

# **Oxygen XML Editor 14.2**



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## Notice

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# Contents

<b>Chapter 1: Introduction.....</b>	<b>21</b>
Key Features and Benefits of Oxygen XML Editor .....	22
<b>Chapter 2: Installation.....</b>	<b>25</b>
Installation Requirements.....	26
Platform Requirements.....	26
Operating System.....	26
Environment Requirements.....	26
JWS-specific Requirements.....	26
Installation Instructions.....	27
Windows Installation.....	27
Mac OS X Installation.....	28
Linux Installation.....	28
All Platforms Installation.....	28
Unix / Linux Server Configuration.....	29
Windows NT Terminal Server Configuration.....	29
Unattended Installation.....	30
Java Web Start (JWS) Installer.....	31
Setting a Java Virtual Machine Parameter in the Launcher Configuration File / Start-up Script.....	32
Starting the Application.....	33
Starting the Application on Windows.....	33
Starting the Application on Mac OS X.....	33
Starting the Application on Linux.....	34
Starting the Application with the All Platforms Kit.....	34
Obtaining and Registering a License Key.....	34
Named User License Registration.....	35
Named User License Registration with Text File.....	35
Named User License Registration with XML File.....	35
How Floating (Concurrent) Licenses Work.....	36
License Registration with an Activation Code.....	41
Unregistering the License Key.....	41
Upgrading the Oxygen XML Editor Application.....	41
Upgrading the Standalone Application.....	41
Checking for New Versions.....	42
Installing and Updating Add-ons.....	42
Uninstalling the Application.....	44
Uninstalling the Standalone Application.....	44
Unattended Uninstall.....	44

Performance Problems.....	44
Large Documents.....	44
External Processes.....	44
Display Problems on Linux/Solaris.....	45
Help Menu.....	45
The About Dialog.....	45
<b>Chapter 3: Getting Started.....</b>	<b>47</b>
Getting Help.....	48
Supported Types of Documents.....	48
Perspectives.....	48
Editor Perspective .....	48
XSLT Debugger Perspective .....	52
XQuery Debugger Perspective .....	53
Database Perspective .....	54
Tree Editor Perspective.....	55
Dockable Views and Editors.....	56
Localization of the User Interface.....	58
Localization of the User Interface Using an XML File.....	58
<b>Chapter 4: Editing Documents.....</b>	<b>61</b>
Working with Unicode.....	62
Opening and Saving Unicode Documents.....	62
The Unicode Toolbar.....	63
Opening and Closing Documents.....	63
Creating New Documents.....	64
Saving Documents.....	67
Opening Existing Documents.....	68
Opening and Saving Remote Documents via FTP/SFTP/WebDAV .....	74
Opening the Current Document in System Application.....	77
Closing Documents.....	77
Viewing File Properties.....	77
Grouping Documents in XML Projects.....	78
Using the Project View.....	78
Defining Master Files at Project Level.....	82
Editing XML Documents.....	84
Associate a Schema to a Document.....	85
Streamline with Content Completion.....	88
Validating XML Documents.....	96
Document Navigation.....	106
Large Documents.....	109
Working with XML Catalogs.....	112
Converting Between Schema Languages.....	113

Editing XML Tree Nodes.....	116
Formatting and Indenting Documents (Pretty Print).....	116
Viewing Status Information.....	117
Image Preview.....	117
Making a Persistent Copy of Results.....	117
Locking and Unlocking XML Markup.....	118
Adjusting the Transparency of XML Markup.....	118
XML Editor Specific Actions.....	118
Editing XHTML Documents.....	123
Editing XML Schemas.....	123
XML Schema Text Editor.....	123
XML Schema Diagram Editor.....	125
Contextual Editing.....	157
Create an XML Schema From a Relational Database Table.....	157
Generate Sample XML Files.....	157
XML Schema Regular Expressions Builder.....	161
Generating Documentation for an XML Schema.....	163
Searching and Refactoring Actions.....	170
Search and Refactor Operations Scope.....	172
Resource Hierarchy / Dependencies View.....	173
Component Dependencies View.....	175
Highlight Component Occurrences.....	176
XML Schema Quick Assist Support.....	176
Linking Between Development and Authoring.....	177
XML Schema 1.1.....	177
Editing Relax NG Schemas.....	178
Relax NG Schema Diagram.....	178
Relax NG Editor Specific Actions.....	182
Searching and Refactoring Actions.....	183
Resource Hierarchy/Dependencies View.....	183
Component Dependencies View.....	185
RNG Quick Assist Support.....	185
Configuring a Custom Datatype Library for a RELAX NG Schema.....	186
Linking Between Development and Authoring.....	186
Editing NVDL Schemas.....	186
NVDL Schema Diagram.....	187
NVDL Editor Specific Actions.....	188
Searching and Refactoring Actions.....	188
Component Dependencies View.....	189
Linking Between Development and Authoring.....	189
Editing XSLT Stylesheets.....	189
Validating XSLT Stylesheets.....	189
Contextual Editing.....	190
Syntax Highlight.....	190
Content Completion in XSLT Stylesheets.....	190

The XSLT/XQuery Input View.....	195
The XSLT Outline View.....	197
XSLT Stylesheet Documentation Support.....	199
Generating Documentation for an XSLT Stylesheet.....	200
Finding XSLT References and Declarations.....	206
Highlight Component Occurrences.....	206
XSLT Refactoring Actions.....	207
Resource Hierarchy/Dependencies View.....	207
Component Dependencies View.....	209
XSLT Quick Assist Support.....	210
Linking Between Development and Authoring.....	210
XSLT Unit Test (XSpec).....	210
Editing XQuery Documents.....	212
XQuery Outline View.....	212
Folding in XQuery Documents.....	213
Generating HTML Documentation for an XQuery Document.....	213
Editing CSS Stylesheets.....	214
Validating CSS Stylesheets.....	214
Content Completion in CSS Stylesheets.....	215
CSS Outline View.....	215
Folding in CSS Stylesheets.....	216
Formatting and Indenting CSS Stylesheets (Pretty Print).....	216
Other CSS Editing Actions.....	216
Editing JSON Documents.....	216
JSON Editor Text Mode.....	217
JSON Editor Grid Mode.....	218
JSON Outline View.....	218
Validating JSON Documents.....	219
Convert XML to JSON.....	219
Editing StratML Documents.....	220
Editing JavaScript Documents.....	220
JavaScript Editor Text Mode.....	221
Content Completion in JavaScript Files.....	222
JavaScript Outline View.....	223
Validating JavaScript Files.....	224
Editing XProc Scripts.....	224
Editing Schematron Schemas.....	225
Combined RELAX NG / W3C XML Schemas and Schematron Schema.....	226
Validate an XML Document.....	226
SVG Documents.....	227
The Standalone SVG Viewer.....	227
The Preview Result Panel.....	228
Integrating External Tools.....	228
Editing Large Documents.....	229
File sizes smaller than 300 Megabytes.....	229

XML file sizes greater than 300 MB.....	230
Insufficient Memory.....	230
Large File Viewer.....	231
Handling Bidirectional (BIDI) Text.....	232
Hex Viewer.....	232
Scratch Buffer.....	233
Handling Read-Only Files.....	233
Editing Documents with Long Lines.....	233

## **Chapter 5: Authoring in the Visual Editor.....235**

Tagless XML Authoring.....	236
General Author Presentation.....	237
Author Views.....	238
The Author Editor.....	244
Review.....	261
Profiling / Conditional Text.....	271
Smart Paste Support.....	276

## **Chapter 6: Author for DITA.....277**

Creating DITA Maps and Topics.....	278
Editing DITA Maps.....	278
Editing Actions.....	280
Creating a Map.....	281
Validating DITA Maps.....	281
Create a Topic in a Map.....	283
Organize Topics in a Map.....	283
Create a Bookmark.....	283
Create a Subject Scheme.....	283
Create Relationships Between Topics.....	284
Advanced Operations.....	284
Transforming DITA Maps and Topics.....	288
Creating a DITA Transformation Scenario.....	288
Customizing a DITA Scenario.....	289
Running a DITA Map ANT Transformation.....	294
Set a Font for PDF Output Generated with Apache FOP.....	295
Tips and Tricks.....	295
Available Output Formats.....	298
Compiled HTML Help (CHM) Output Format.....	299
The <i>TocJS</i> Transformation.....	299
DITA-OT Customization.....	300
Support for Transformation Customizations.....	300
Using Your Custom Build File.....	300
Customizing the Oxygen XML Editor Ant Tool.....	300

Increasing the Memory for the Ant Process.....	300
Resolving Topic References Through an XML Catalog.....	300
DITA to PDF Output Customization.....	300
Installing a plugin in the DITA Open Toolkit.....	302
DITA Specialization Support.....	302
Integration of a DITA Specialization.....	302
Editing DITA Map Specializations.....	303
Editing DITA Topic Specializations.....	303
Use a New DITA Open Toolkit in Oxygen XML Editor.....	303
Reusing Content.....	304
Working with Content References.....	304
How to Work with Reusable Components.....	304
Insert a Direct Content Reference.....	305
Moving and Renaming Resources.....	305
DITA Profiling / Conditional Text.....	306
Profiling / Conditional Text Markers.....	306
Profiling with a Subject Scheme Map.....	307
Publish Profiled Text.....	308
How to Profile DITA Content.....	308
Working with MathML.....	309

## **Chapter 7: Predefined Document Types.....311**

Document Type.....	312
The DocBook 4 Document Type.....	312
DocBook 4 Author Extensions.....	312
DocBook 4 Transformation Scenarios.....	315
DocBook 4 Templates.....	323
Inserting olink Links in DocBook 5 Documents.....	323
The DocBook 5 Document Type.....	325
DocBook 5 Author Extensions.....	325
DocBook 5 Transformation Scenarios.....	326
DocBook 5 Templates.....	335
Inserting olink Links in DocBook 5 Documents.....	335
The DocBook Targetset Document Type.....	338
DocBook Targetset Templates.....	338
The DITA Topics Document Type.....	339
DITA Author Extensions.....	339
DITA Transformation Scenarios.....	345
DITA Templates.....	345
The DITA Map Document Type.....	346
DITA Map Author Extensions.....	346
DITA Map Transformation Scenarios.....	346
DITA Map Templates.....	355
The XHTML Document Type.....	355

XHTML Author Extensions.....	355
XHTML Transformation Scenarios.....	356
XHTML Templates.....	357
The TEI ODD Document Type.....	357
TEI ODD Author Extensions.....	357
TEI ODD Transformation Scenarios.....	359
TEI ODD Templates.....	359
The TEI P4 Document Type.....	359
TEI P4 Author Extensions.....	359
TEI P4 Transformation Scenarios.....	361
TEI P4 Templates.....	361
Customization of TEI Frameworks Using the Latest Sources.....	361
The TEI P5 Document Type.....	362
TEI P5 Transformation Scenarios.....	362
TEI P5 Templates.....	362
Customization of TEI Frameworks Using the Latest Sources.....	363
Customization of TEI Frameworks Using the Compiled Sources.....	363
The EPUB Document Type.....	363

## **Chapter 8: Author Developer Guide.....365**

Simple Customization Tutorial.....	367
XML Schema.....	367
CSS Stylesheet.....	367
The XML Instance Template.....	370
Advanced Customization Tutorial - Document Type Associations.....	371
Author Settings.....	371
Editing attributes in-place using form controls.....	392
Localizing Frameworks.....	392
How to deploy a framework as an Oxygen XML Editor add-on.....	393
Creating the Basic Association.....	393
Configuring New File Templates.....	400
Configuring XML Catalogs.....	403
Configuring Transformation Scenarios.....	404
Configuring Validation Scenarios.....	406
Configuring Extensions.....	407
Customizing the Default CSS of a Document Type.....	429
Document Type Sharing.....	429
Adding Custom Persistent Highlights.....	430
CSS Support in Author.....	430
Supported CSS Selectors.....	430
CSS 2.1 Features.....	432
CSS 3 Features.....	435
Styling Elements from other Namespace.....	439
Additional Custom Selectors.....	439

Oxygen CSS Extensions.....	441
Example Files Listings - The Simple Documentation Framework Files.....	457
XML Schema files.....	457
CSS Files.....	458
XML Files.....	460
XSL Files.....	461
Author Component.....	462
Licensing.....	462
Installation Requirements.....	463
Customization.....	463
Deployment.....	465
Frequently asked questions.....	470
Creating and Running Automated Tests.....	473
<b>Chapter 9: API Frequently Asked Questions (API FAQ).....</b>	<b>475</b>
Difference Between a Document Type (Framework) and a Plugin Extension.....	477
Dynamically Modify the Content Inserted by the Writer.....	477
Split Paragraph on Enter (Instead of Showing Content Completion List).....	478
Impose Custom Options for Writers.....	479
Highlight Content.....	479
How Do I Add My Custom Actions to the Contextual Menu?.....	480
Adding Custom Callouts.....	481
Change the DOCTYPE of an Opened XML Document.....	484
Customize the Default Application Icons for Toolbars/Menus.....	484
Disable Context-Sensitive Menu Items for Custom Author Actions.....	485
Dynamic Open File in Oxygen XML Editor Distributed via JavaWebStart.....	485
Change the Default Track Changes (Review) Author Name.....	486
Multiple Rendering Modes for the Same Author Document.....	486
Obtain a DOM Element from an AuthorNode or AuthorElement.....	487
Print Document Within the Author Component.....	487
Running XSLT or XQuery Transformations.....	487
Use Different Rendering Styles for Entity References, Comments or Processing Instructions.....	488
Insert an Element with all the Required Content.....	490
Obtain the Current Selected Element Using the Author API.....	491
<b>Chapter 10: Grid Editor.....</b>	<b>493</b>
Layouts: Grid and Tree.....	494
Navigating the Grid.....	494
Specific Grid Actions.....	495
Sorting a Table Column.....	495
Inserting a Row in a Table.....	495
Inserting a Column in a Table.....	495
Clearing the Content of a Column.....	495

Adding Nodes.....	495
Duplicating Nodes.....	495
Refresh Layout.....	496
Start Editing a Cell Value.....	496
Stop Editing a Cell Value.....	496
Drag and Drop in the Grid Editor.....	496
Copy and Paste in the Grid Editor.....	496
Bidirectional Text Support in the Grid Editor.....	498
<b>Chapter 11: Transforming Documents.....</b>	<b>499</b>
Output Formats.....	500
Transformation Scenario.....	501
Defining a New Transformation Scenario.....	501
Duplicating a Transformation Scenario.....	525
Editing a Transformation Scenario.....	525
Batch Transformation.....	526
Built-in Transformation Scenarios.....	526
Sharing the Transformation Scenarios.....	526
<b>Transformation Scenarios View</b> .....	527
XSLT Processors.....	530
Supported XSLT Processors.....	530
Configuring Custom XSLT Processors.....	531
Configuring the XSLT Processor Extensions Paths.....	531
XSL-FO Processors.....	532
The Built-in XSL-FO Processor.....	532
Add a Font to the Built-in FOP - The Simple Version.....	532
Add a Font to the Built-in FOP.....	533
Adding Libraries to the Built-in FOP.....	535
<b>Chapter 12: Querying Documents.....</b>	<b>537</b>
Running XPath Expressions.....	538
What is XPath.....	538
Oxygen XPath Toolbar.....	538
The XPath/XQuery Builder View.....	541
Working with XQuery.....	543
What is XQuery.....	543
Syntax Highlight and Content Completion.....	543
XQuery Outline View.....	544
The XQuery Input View.....	545
XQuery Validation.....	546
Other XQuery Editing Actions.....	547
Transforming XML Documents Using XQuery.....	547

**Chapter 13: Debugging XSLT Stylesheets and XQuery Documents.....551**

Overview.....	552
Layout.....	552
Control Toolbar.....	553
Information View.....	555
Multiple Output Documents in XSLT 2.0.....	564
Working with the XSLT / XQuery Debugger.....	564
Steps in a Typical Debug Process.....	564
Using Breakpoints.....	565
Determining What XSLT / XQuery Expression Generated Particular Output.....	565
Debugging Java Extensions.....	567
Supported Processors for XSLT / XQuery Debugging.....	568

**Chapter 14: Performance Profiling of XSLT Stylesheets and XQuery Documents.569**

Overview.....	570
Viewing Profiling Information.....	570
Invocation Tree View.....	570
Hotspots View.....	571
Working with XSLT/XQuery Profiler.....	571

**Chapter 15: Comparing and Merging Documents.....573**

Directories Comparison.....	574
Directories Comparison User Interface.....	574
Comparison Result.....	575
Compare Images.....	576
Files Comparison.....	576
Main Menu.....	578
Compare Toolbar.....	579
Files Selector.....	581
File Contents Panel.....	581
Word Level Comparison.....	581
Character Level Comparison.....	582
XML Diff API.....	582

**Chapter 16: Working with Archives.....585**

Browsing and Modifying Archive Structure.....	586
Working with EPUB.....	587
Create an EPUB.....	588
Publish to EPUB.....	588
Editing Files From Archives.....	589

<b>Chapter 17: Working with Databases.....</b>	<b>591</b>
Relational Database Support.....	592
Configuring Database Data Sources.....	592
Configuring Database Connections.....	597
Resource Management.....	602
SQL Execution Support.....	607
Native XML Database (NXD) Support.....	609
Configuring Database Data Sources.....	610
Configuring Database Connections.....	611
Data Source Explorer View.....	613
XQuery and Databases.....	623
Build Queries With Drag and Drop From Data Source Explorer View.....	624
XQuery Transformation.....	624
XQuery Database Debugging.....	626
WebDAV Connection.....	627
How to Configure a WebDAV Connection.....	627
WebDAV Connection Actions.....	627
SharePoint Connection.....	628
How to Configure a SharePoint Connection.....	628
SharePoint Connection Actions.....	629
Configuring BaseX Support.....	630
Resource management.....	630
XQuery execution.....	630
<b>Chapter 18: Importing Data.....</b>	<b>633</b>
Introduction.....	634
Import from Database.....	634
Import Table Content as XML Document.....	634
Convert Table Structure to XML Schema.....	636
Import from MS Excel Files.....	636
Import from MS Excel 2007-2010 (.xlsx).....	638
Import from HTML Files.....	639
Import from Text Files.....	639
<b>Chapter 19: Content Management System (CMS) Integration.....</b>	<b>643</b>
Integration with Documentum (CMS).....	644
Configure Connection to Documentum Server.....	644
Documentum (CMS) Actions in the Data Source Explorer View.....	645
Transformations on DITA Content from Documentum (CMS).....	649
<b>Chapter 20: Composing Web Service Calls.....</b>	<b>651</b>

Overview.....	652
Composing a SOAP Request.....	652
Testing Remote WSDL Files.....	655
The UDDI Registry Browser.....	655
Generate WSDL Documentation.....	656
<b>Chapter 21: Digital Signatures.....</b>	<b>659</b>
Overview.....	660
Canonicalizing Files.....	661
Certificates.....	662
Signing Files.....	662
Verifying the Signature.....	663
<b>Chapter 22: Syncro SVN Client.....</b>	<b>665</b>
Main Window.....	666
Views.....	666
Main Menu.....	666
Main Toolbar.....	672
Status Bar.....	672
Getting Started.....	673
SVN Repository Location.....	673
Share a Project.....	675
Defining a Working Copy.....	676
Manage Working Copy Resources.....	679
Synchronize with Repository.....	683
Obtain Information for a Resource.....	693
Management of SVN Properties.....	693
Branches and Tags.....	694
Working with Repositories.....	717
Sparse Checkout.....	719
Syncro SVN Client Views.....	719
Repositories View.....	719
Working Copy View.....	722
History View.....	732
Directory Change Set View.....	735
The Editor Panel of SVN Client.....	736
Annotations View.....	736
Compare View.....	737
Image Preview.....	739
Compare Images View.....	739
Properties View.....	739
Console View.....	741
Dynamic Help View.....	741

The Revision Graph of a SVN Resource.....	741
Syncro SVN Client Preferences.....	744
Command Line Reference.....	744
Checkout Command.....	744
Update Command.....	745
Commit Command.....	745
Diff Command.....	745
Show History.....	745
Refresh.....	746
Synchronize.....	746
Import.....	746
Export.....	746
Information.....	746
Add.....	747
Add to svn:ignore.....	747
Delete.....	747
Copy.....	747
Move / Rename.....	747
Mark resolved.....	748
Revert.....	748
Cleanup.....	748
Show / Refresh Properties.....	748
Branch / Tag.....	748
Merge.....	748
Scan for locks.....	749
Lock.....	749
Unlock.....	749
Mark as merged.....	749
Override and update.....	750
Override and Commit.....	750
Add / Edit property.....	750
Remove property.....	750
Revert changes from this revision.....	750
Revert changes from these revisions.....	750
Technical Issues.....	751
Authentication Certificates Not Saved.....	751
Updating Newly Added Resources.....	751
Cannot Access a Repository through HTTPS.....	751
<b>Chapter 23: Extending Oxygen XML Editor with Plugins.....</b>	<b>753</b>
Introduction.....	754
General configuration of an Oxygen XML Editor plugin.....	754
Types of plugins.....	755
General Plugin.....	755

Selection Plugin.....	755
Document Plugin.....	756
Custom Protocol Plugin.....	756
Resource Locking Custom Protocol Plugin.....	756
Components Validation Plugin.....	757
Workspace Access Plugin.....	757
Open Redirect Plugin.....	759
Targeted URL Stream Handler Plugin.....	759
Lock Handler Factory Plugin.....	760
StylesFilter Plugin.....	761
How to.....	761
How to Write a CMS Integration Plugin.....	761
How to Write A Custom Protocol Plugin.....	764
How to deploy a plugin as an Oxygen XML Editor add-on.....	764
Installation.....	765
Example - A Selection Plugin.....	765
Creating and Running Automated Tests.....	766
Disabling a Plugin.....	767

## **Chapter 24: Text Editor Specific Actions.....769**

Undoing and Redoing User Actions.....	770
Copying and Pasting Text.....	770
Finding and Replacing Text in the Current File.....	770
The Find / Replace Dialog.....	770
The Find All Elements / Attributes Dialog.....	773
The Quick Find Toolbar.....	774
Keyboard Shortcuts for Finding the Next and Previous Match.....	774
Finding and Replacing Text in Multiple Files.....	774
Spell Checking.....	777
Spell Checking Dictionaries.....	778
Learned Words.....	779
Ignored Words.....	779
Automatic Spell Check.....	779
Spell Checking in Multiple Files.....	780
Changing the Font Size.....	780
Word/Line Editor Actions.....	781
Dragging and Dropping the Selected Text.....	781
Inserting a File at Caret Position.....	781
Opening the File at Caret in System Application.....	781
Opening the File at Caret Position.....	781
Switching Between Opened Tabs.....	781
Printing a File.....	781
Exiting the Application.....	782

**Chapter 25: Configuring the Application.....783**

Configuring Options.....	784
Customized Default Options.....	784
Project Level User Options.....	785
Importing / Exporting Global Options.....	785
Preferences.....	786
Global.....	787
Add-ons.....	788
Fonts.....	789
Document Type Association.....	789
Perspectives Layout.....	798
Encoding.....	799
Editor.....	799
CSS Validator.....	820
XML.....	820
Data Sources.....	838
SVN.....	841
Files Comparison.....	845
Directories Comparison.....	846
Archive.....	847
Plugins.....	848
External Tools.....	849
Menu Shortcut Keys.....	850
File Types.....	851
SVN File Editors.....	852
Custom Editor Variables.....	853
The Network Connection Settings Preferences Page.....	854
Certificates.....	856
XML Structure Outline.....	857
View.....	857
Messages.....	858
Tree Editor.....	859
Reset Global Options.....	859
Scenarios Management.....	859
Editor Variables.....	860
Custom Editor Variables.....	862
Configure Toolbars.....	862
Custom System Properties.....	862

**Chapter 26: Upgrading the Application.....865**

Upgrading Oxygen XML Editor on Windows / Linux.....	866
Upgrading Oxygen XML Editor on Mac OS X.....	866

**Chapter 27: Common Problems.....867**

XML Document Opened After a Long Time.....	869
Out Of Memory Error When I Open Large Documents.....	869
Special Characters Are Replaced With a Square in Editor.....	869
XSLT Debugger Is Very Slow.....	869
The Scroll Function of my Notebook's Trackpad is Not Working.....	869
NullPointerException at Startup on Windows XP.....	870
Crash at Startup on Windows with an Error Message About a File nvogl32.dll.....	870
Oxygen XML Editor Crashed on My Mac OS X Computer.....	870
Wrong Highlights of Matched Words in a Search in User Manual.....	870
Keyboard Shortcuts Do Not Work.....	871
After Installing Oxygen XML Editor I Cannot Open XML Files in Internet Explorer Anymore.....	871
I Cannot Associate Oxygen XML Editor With a File Type on My Windows Computer.....	871
The Files Are Opened in Split Panels When I Restart the Oxygen XML Editor Application.....	872
Grey Window on Linux With the Compiz / Beryl Window Manager.....	872
Drag and Drop Without Initial Selection Does Not Work.....	872
Set Specific JVM Version on Mac OS X.....	872
Segmentation Fault Error on Mac OS X.....	872
Damaged File Associations on Mac OS X.....	873
I Cannot Connect to SVN Repository From <b>Repositories</b> View.....	873
Problem Report Submitted on the Technical Support Form.....	874
Signature verification failed error on open or edit a resource from Documentum.....	874
Cannot cancel a system shutdown when there is at least one modified document open in Oxygen XML Editor.....	874
Compatibility issue between Java and certain graphics card drivers.....	875
An Image appears stretched out in the PDF output.....	875
The DITA PDF Transformation Fails.....	876

**Chapter 28: MAC OS Specific Features.....877****Chapter 29: Terms.....879**

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# Chapter 1

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## Introduction

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### Topics:

- [Key Features and Benefits of Oxygen XML Editor](#)

Welcome to the User Manual of Oxygen XML Editor 14.2!

Oxygen XML Editor is a cross-platform application designed for document development using structured mark-up languages such as XML , XSD, Relax NG, XSL, DTD.

It offers developers and authors a powerful Integrated Development Environment. Based on proven Java technology, the intuitive Graphical User Interface of the Oxygen XML Editor is easy-to-use and provides robust functionality for editing, project management and validation of structured mark-up sources. Coupled with *XSLT* and *FOP* transformation technologies, Oxygen XML Editor supports output to multiple target formats, including: *PDF*, *PS*, *TXT*, *HTML*, *JavaHelp* and *XML*.

Oxygen XML Editor is the XML Editor of choice for developers, authors and integrators that demand high-quality output with a flexible and robust, single-source, structured mark-up environment.

This user guide is focused mainly at describing features, functionality and application interface to help you get started in no time. It also describes the basic process of authoring, management, validation of structured mark-up documents and their transformation to multiple target outputs. It is assumed that you are familiar with the use of your operating system and the concepts related to structured mark-up.

## Key Features and Benefits of Oxygen XML Editor

Multiplatform availability: Windows, Mac OS X, Linux, Solaris	Multilanguage support: English, German, French, Italian and Japanese
Visual WYSIWYG XML editing mode based on W3C CSS stylesheets.	Visual DITA Map editor
Closely integrate with the DITA Open Toolkit for generating DITA output	Support for latest versions of document frameworks: DocBook and TEI.
Can be used as standalone desktop application, run through Java Web Start or as an Eclipse plugin	Non blocking operations, you can perform validation and transformation operations in background
Support for XML, XML Schema 1.0 and 1.1, Relax NG, Schematron, DTD, NVDL schemas, XSLT, XSL:FO, WSDL, XQuery, HTML, CSS	Support for XML, CSS, XSLT, XSL-FO.
Validate XML Schema schemas, Relax NG schemas, DTD's, Schematron schemas, NVDL schemas, WSDL, XQuery, HTML and CSS	Manual and automatic validation of XML documents against XML Schema schemas, Relax NG schemas, DTD's, Schematron, and NVDL schemas
Multiple built-in validation engines (Xerces, libxml, Saxon SA, MSXML 4.0, MSXML.NET) and support for custom validation engines (XSV, SQC).	Multiple built-in XSLT transformers (Saxon 6.5, Saxon 9 Enterprise (schema aware), Xalan, libxslt, MSXML 3.0 / 4.0, Microsoft .NET 1.0, Microsoft .NET 2.0), support for custom JAXP transformers.
Support for latest versions of document frameworks: DocBook and TEI.	Compare and merge files and directories
Ready to use FOP support to generate PDF or PS documents	XInclude support
Support for editing remote files over FTP, SFTP, HTTP / WebDAV and HTTPS / WebDAV	Easy error tracking - locate the error source by clicking on it
Visual schema editor with full and logical model views	Generate HTML documentation from XML Schemas
New XML document wizards to easily create documents specifying a schema or a DTD	Context sensitive content assistant driven by XML Schema, Relax NG, DTD, NVDL or by the edited document structure enhanced with schema annotation presenter
XML Catalog support	Unicode support
Conversions from DTD, Relax NG schema or a set of documents to XML Schema, DTD or Relax NG schema	Syntax coloring for XML, DTD, Relax NG compact syntax, Java, C++, C, PHP, Perl, etc
Pretty-printing of XML files	Easy configuration for external FO Processors
Apply XSLT and FOP transformations	XPath search and evaluation support
Preview transformation results as XHTML or XML or in your browser	Support for document templates to easily create and share documents
Import data from a database, Excel, HTML or text file	Convert database structure to XML Schema
Canonicalize and sign documents	XML project manager
Batch validate selected files in project	Fully-fledged client for the Apache Subversion™ (SVN) versioning system with support for SVN 1.4, SVN 1.5, SVN 1.6 and SVN 1.7.
Generate large sets of sample XML instances from XML Schema	Tree view / edit support for XML documents

Configurable external tools	Configurable actions key bindings
Multi-line find and replace support allows regular expressions, is XML aware, is incremental, handles multiple files	Special viewer for very large files (up to 2 GB file size).
Associate extensions on Windows	Bookmark support
Mac OS X ready	Print documents
XSLT Debugger with Backmapping support	XSLT Profiler
XQuery Debugger with Backmapping support	XQuery Profiler
Model View	Attributes View
Multidocument environment	SVG Viewer
XQuery 1.0 support	WSDL analysis and SOAP requests support
XSLT 2.0 full support	XPath 2.0 execution and debugging support
Dockable views and editors	Document folding
XSLT refactoring actions	Text transparency levels adjuster
Spell checking supporting English, German and French including locals	Custom protocol plugin support
All the usual editor capabilities (cut, copy, paste, find, replace, windows management)	Drag&drop support
Support for editing, modifying and using files directly from ZIP-type archives	Outline view in sync with a non well-formed document



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# Chapter 2

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## Installation

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### Topics:

- [Installation Requirements](#)
- [Installation Instructions](#)
- [Java Web Start \(JWS\) Installer](#)
- [Setting a Java Virtual Machine Parameter in the Launcher Configuration File / Start-up Script](#)
- [Starting the Application](#)
- [Obtaining and Registering a License Key](#)
- [Unregistering the License Key](#)
- [Upgrading the Oxygen XML Editor Application](#)
- [Checking for New Versions](#)
- [Installing and Updating Add-ons](#)
- [Uninstalling the Application](#)
- [Performance Problems](#)
- [Help Menu](#)

This section explains platform requirements and installation procedures. It also provides instructions on how to obtain and register a license key, how to perform upgrades and uninstall the application.

If you need help at any point during these procedures please send email to [support@oxygenxml.com](mailto:support@oxygenxml.com)

## Installation Requirements

---

This section contains details about the platform and environment requirements necessary for installing and running the application.

### Platform Requirements

The run-time requirements of the application are:

- CPU (processor): minimum - Intel Pentium III™/AMD Athlon™ class processor, 500 *Mhz*; recommended - Dual Core class processor.
- Computer memory: minimum - 512 MB of RAM (1 GB on Windows Vista™, Windows 7, and Mac OS) ; recommended - 2 GB of RAM.
- Hard disk space: minimum - 300 MB free disk space ; recommended - 500 MB free disk space.

### Operating System

<b>Windows</b>	Windows XP, Windows Vista, Windows 7, Windows 2003, Windows Server 2008.
<b>Mac OS</b>	Mac OS X version 10.5 64-bit or later.
<b>Unix/Linux</b>	Any Unix/Linux distribution with an available Java SE Runtime Environment version 1.6.0 or later from Oracle (formerly from Sun).

### Environment Requirements

This section specifies the Java platform requirements and other tools that may be needed for installing the application.

#### Tools

Installation packages are supplied in compressed archives. Ensure you have installed a suitable archive extraction utility with which to extract the archive. The MD5 sum is available on [the Download page](#) for every archive. You should check the MD5 sum of the downloaded archive with a MD5 checking tool available on your platform.

#### Java Virtual Machine Prerequisites

Prior to installation ensure that your Operating System environment complies with the following:

- Oxygen XML Editor supports only official and stable Java virtual machines with the version number 1.6.0 or later (the recommended version is 1.6.0) from Oracle, formerly Sun Microsystems (available at <http://www.oracle.com/technetwork/java/javase/downloads/index.html>) and from Apple Computer. The Java Virtual Machine from Apple is pre-installed on Mac OS X computers. For Mac OS X, Java Virtual Machine updates are available at the Apple website. Oxygen XML Editor may work very well with JVM implementations from other vendors but the eventual incompatibilities will not be solved in further Oxygen XML Editor releases. Oxygen XML Editor *does not work with the GNU libgcj Java virtual machine*.
- The PATH environment variable is set to the most current Java Virtual Machine installation.
- References to older Java Virtual Machine installations are removed from the PATH.

### JWS-specific Requirements

For **Windows** and **Linux** installations:

- The minimum Java Virtual Machine version should be 1.6 update 10 or later;
- The browser should support the New Java™ Plug-In Technology (usually this plug-in is installed together with the Java VM).

For **Mac OS X** installations, note that the New Java™ Plug-In Technology support is not enabled by default on Mac OS X. To enable the plugin follow these steps:

- Upgrade to Java VM version 1.6 update 17 or later;
- Open the **Java Preferences** application and toggle setting to *Run applets: in their own process*;
- Restart your **Safari** browser and try viewing the applet.



**Caution:**

If you want to *run the application with Java Web Start* directly from the Oxygen XML Editor website or from your intranet server please configure your Java Web Start not to ask for desktop integration (File -> Preferences, Shortcuts). If you don't, the application will freeze because it will show up a dialog in the same time with the license registration dialog.

## Installation Instructions

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Before proceeding with the following instructions, please ensure that your system complies with the prerequisites detailed in the installation requirements.



**Note:**

The following instructions assume that a Java Runtime Environment (*JRE*) is installed. If you have downloaded an installation package that contains the *JRE*, please note that the package will automatically install a *JRE* before execution of the application but this *JRE* will be used on your computer only for running Oxygen XML Editor, it will be invisible to other applications.



**Note:**

The installation kits and the executable files packaged inside the installation kits were checked before publication with an antivirus program to make sure they are not infected with viruses, trojan horses or other malicious software.

## Windows Installation

Windows installation procedure.

The following steps describe the installation procedure of Oxygen XML Editor, valid for Windows:

1. Download the `oxygen.exe` installation kit and run it.
2. Follow the instructions presented in the installation program.

The user preferences are stored in the `com.oxygenxml` subfolder of the folder that is the value of the `APPDATA` Windows variable for the user that starts the application.



**Note:**

In order to specify another Java virtual machine to be used by Oxygen XML Editor you have to set the home folder of the desired JVM in the Windows variable `JAVA_HOME` or in the Windows variable `JDK_HOME`. If `JAVA_HOME` and `JDK_HOME` are not set the application launcher will try to detect a JVM installed in a standard location on the computer and use it for running the application. If you installed the kit which includes a Java virtual machine you have to rename or remove the `jre` subfolder of the install folder in order for the variable `JAVA_HOME` or `JDK_HOME` to take effect.



**Note:**

Copy to clipboard the license key you have received by email and paste it in the application license dialog.



**Note:**

If you have difficulties installing the product please use the zip archive distribution instead (`oxygen.zip`). Just unzip it in a folder where you have write permissions and use the product launchers.

## Mac OS X Installation

The following steps describe the installation procedure of Oxygen XML Editor, valid for Mac OS X:

1. Create a folder named `oxygen` on your local disk.
2. In the `oxygen` folder, create a child folder named after the version number of the application.

The folder structure is `../oxygen/ 14.2/`.

3. Download the Mac OS X Installation package ( `oxygen.zip` ) and copy it in this folder.
4. Extract the archive in the same folder.
5. Execute the `oxygen` file.



### Note:

Oxygen XML Editor uses the first JVM from the list of preferred JVM versions, set on your Mac computer, that has the version number 1.6.0 or newer. To change the version of the Java Virtual Machine that runs the application, go to Applications -> Utilities -> Java -> Java Preferences and drag the new JVM version up in the list of preferred versions.



### Note:

The compressed file should be recognized by StuffIt Expander and should automatically be expanded after downloading. If it is not expanded, you can expand it manually using StuffIt Expander 6.0 or newer.



### Note:

Enter the license key you received by email in the application license dialog.



### Note:

To avoid an unpredictable behavior of the cursor, use a fixed-size font, for example Monaco. [Here](#) you can find more details about this.

## Linux Installation

Linux installation procedure.

To install Oxygen XML Editor on Linux, follow these steps:

1. Download the `oxygen-32bit.sh` installation kit for 32 bit Linux machines or the `oxygen-64bit.sh` installation kit for 64 bit Linux machines and run it.
2. Follow the instructions presented in the installation program.



### Note:

In order to specify another Java virtual machine to be used by Oxygen XML Editor you have to set the home folder of the desired JVM in the environment variable `JAVA_HOME` or in the environment variable `JDK_HOME`. If `JAVA_HOME` and `JDK_HOME` are not set the application launcher will try to detect a JVM installed in a standard location on the computer and use it to run the application.

## All Platforms Installation

The following steps describe the installation procedure of Oxygen XML Editor, valid for all supported platforms:

1. Create a folder named `oxygen` on your local disk.
2. In the `oxygen` folder, create a child folder named after the version number of Oxygen XML Editor.  
The directory structure is `../oxygen/ 14.2/`.
3. Download the All Platforms Installation package (`oxygen.tar.gz`) to this folder.
4. Extract the archive to the same folder.

5. From a command line, run the following scripts: `oxygen.bat` on Windows, `oxygenMac.sh` on Mac OS X, and `oxygen.sh` on Unix / Linux.

 **Note:**

To change the version of the Java Virtual Machine that runs the application, go to the Java command at the end of the script file and specify the full path to the Java executable of the desired JVM version, for example:

```
"C:\Program Files\Java\jre1.6.0\bin\java" -Xmx256m
-Dsun.java2d.noddraw=true ...
```

on Windows, or

```
/System/Library/Frameworks/JavaVM.framework/Versions/1.6.0/Home/bin/java
"-Xdock:name=Oxygen" ...
```

on Mac OS X.

 **Note:**

You must have installed a Java virtual machine 1.6.0 or later.

 **Note:**

Copy to clipboard the license key you have received by email and paste it in the application license dialog.

## Unix / Linux Server Configuration

Unix / Linux Server configuration procedure.

To install Oxygen XML Editor on a Unix / Linux server, follow these steps:

1. Install the application on the server, making sure the `oxygen.sh` script is executable and the installation directory is in the PATH of the users that need to use the editor.
2. If you need to run multiple instances of the application, make sure you add the `-Dcom.oxygenxml.MultipleInstances=true` parameter in the startup script.
3. Make sure you allocate sufficient memory to the application by setting an appropriate value for the `-Xmx` parameter in the `.sh` startup script.
4. Make sure the X server processes located on the workstations allow connections from the server host. For this use the `xhost` command.
5. Telnet (or ssh) on the server host.
6. Start an xterm process, with `display` parameter set on the current workstation. Ex: `xterm -display workstationip:0.0`
7. Start the application by typing `oxygen.sh`

## Windows NT Terminal Server Configuration

Windows NT Terminal Server configuration procedure.

1. Install Oxygen XML Editor on the server, making its shortcuts available to all users.
2. If you need to run multiple instances of Oxygen XML Editor, make sure you add the `-Dcom.oxygenxml.MultipleInstances=true` parameter in the `.bat` or `.sh` startup script.
3. Make sure you allocate sufficient memory to Oxygen XML Editor by adding the `-Xmx` parameter either in the `.bat` or `.sh` startup script, or in the `.vmoptions` configuration file (if you start it from an executable launcher).

## Unattended Installation

Unattended installation is possible only on Windows and Linux by running the installer executable from command line and passing the `-q` parameter. The installer executable is called `oxygen.exe` on Windows and `oxygen.sh` on Linux

In unattended mode the installer does not overwrite files with the same name if a previous version of the application is installed in the same folder. The `-overwrite` parameter added after `-q` parameter forces the overwriting of these files.

If the installer is executed in silent (unattended) mode and `-console` parameter is passed as a second parameter after `-q` parameter, a console will be allocated on Windows that displays the output of the installer. The command for running the installer in this case is:

```
start /wait oxygen.exe -q -console
```

### Custom Settings in Unattended Installation

By default an unattended installation applies the default settings of the installer. If you want to install the application on a large number of computers but you need to change the default values of some settings (like the install folder on disk, whether a desktop icon or a quick launch shortcut is created, the file associations created in the operating system, the name of the program group on the Start menu, etc.) then you should use a special settings file which specifies the new values for these settings. To generate the settings file you have to run the installer in normal attended mode once on a test computer and specify the exact options that you want for the unattended installation. When the installation is completed a file called `response.varfile` and containing your selected options is created in the `.install4j` subfolder of the installation folder, by default `C:\Program Files\Oxygen XML Editor Editor 14\install4j` on Windows. This is a one time process. After that for applying these options on all the computers where an unattended installation is performed you have to specify this file in the command line, for example copy the file in the same location as the installer program and use the command:

**- on Windows:**

```
oxygen.exe -q -varfile response.varfile
```

**- on Linux:**

```
oxygen.sh -q -varfile response.varfile
```

### Privacy Options

The following parameters control the privacy options:

**Table 1: Privacy Options Parameters**

Parameter name	Description	Values
<code>autoVersionChecking</code>	Automatic version checking.	<code>true / false</code> . Default setting is <code>true</code> .
<code>reportProblem</code>	Allows you to report a problem encountered while using the application.	<code>true / false</code> . Default setting is <code>true</code> .
<code>usageDataCollector</code>	When set to <code>true</code> , the user can choose whether the application will send anonymous information about how the product is used.	<code>true / false</code> . Default setting is <code>true</code> .

They can be set either in the `response.varfile` configuration file, or directly in the command line, like in the following example:

**- on Windows:**

```
oxygen.exe -q -VautoVersionChecking=false -VreportProblem=false
-VusageDataCollector=false
```

**- on Linux:**

```
oxygen.sh -q -VautoVersionChecking=false -VreportProblem=false
-VusageDataCollector=false
```

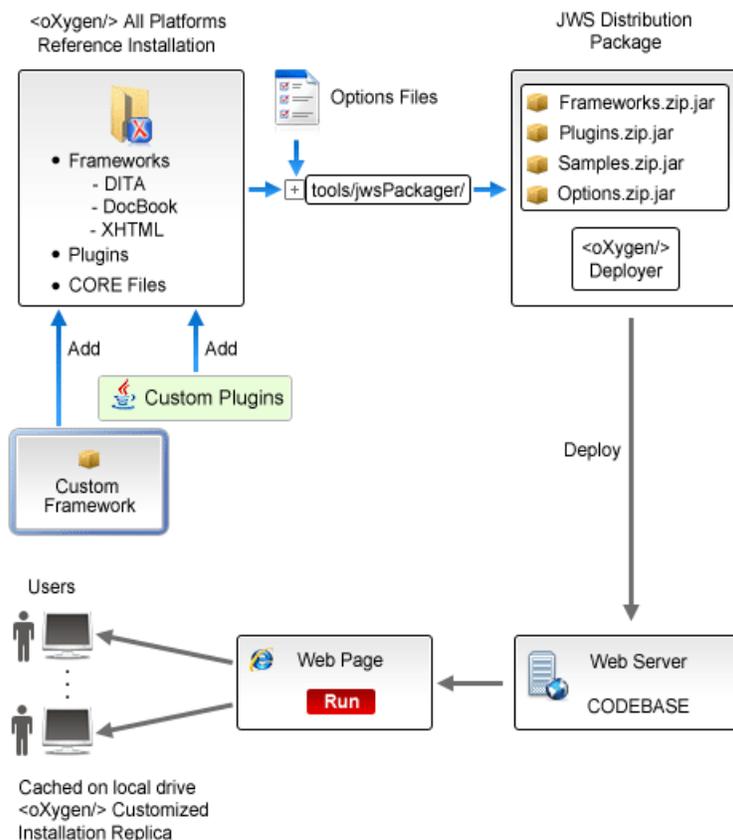
## Java Web Start (JWS) Installer

Oxygen XML Editor provides the tools to create your own JWS distribution that can be installed on a custom web server. Advantages of a JWS distribution include:

- Oxygen XML Editor is run locally, not inside a web browser, overcoming many of the browser compatibility problems common to applets;
- JWS ensures that the most current version of the application will be deployed, as well as the correct version of JRE;
- applications launched with Java Web Start are cached locally. Thus, an already downloaded application is launched on par with a traditionally installed application;
- you can preconfigure Oxygen XML Editor and the rest of your team will use the same preferences and frameworks.

**Note:** A code signing certificate is needed to sign the JWS distribution. The following procedure assumes that you already have such a certificate (for example Thawte™, or Verisign™, just to name a few).

The following schematics depicts the Oxygen XML Editor Java Web Start deployment procedure:



**Figure 1: Java Web Start Deployment Procedure**

The following steps describe the procedure of deploying a Oxygen XML Editor installation on a custom server.

1. Download the All Platforms Installation package from <http://www.oxygenxml.com/InstData/Editor/All/oxygen.tar.gz> to a local drive.
2. Expand the archive.  
oxygen folder is created.
3. Optionally, you can customize the content of the **frameworks** folder, containing default template document files.
4. Edit the `oxygen\tools\jwsPackager\packager.properties` configuration file. The following properties need to be adjusted:
  - **codebase** - represents the location of the future JWS distribution;
  - **keystore** - keystore location path;
  - **storepass** - password for keystore integrity;
  - **storetype** - type of the certificate file, like PKCS12 or JKS;
  - **alias** - keystore alias;
  - **optionsDir** - points to the options directory that may be distributed with the JWS installer.



**Note:** This property is **optional** and it is provided only if *custom options* need to be delivered to the end users.

The values of **keystore**, **storepass**, and **alias** properties are all provided by the code signing certificate. For more information, please check the documentation of the *jarsigner* tool.

5. Edit the JNLP `oxygen\tools\jwsPackager\dist\javawebstart\oxygen\oxygen.jnlp` template file to modify default settings. You can specify the list of files the application opens at startup by modifying the `<argument>` list. To pass system properties directly to the started Oxygen XML Editor application, you must add them the `oxy` prefix, like in the example: `<property name="oxyPropertyName" value="testValue"/>`. The system property is passed to the Oxygen XML Editor application with the prefix stripped.
6. Using a command-line console, run `ant` in the `oxygen\tools\jwsPackager` folder.  
The `ant` process creates the `oxygen\tools\jwsPackager\dist\InstData\oxygenJWS.zip` archive that contains the actual remote JWS installer.
7. Copy the expanded content of the archive into the folder specified in the **codebase** property, previously set in the **packager.properties** file.
8. Using your favorite web browser, go to the address specified in the **codebase** property or to its parent folder and start the remote installer.

## Setting a Java Virtual Machine Parameter in the Launcher Configuration File / Start-up Script

---

There are two ways of setting new Java Virtual Machine parameters:

### Setting Parameters for the Application Launchers

On **Mac OS X** you can set or change existing parameters by editing the `Info.plist` file:

1. Open the package contents (use the contextual menu action *Show Package Contents* in Finder) of the application Oxygen XML Editor;
2. Using *Text Edit* open the file `Info.plist` from the *Contents* directory;
3. Locate the key `VMOptions` and change or add the JVM argument.

On **Windows** and **Linux** you can change or add new Java Virtual Machine parameters and Java system properties by editing the `.vmoptions` file associated with each application launcher. The file can be edited with any text editor (like *Notepad*).

For example the file `oxygen 14.2.vmoptions` is located in the same folder with the application launcher. If the file does not exist then you will have to create it.

For example for setting the maximum amount of Java memory to 600 MB, the content of the file `oxygen 14.2.vmoptions` must be:

```
-Xmx600m
```



**Note:** On Windows Vista/7 you will first have to copy the `oxygen 14.2.vmoptions` file to a folder with write access (like your Desktop), modify it there with a text editing application (like *Notepad*) and then copy it back to the installation folder, replacing the original file.

On Windows Vista/7 you will first have to copy the `oxygen 14.2.vmoptions` file to a folder with write access (like your Desktop), modify it there with a text editing application (like *Notepad*) and then copy it back to the installation folder, replacing the original file.

## Setting Parameters in the Command Line Scripts

If you start the application with the script `oxygen.bat` you have to add or modify the parameter to the java command at the end of the script.

For example to set the maximum amount of Java memory to 600 MB on **Windows** the `-Xmx` parameter must be modified like this:

```
java -Xmx600m -Dsun.java2d.noddraw=true ...
```

on **Mac OS X** the java command should look like:

```
java "-Xdock:name=Oxygen"\  
-Dcom.oxygenxml.editor.plugins.dir="$OXYGEN_HOME/plugins"\  
-Xmx600m\  
...
```

and on **Linux** the Java command should look like:

```
java -Xmx600m\  
"-Dcom.oxygenxml.editor.plugins.dir=$OXYGEN_HOME/plugins"
```

## Starting the Application

---

This section specifies the steps for starting the application.

### Starting the Application on Windows

Start the application launcher.

Use one of the following two launchers:

- - started from the shortcut created by the installer on the **Start** menu.
- `oxygen.bat` - located in the install folder and started from command line.

### Starting the Application on Mac OS X

Start the application's launcher.

Use one of the following two methods:

- The shortcut `Oxygen` created on **Desktop** by the installer.
- The command

```
sh oxygenMac.sh
```

executed from command line. This launcher file is located in the install folder.



**Notice:** Two or more instances can be started on the same computer with the following command that should be executed for any new instance:

```
open -n
        Oxygen.app
```

## Starting the Application on Linux

Start the application's launcher.

Use one of the following two methods:

- The shortcut `oxygen` created on **Desktop** by the installer.
- The command

```
sh oxygen.sh
```

executed from command line. This launcher file is located in the install folder.

## Starting the Application with the All Platforms Kit

Start the application's launcher.

Use the following command:

- On Windows:

```
oxygen.bat
```

- On Linux:

```
sh oxygen.sh
```

- On Mac OS X:

```
sh oxygenMac.sh
```

## Obtaining and Registering a License Key

---

Oxygen XML Editor is not free software and requires a license in order to enable the application.

For demonstration and evaluation purposes a time limited license is available upon request from the [Oxygen XML Editor website](#) . This license is supplied at no cost for a period of 30 days from date of issue. During this period the software is fully functional, enabling you to test all its aspects. Thereafter, the software is disabled and a permanent license must be purchased in order to use it. For special circumstances, if a trial period of greater than 30 days is required, please contact [support@oxygenxml.com](mailto:support@oxygenxml.com) .

For definitions and legal details of the license types, consult the End User License Agreement received with the license key. It is also available at <http://www.oxygenxml.com/eula.html> .

There are several ways to register a license, depending on its type and use case:

- using the application's Register dialog (the most common case) to register a named-user based or concurrent license;
- storing the license key into a file (either text or xml) that is copied into the application's install folder.

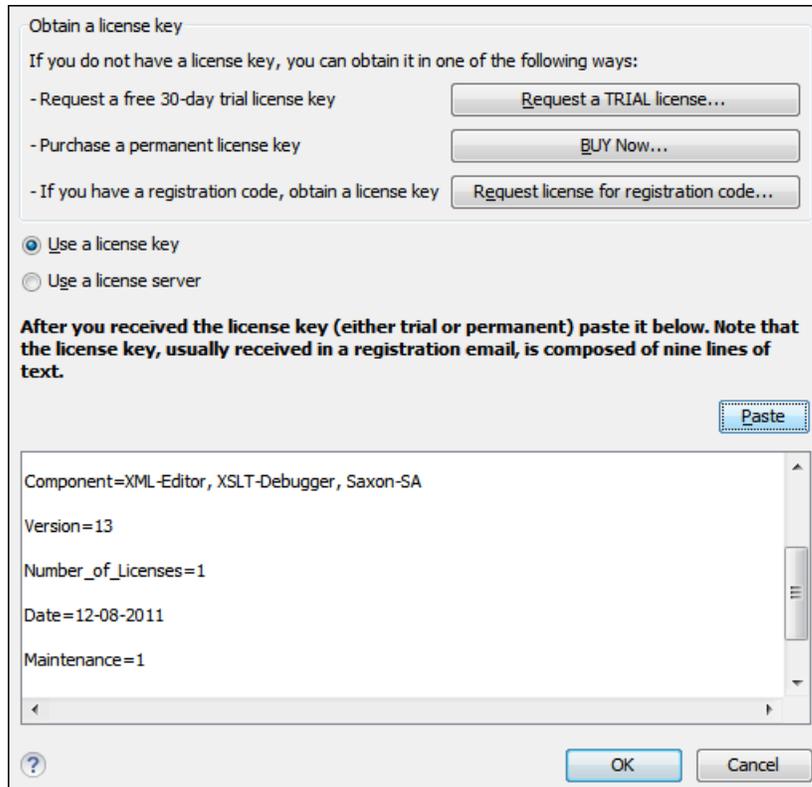
When started, the application looks for a valid license key in the following location, in this order:

- [xml file registration](#);

- [text file registration](#);
- application's internal settings files created after you used the Register dialog to validate a [named-user based](#) or [concurrent license](#).

## Named User License Registration

1. Save a backup copy of the message containing the new license key.
2. Start Oxygen XML Editor.
3. Copy to the clipboard the license text as explained in the message.
4. If this is a new install of Oxygen XML Editor, the registration dialog is displayed automatically at start-up. In the case you already used Oxygen XML Editor and obtained a new license, use the menu option Help / Register



**Figure 2: Registration Dialog**

5. Select **Use a license key** as licensing method.
6. Paste the license text in the registration dialog.
7. Press the OK button.

## Named User License Registration with Text File

1. Save the license key in a file named `licensekey.txt`.
2. Copy the file in the application install folder or in the `lib` subfolder of the install folder.
3. Start the application.

## Named User License Registration with XML File

This procedure is designed to help system administrators register the application for multiple users, without the hassle of configuring the application licensing for each of them.

1. Depending on your license type, register the application for the currently logged user, using one of the following procedures:
  - [Named User License Registration](#);
  - [Request a Floating License from a License Server Running as a Standalone Process](#) or [Request a Floating License from a License Server Running as a Java Servlet](#), if you have a floating license key.
2. Copy the `license.xml` file from the application's *preferences directory* to the application's installation directory (or its `lib` sub-directory).
3. For each installation of the application (either on the same computer or different computers) repeat step 2.

## How Floating (Concurrent) Licenses Work

Floating licenses are "pooled" licenses that can be shared across a group of users. They are most often deployed when an organization has a group of users that will only consume a license for a minority of their working hours. The licenses are returned back into the license pool as soon as they are released. Other users can then immediately reuse them.

 **Note:** A user who runs two different distributions of the application (for example Standalone and Eclipse Plugin) at the same time on the same computer, consumes a single license.

The license management is done either by the application itself or by the Oxygen license server:

- If you plan to use the application on machines running in the same local network, Oxygen XML Editor can manage the licenses usage by itself. Different running instances of the application communicate between them, using UDP broadcast on the port: 59153 to the group 239.255.255.255. The registration procedure requires you to paste the license key in the license registration dialog. See [Named User License Registration](#) procedure for more details.
- If you plan to use the application on machines running in different network segments, then you must use a Oxygen XML Editor floating license server. A floating license server can be installed either as a *Java servlet* or as a *standalone process*.

### Setting up a Floating License Server Running as a Java Servlet

Setting up the floating license servlet.

Apache Tomcat 5.5 or higher is necessary. You can get it from: <http://tomcat.apache.org/>

1. Download the license servlet **Web ARchive (.war)** from one of the download URLs included in the registration email message.
2. Go to the Tomcat Web Application Manager page. In the **WAR file to deploy** section choose the WAR file and then press the **Deploy** button. The *oXygen License Servlet* should be up and running, but there is no licensing information set.
3. To set the license key, log on the deployment machine, and go to the Tomcat installation folder (usually `/usr/local/tomcat`). Then go to the `webapps/oXygenLicenseServlet/WEB-INF/license/` folder and create a new file called `license.txt`. Copy the license text that was sent to you via e-mail into this file and save it.
4. It is recommended to password protect your pages using a Tomcat Realm. Please refer to the Tomcat Documentation for detailed info, like the [Realm Configuration HOW-TO - Memory Based Realm section](#).
5. Once you have defined a realm resource, you have to edit `webapps/oXygenLicenseServlet/WEB-INF/web.xml` file to configure user access rights on the license server. Note that Tomcat's standard security roles are used, i.e.: **standard** for licensing and **admin** or **manager** for the license usage report page.
6. By default, the license server is logging its activity in `/usr/local/tomcat/logs/oxygenLicenseServlet.log` file. To change the log file location, edit the `log4j.appender.R2.File` property from the `/usr/local/tomcat/webapps/oXygenLicenseServlet/WEB-INF/lib/log4j.properties` configuration file.
7. Restart *oXygen License Servlet* from the Tomcat Web Application Manager page.

Contact the Oxygen XML Editor XML support staff at [support@oxygenxml.com](mailto:support@oxygenxml.com) and ask for a new license key if:

- you have multiple license keys for the same Oxygen XML Editor version and you want to have all of them managed by the same server;
- you have a multiple-user floating license and you want to split it between two or more license servers.

### Report Page

You can access an activity report at

`http://hostName:port/oxygenLicenseServlet/license-servlet/report.`

It displays in real time the following information:

- **License load** - a graphical indicator that shows how many licenses are available. When the indicator turns red, there are no more licenses available.
- **Floating license server status** - general information about the license server status like:
  - server start time
  - license count
  - rejected and acknowledged requests
  - average usage time
  - license refresh and timeout intervals
  - location of the license key
  - server version
- **License key information** - license key data:
  - licensed product
  - registration name
  - company name
  - license category
  - number of floating users
  - Maintenance Pack validity
- **Current license usage** - lists all currently acknowledged users:
  - user name
  - date and time when the license was granted
  - name and IP address of the computer where Oxygen XML Editor runs
  - MAC address of the computer where Oxygen XML Editor runs



**Note:** The report is available also in XML format at

`http://hostName:port/oxygenLicenseServlet/license-servlet/report-xml.`

### Setting up a Floating License Server Running as a Standalone Process

Setting up the floating license server.

1. Download the license server installation kit for your platform from one of the download URLs included in the registration email message with your floating license key.
2. Unzip the install kit in a new folder.

The Windows installer *installs the license server as a Windows service*. It provides the following optional features that are not available in the other license server installers:

- Set the Windows Service name;
- Start the Windows service automatically at Windows startup;
- Create shortcuts on the Start menu for starting and stopping the Windows service manually.

If you use the zip archive on Windows you have to run the scripts provided in the archive for installing, starting, stopping and uninstalling the server as a Windows service.

The zip archive can be used for running the license server on any platform where a Java virtual machine can run (Windows, Mac OS X, Linux / Unix, etc).

### 3. Start the server using the startup script.

The startup script is called `licenseServer.bat` for Windows and `licenseServer.sh` for Mac OS X and Unix / Linux. It has 2 parameters:

- `licenseDir` - the path of the directory where the license files will be placed. Default value: `license`.
- `port` - the TCP port number used to communicate with Oxygen XML Editor instances. Default value: **12346**.

The following is an example command line for starting the license server on Unix/Linux and Mac OS X:

```
sh licenseServer.sh myLicenseDir 54321
```

The following is an example command line for starting the license server on Windows:

```
licenseServer.bat myLicenseDir 54321
```

The license folder must contain a text file called `license.txt` which must contain a single floating license key corresponding to the set of purchased floating licenses. If you have more than one floating license key for the same Oxygen XML Editor version obtained from different purchases or you want to split a set of license keys between 2 different servers please contact us at [support@oxygenxml.com](mailto:support@oxygenxml.com) to merge / split your license keys.

### Install the License Server as a Windows Service

1. Download the Windows installer of the license server from the URL provided in the registration email message containing your floating license key.
2. Run the downloaded installer.
3. Enable the Windows service on the machine that hosts the license server, either during installation or at a later time with the service management batch scripts (*installWindowsService.bat*).

If you want to install, start, stop and uninstall manually the server as a Windows service you must run the following scripts from command line. On Windows Vista and Windows 7 you have to run the commands as Administrator.

- `installWindowsService.bat [serviceName]` - install the server as a Windows service with the name *serviceName*. The parameters for the license key folder and the server port can be set in the `oxygenLicenseServer.vmoptions` file.
- `startWindowsService.bat [serviceName]` - start the Windows service.
- `stopWindowsService.bat [serviceName]` - stop the Windows service.
- `uninstallWindowsService.bat [serviceName]` - uninstall the Windows service.

 **Note:** If you do not provide the *serviceName* argument, the default name, *oxygenLicenseServer*, is used.

When the license server is used as a Windows service the output and error messages are redirected automatically to the following log files created in the install folder:

- `outLicenseServer.log` - server's standard output stream
- `errLicenseServer.log` - server's standard error stream

 **Note:** Before starting the server, the `JAVA_HOME` variable must point to the home folder of a Java runtime environment installed on your Windows system.

 **Note:**

On Windows Vista and Windows 7 if you want to start or stop the Windows service with the Start menu shortcut called *Start Windows service* / *Stop Windows service* you have to run the shortcut as Administrator.

### Common Problems

Here are the common problems that may appear when setting up a floating license server running as a standalone process.

### Windows service reports Incorrect Function when started

The "Incorrect Function" error message when starting the Windows service usually appears because the Windows service launcher cannot locate a Java virtual machine on your system.

Make sure that you have installed a 32-bit Java SE from Oracle(or Sun) on the system:

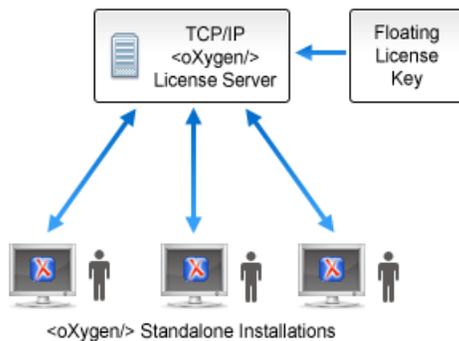
<http://www.oracle.com/technetwork/java/javase/downloads/index.html>

When started, the Windows service reports Error 1067: The process terminated unexpectedly.

This error message appears if the Windows service launcher has quit immediately after being started.

This problem usually happens because the license key has not been correctly deployed(license.txt file in the license folder). More details about this can found [here](#).

### Request a Floating License from a License Server Running as a Standalone Process



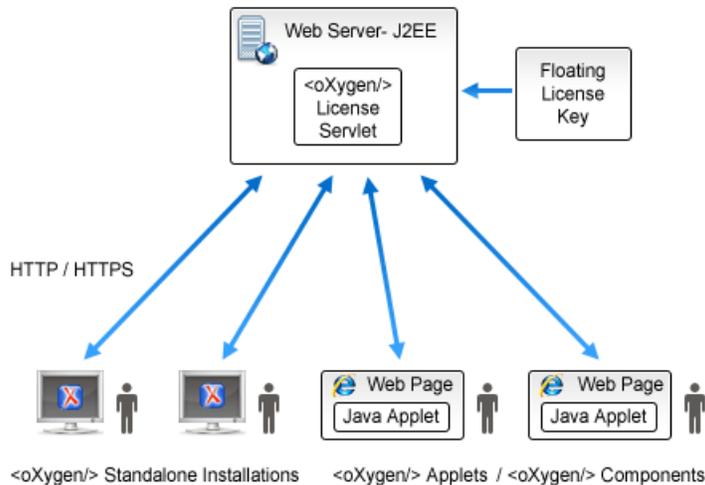
**Figure 3: Floating License Server Running as a Standalone Process**

1. Start the application.
2. Go to menu **Help > Register** .  
The license dialog is displayed.
3. Choose **Use a license server** as licensing method.
4. Select **Standalone server** as server type.
5. Fill-in the *Host* text field with the host name or IP address of the license server.
6. Fill-in the *Port* text field with the port number used to communicate with the license server.
7. Click the **OK** button.

If the maximum number of available licenses was not exceeded a license key is received from the floating license server and registered in Oxygen XML Editor. The license details are displayed in the **About** dialog opened from the **Help** menu. If the maximum number of licenses was exceeded a warning dialog pops up letting you know about the problem. The message contains information about the users who requested and successfully received the floating licenses before exceeding the maximum number of licenses.

### Request a Floating License from a License Server Running as a Java Servlet

Starting with Oxygen XML Editor version 12.1, Oxygen XML Editor can use a license server running as a Java Servlet to manage floating licenses.



**Figure 4: Floating License Server Running as a Servlet**

1. Start the application.
2. Go to menu **Help** > **Register** .  
The license dialog is displayed.
3. Choose **Use a license server** as licensing method.
4. Select **HTTP/HTTPS Server** as server type.
5. Fill-in the *URL* text field with the address of the license server.  
The URL address has the following format:  
`http://hostName:port/oxygenLicenseServlet/license-servlet`
6. Fill-in the *User* and *Password* text fields. Contact your server administrator to supply you this information.
7. Click the **OK** button.

If the maximum number of available licenses was not exceeded a license key is received from the floating license server and registered in Oxygen XML Editor. The license details are displayed in the **About** dialog opened from the **Help** menu. If the maximum number of licenses was exceeded a warning dialog pops up letting you know about the problem. The message contains information about the users who requested and successfully received the floating licenses before exceeding the maximum number of licenses.

 **Note:** Two different Oxygen XML Editor instances (for example one standalone and one Eclipse plugin) run on the same machine, consume a single license key.

### Release a Floating License

The floating license key registered for the current Oxygen XML Editor instance will be released automatically when the connection with the license server is lost (after closing the application or as a result of a network failure).

To manually release a floating license key to be returned to the server's pool of available license keys:

1. Go to the menu **Help**.
2. Select **Register**.
3. Select **Use a license key** as licensing method.
4. Paste a Named User license key in the registration dialog. Leave the text area empty to return to the previously used license key, if any.
5. Press the **OK** button of the dialog.

## License Registration with an Activation Code

If you have only an activation code and you want to register the associated license key you must request this license key by filling the registration code and other details associated with your license in a request form on the Oxygen XML Editor website. The button **Request license for registration code** in the registration dialog available from menu **Help > Register** opens this request form in the default Web browser on your computer.

## Unregistering the License Key

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Sometimes you need to unregister your license key, for example to release a *floating license* to be used by other user and still use the current Oxygen XML Editor instance with a Named User license, or to transfer your license key to other computer before other user starts using your current computer.

1. Go to menu **Help > Register > Register**  
This displays the license registration dialog.
2. Make sure the text area for the license key is empty.
3. Make sure the option **Use a license server** is not selected.
4. Press the **OK** button of the dialog.  
This displays a confirmation dialog.
5. Select between falling back to the license key entered previously (for the case of releasing a floating license and reverting to Named User license) and removing your license key from your user account of the computer.

## Upgrading the Oxygen XML Editor Application

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From time to time, upgrade and patch versions of Oxygen XML Editor are released to provide enhancements that rectify problems, improve functionality and the general efficiency of the application.

Any personal configuration settings and customizations are preserved by installing an upgrade or a patch.

### Upgrading the Standalone Application

Upgrading to a new version might require a new license key. To check if your license key is compatible with the new version, select **Help > Check for New Version**. Note that the application needs an Internet connection to check the license compatibility.

 **Note:** Any customization that was applied to a *predefined document type* will be removed by an upgrade.

 **Note:** If there is a previous version of Oxygen XML Editor already installed on your computer, it can coexist with the new one, which means you don't have to uninstall it. However, if you choose to uninstall the older version please note that all the files from its install directory will be removed, including any modification in Author frameworks files, XSLT stylesheets, XML catalogs, and templates. If you have modified any files in that directory, it is recommended to keep the older version until you are sure you don't need it anymore. The user preferences are stored in a different directory. They will not be removed and will be imported automatically in the new version at the first application launch.

1. Download the install kit of the new version.
2. Create a new folder under `/. /oxygen` e. g. `./oxygen/ 14.2`
3. Extract the content of the install kit into the new folder.
4. If you have defined Oxygen XML Editor in the system PATH, modify it to point to the new installation folder.
5. Start Oxygen XML Editor  
This will test that the application can start and that your license is recognized by the upgrade installation.

## Checking for New Versions

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Oxygen XML Editor offers *the option of checking for new versions* at the <http://www.oxygenxml.com> site when the application is started. If this option is enabled a message dialog will notify the user when new versions are released.

To check for new versions manually at any time, go to **Help > Check for New Versions**.

You are informed automatically that a new version is available as follows:

- in case the version you are using is the same with the latest released version, you are notified when new builds are available at [www.oxygenxml.com](http://www.oxygenxml.com);
- in case the version you are using is the penultimate version (for example you are using version 14.1 and version 14.2 is available at [www.oxygenxml.com](http://www.oxygenxml.com)), you are informed that a new version was released;
- in case at [www.oxygenxml.com](http://www.oxygenxml.com) two versions are available, for example version 14.1 and version 15, and you are using version 14.1, you are informed that version 15.1 was released. Apart from this notification, if you do not have the latest build installed, you are also informed about new 14.1 builds;
- in case at [www.oxygenxml.com](http://www.oxygenxml.com) both a minor and a major version is available, and you are using a version older than both of them, you are informed about the major version and also about the minor one.

## Installing and Updating Add-ons

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Oxygen XML Editor provides a framework and plugin deployment support which allows frameworks and plugins to be automatically discovered and installed from a remote location. Two types of add-ons are supported:

- framework - a collection of files (CSS stylesheets, XML schemas, transformation scenarios, specific actions, just to name a few) which provide custom functionality for a specific type of document;



**Note:** Frameworks that you install through the add-ons system are read-only.

- plugin - a software component that adds extended functionality using a series of extension points provided by Oxygen XML Editor.

To open the add-ons preferences page, go to **Options > Menu > Preferences > Add-ons**. The following options are available in the Add-ons preferences page:

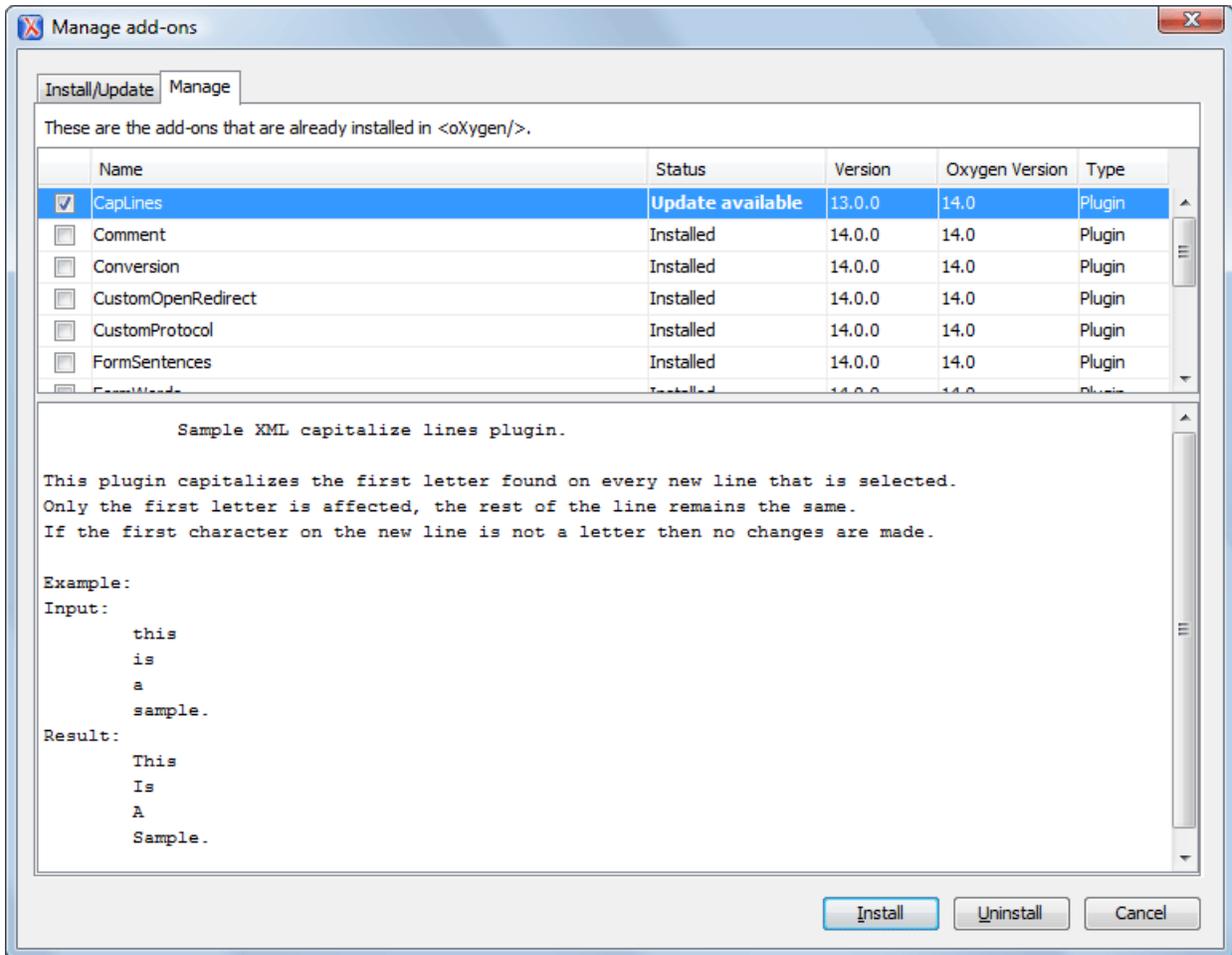
- **Enable automatic updates checking** - allows Oxygen XML Editor to search for available updates automatically;
- **Update Sites URLs** - this list contains the URLs of the update sites. An update site is an XML descriptor file which stores all the information about an add-on. You can add, edit, and delete URLs in this list.

To manage the add-ons, go to **Help > Manage add-ons...** Oxygen XML Editor reads the update site, detects the add-ons, and displays them.



**Note:**

By default, only the latest versions of the add-ons that are compatible with the current version of Oxygen XML Editor are displayed.



**Figure 5: The Manage add-ons dialog**

The **Manage add-ons dialog** contains two tabs:

- the **Install/Update** tab - this tab presents the list of available updates that are compatible with the current version of Oxygen XML Editor. The updates list contains the name, the status, the update version, the oxygen version, and the type of the add-on (either framework, or plugin). A short description of each update is presented under the updates list. To visualize all the add-ons from the remote update site, disable **Show only compatible add-ons** and **Show only the latest version of the add-ons**;
- the **Manage** tab - this tab presents a list with the available updates (compatible with the current version of oxygen) and with the already installed updates. From the manage tab, you are able to install new updates, or remove installed ones. Under the updates list, Oxygen XML Editor presents a short description of each update.

To install an add-on, enable its check-box and click the **Install** button. Oxygen XML Editor opens the **License and signature** dialog. This dialog contains two sections. The first section presents a list with the add-ons you chose and the second section is composed of two tabs:

- **License** - presents the End User License Agreement;
- **Signature** - lets you know whether the add-on has a valid signature and presents information regarding the certificate.

After reading the information in the two tabs, enable **I accept all terms of the end user license agreement** and select **Update** to complete the operation.

The **Help** menu also contains the **Check for add-ons updates...** option. This option also opens the **Manage add-ons dialog**, but only presents the updates compatible with the current oxygen version.

When you install a new version of Oxygen XML Editor, you can import add-ons from the previous version. Oxygen XML Editor presents all the add-ons of the previous version, compatible or not.

## Uninstalling the Application

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This section contains uninstallation procedures.

### Uninstalling the Standalone Application



**Caution:** The following procedure will remove Oxygen XML Editor from your system. **Please ensure that all valuable data stored in the install folder is saved to another location prior to performing this procedure.**

1. Backup all valuable data from the Oxygen XML Editor installation folder.
2. Remove the application.
  - On Windows use the appropriate uninstaller shortcut provided with your OS.
  - On Mac OS X and Unix manually delete the installation folder and all its contents.
3. If you want to remove also the user preferences that were configured in the **Preferences** dialog you must remove the folder `%APPDATA%\com.oxygenxml` on Windows (usually `%APPDATA%` has the value `[user-home-dir]\Application Data`) / the subfolder `.com.oxygenxml` of the user home folder on Linux / the subfolder `Library/Preferences/com.oxygenxml` of the user home folder on Mac OS X.

### Unattended Uninstall

The unattended uninstall procedure is available only on Windows and Linux.

Run the uninstaller executable from command line with the `-q` parameter.

The uninstaller executable is called `uninstall.exe` on Windows and `uninstall` on Linux and is located in the application's install folder.

## Performance Problems

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This section contains the solutions for some common problems that may appear when running Oxygen XML Editor.

### Large Documents

When started from the icon created on the Start menu or the Desktop on Windows or from the shortcut created on the Linux desktop the maximum memory available to Oxygen XML Editor is set by default to 40% of the amount of physical RAM but not more than 700 MB. When started from the command line scripts the maximum memory is 256 MB. If large documents are edited in Oxygen XML Editor and you see that performance slows down considerably after some time then a possible cause is that the application needs more memory in order to run properly. You can increase the maximum amount of memory available to Oxygen XML Editor by [setting the `-Xmx` parameter in a configuration file](#) specific to the platform that runs the application.



**Attention:**

The maximum amount of memory should not be equal to the physical amount of memory available on the machine because in that case the operating system and other applications will have no memory available.

When installed on a multi-user environment such as Windows Terminal Server or Unix/Linux, to each instance of Oxygen XML Editor will be allocated the amount stipulated in the memory value. To avoid degrading the general performance of the host system, please ensure that the amount of memory available is optimally apportioned for each of the expected instances.

### External Processes

The [Memory available to the built-in FOP](#) option controls the amount of memory allocated to generate PDF output with the built-in Apache FOP processor. In case Oxygen XML Editor throws an *Out Of Memory* error, go to **Options** >

**Preferences > XML > XSLT-FO-XQuery > FO Processors** and increase the value of the *Memory available to the built-in FOP* option.

For external XSL-FO processors, XSLT processors, and external tools, the maximum value of the allocated memory is set in the command line of the tool using the `-Xmx` parameter set to the Java virtual machine.

## Display Problems on Linux/Solaris

Display problems like screen freeze or momentary menu pop-ups during mouse movements over screen on Linux or Solaris can be solved by *adding the startup parameter* `-Dsun.java2d.pmosffscreen=false`.

## Help Menu

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The **Help** menu contains the following options:

- **Help** - opens the **Help** dialog;
- **Show Dynamic Help View** - loads automatically the relevant help section for the focused editor, view, or dialog box;
- **Check for add-ons updates...** - select this option to check for available add-ons updates. Oxygen XML Editor lets you know whether updates are available or not. In case updates are available select **Review updates** to open the **Manage add-ons** view.
- **Manage add-ons** - select this option to open the **Manage add-ons** view;
- **Check for a New Version** - checks the availability of a new application version;
- **Browse oXygen website** - opens the Oxygen XML Editor website in your default web browser;
- **Register** - opens the registration dialog;
- **Report problem** - opens a dialog that allows the user to write the description of a problem that was encountered while using the application;
- **Improvement Program Options** - allows you to activate or deactivate the application Product Improvement Program;
- **Support center** - opens the Oxygen XML Editor Support Center web page in a browser;
- **About** - opens the **About** dialog.

## The About Dialog

The **About** dialog contains the following tabs:

- **Copyright** - this tab contains general information about the product and the version of the product you are using, along with contact details and the *SGN* number. Details regarding the memory usage are also presented at the bottom of the dialog;
- **Libraries** - this tab presents the list of third party libraries that Oxygen XML Editor uses. To view the End User Licence Agreement of each library, double click it;
- **Frameworks** - this tab contains a list with the frameworks that are bundled with Oxygen XML Editor;
- **System Properties** - this tab contains a list with system properties and their values. The contextual menu allows you to select and copy the properties.



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# Chapter

# 3

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## Getting Started

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### Topics:

- [Getting Help](#)
- [Supported Types of Documents](#)
- [Perspectives](#)
- [Dockable Views and Editors](#)
- [Localization of the User Interface](#)

This section will get you started with the editing perspectives of Oxygen XML Editor.

## Getting Help

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Online help is available at any time while working in Oxygen XML Editor by accessing the **Help > Help** menu which opens the **Help** dialog.

Context sensitive help is available from any dialog or view by pressing the F1 key. This opens the same **Help** dialog directly on a page relevant for the current view or dialog which has the editing focus.

The same help content is available in the view **Window > Show View > Dynamic Help** (also available from menu **Help > Show Dynamic Help View**) which loads automatically the relevant help section for the focused editor, view or dialog.

The name and version of the third-party libraries and frameworks used by Oxygen XML Editor are listed in the **About** dialog box: **Help > About** Also you can see here the values of system properties like the version of the Java virtual machine, the location of the user home directory, the Java classpath, etc.

## Supported Types of Documents

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Oxygen XML Editor provides a rich set of features for working with:

- XML documents and applications
- XSL stylesheets - transformations and debugging support
- Schema languages: XML Schema (versions 1.0 and 1.1), Relax NG (full and compact syntax), NVDL, Schematron, DTD
- Querying documents using XPath and XQuery
- Analyzing, composing and testing WSDL SOAP messages
- CSS documents

## Perspectives

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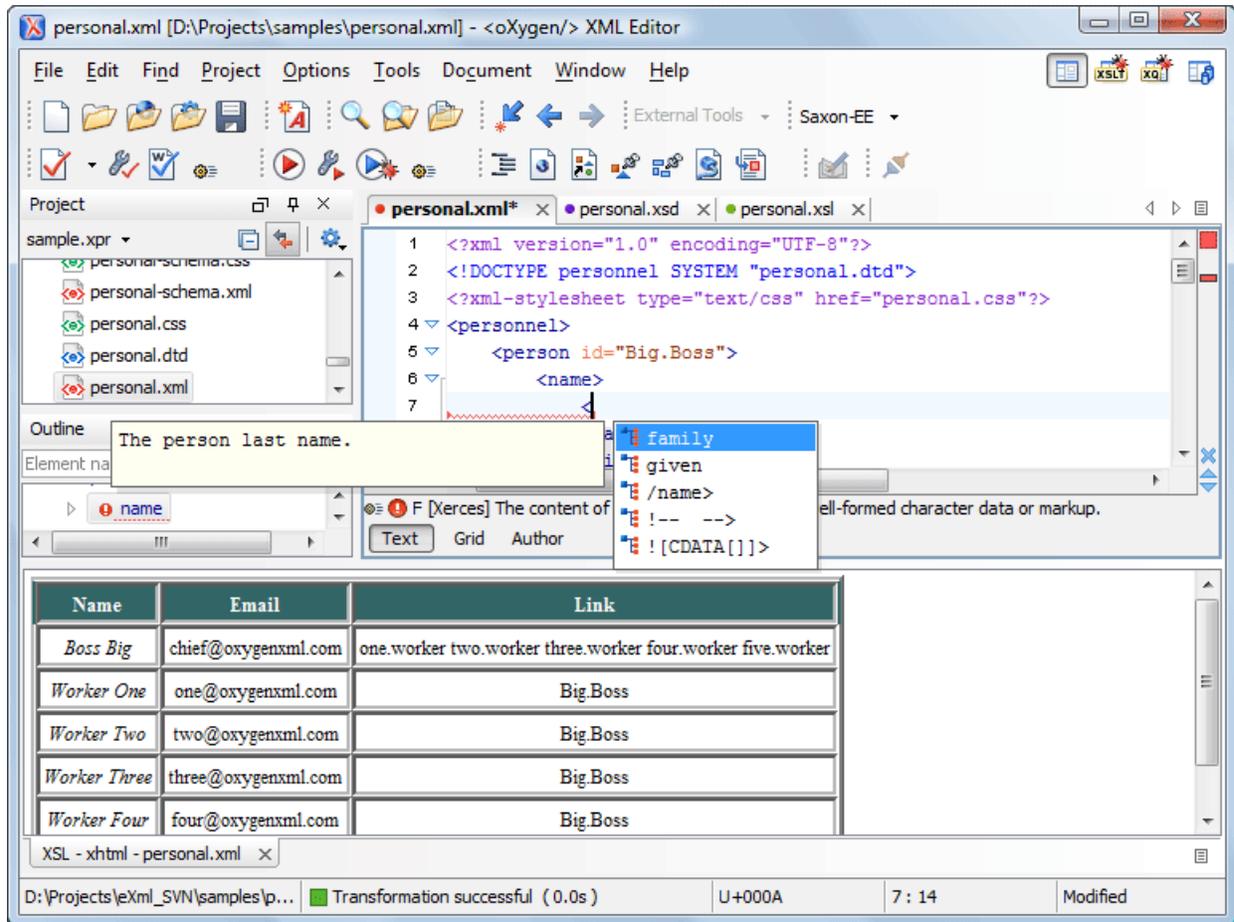
The Oxygen XML Editor interface uses standard interface conventions and components to provide a familiar and intuitive editing environment across all operating systems.

In Oxygen XML Editor you can work with documents in one of the perspectives:

<i>Editor perspective</i>	Documents editing is supported by specialized and synchronized editors and views.
<i>XSLT Debugger perspective</i>	XSLT stylesheets can be debugged by tracing their execution step by step.
<i>XQuery Debugger perspective</i>	XQuery transforms can be debugged by tracing their execution step by step.
<i>Database perspective</i>	Multiple connections to relational databases, native XML databases, WebDAV sources and FTP sources can be managed at the same time in this perspective: database browsing, SQL execution, XQuery execution and data export to XML.

### Editor Perspective

The Editor perspective is used for editing the content of your documents.



**Figure 6: Editor perspective**

When two or more views are displayed, the application provides divider bars. Divider bars can be dragged to a new position increasing the space occupied by one panel while decreasing it for the other.

As the majority of the work process centers around the Editor area, other views can be hidden using the controls located on the views headers.

This perspective organizes the workspace in the following sections:

- **Main menu** - Provides menu driven access to all the features and functions available in Oxygen XML Editor.
- **Main toolbar** - Provides easy access to common and frequently used functions. Each icon is a button that acts as a shortcut to a related function.
- **Editor area** - The place where you spend most of your time, reading, editing, applying markup and validating your documents.
- **Outline view** - It provides an XML document overview and offers functions such as modifications follow-up, document structure change, document tag selection, elements filtering.
- **Model view** - Presents the current edited element structure model and additional documentation as defined in the schema.
- **Results view** - Displays result messages obtained by performing user operations like search (the results of the **Find All** action *applied to the current file* or the results of a find action *applied on a set of files*), *validation*, *transformation* and *spell check*. The following actions are available in a vertical toolbar on the right side of the view:
  - **Grouping options** - allows you to choose grouping criteria, which reflects into a flat or tree-like presentation of the results. To display the results in a flat layout, you can either uncheck all selected criteria or press the **Ungroup all** button. All these actions are also available in the table header contextual menu.
  - **Remove selected** - removes the currently selected messages from the list.

- **✖ Remove all** - clears the message list.

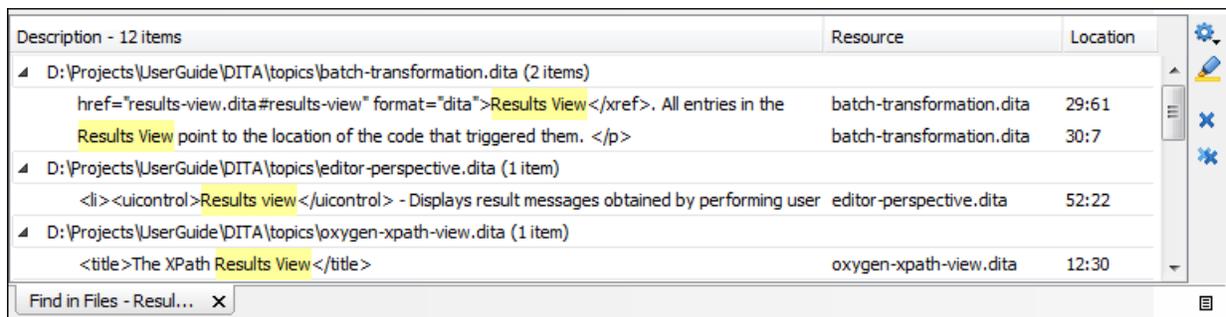
A contextual menu available on the table grid allows you to:

- Navigate to previous and next message. As alternative, you can use the default shortcut keys: Ctrl + Shift + ] (Meta + Shift + ] on Mac) for navigating to the next and Ctrl + Shift + [ (Meta + Shift + [ on Mac) for navigating to the previous message.
- Print the results or save them either in text or XML format.
- Expand or collapse all displayed items (with the shortcuts **Alt+Shift+PageUp** for the **Expand All** action and **Alt+Shift+PageDown** for the **Collapse All** action).
- Restore default grouping criteria and table column widths.
- **Project view** - Enables the definition of projects and logical management of the documents they contain.
- **Attributes view** - Presents all possible attributes of the current element
- **Elements view** - Presents a list of all defined elements that you can insert at the current caret position according to the document's schema.
- **Entities view** - Displays a list with all entities declared in the current document as well as built-in ones.
- **Transformation Scenarios view** - Displays a list with all currently configured transformation scenarios.

## The Results View

The Results View displays the messages generated as a result of user actions like validations, transformations, search operations and others. Each message is a link to the location related to the event that triggered the message. Double clicking a message opens the file containing the location and positions the cursor at the location offset. The actions that can generate result messages are:

- *Validate action*
- *Transform action*
- *Check Spelling in Files action*
- **Find All** action from *the Find/Replace dialog*
- *Find/Replace in Files dialog*
- *Search References action*
- *XPath expression results*
- *SQL results*



**Figure 7: Results View**

The view provides a toolbar with the following actions:

- grouping actions: **Group by 'Severity'**, **Group by 'Resource'**, **Group by 'System ID'**, **Group by 'Description'**, **Group by 'Operation description'**, **Ungroup all**, **Restore Defaults** - these actions group the messages according to a selected criteria so that they can be presented in a hierarchical layout. The criteria used for grouping can be the severity of the errors (error, warning, info message and so on), the resource name, the description of the message and so on. The **Ungroup all** action removes the grouping rule so that the messages are presented as a continuous list.

- **Highlight all results in editor** - Oxygen XML Editor highlights all matches obtained after executing an XPath expression, or performing one of the following operations: **Find All**, **Find in Files**, **Search References**, and **Search Declarations**. Click **Highlight all results in editor** again to turn off highlighting.



**Note:** Go to **Options > Preferences > Editor > Highlights category** to do the following customizations:

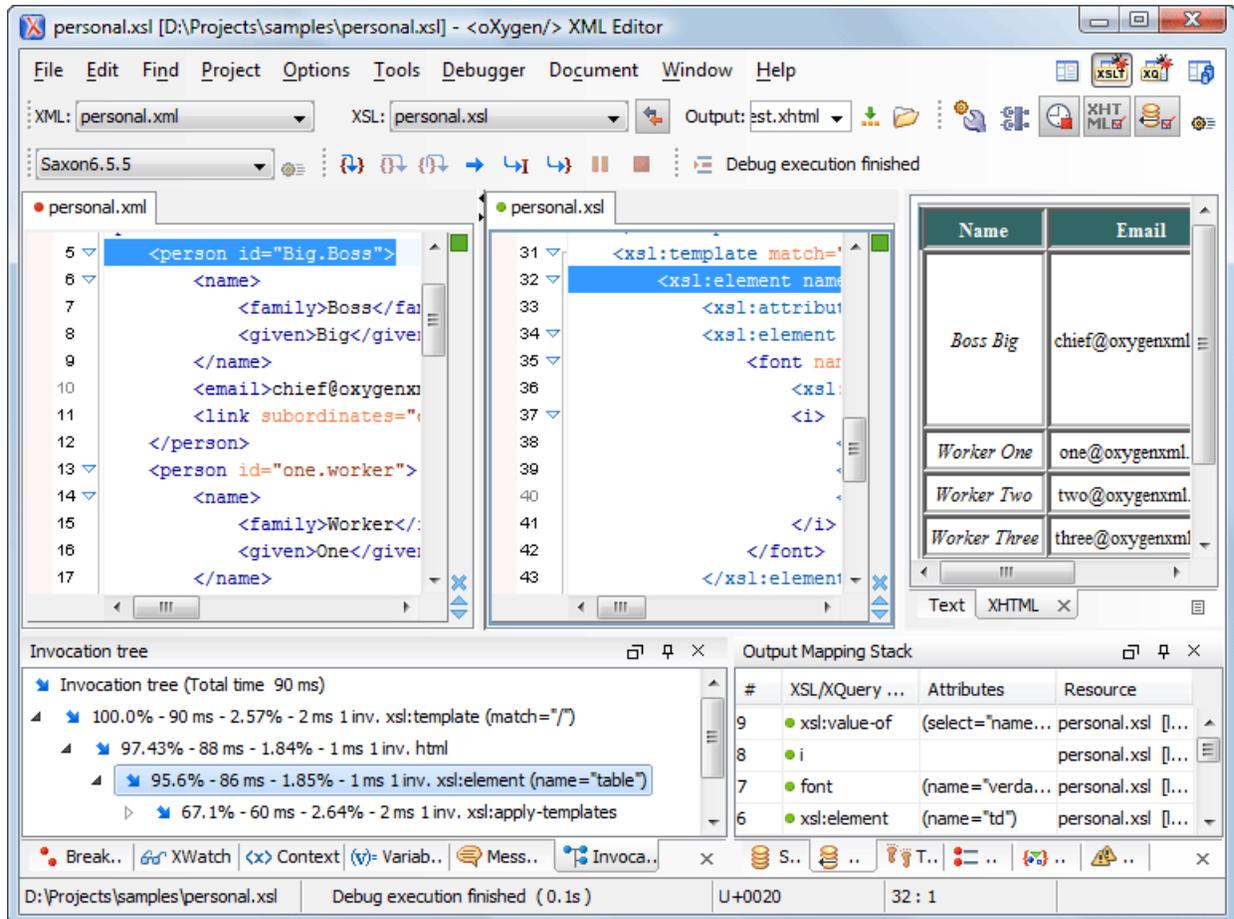
- set a specific color of the highlights depending on the type of action you make.
  - set a maximum number of highlights that the application displays at any given time.
- remove actions: **Remove selected**, **Remove all** - these actions reduce the number of the messages from the view by removing them. It is useful when you do not want unimportant messages to clutter the view.

The actions available on the contextual menu are:

- **Show message** - Displays a dialog box with the full error message, which is useful for a long message that does not have enough room to be displayed completely in the view.
- **Previous message** - Moves the selection in the view to the message above the current one.
- **Next message** - Moves the selection in the view to the message below the current one.
- **Remove selected** - Removes selected messages from the view.
- **Remove all** - Removes all messages from the view.
- **Copy** - Copies the information associated with the selected messages:
  - the file path of the document that triggered the output message,
  - the path of the main file (in case of *validation scenario* it is the path of the file from which the validation starts and which can be different than the validated file),
  - error severity (error, warning, info message and so on.),
  - name of validating processor,
  - name of *validation scenario*,
  - the line and column in the file that triggered the message.
- **Select All** - Extends the selection to all the messages from the view.
- **Print Results ...** - Sends the complete list of messages to a printer. For each message the included details are the same as the ones for *the Copy action*.
- **Save Results ...** - Saves the complete list of messages in a file in text format. For each message the included details are the same as the ones for *the Copy action*.
- **Save Results as XML** - Saves the complete list of messages in a file in XML format. For each message the included details are the same as the ones for *the Copy action*.
- **Group by** - *the same actions as on the toolbar* for grouping the messages in a hierarchical presentation.
- **Ungroup all** - Removes the grouping rule set by a **Group by** action so that the errors are presented as a continuous list.
- **Show Group Columns** -
- **Restore Defaults** - Restores the column size for each column and the grouping rule that were saved in the user preferences the last time when this view was used (possible in the previous Oxygen session). If it is the first time when this view is used, the action sets an initial default column size for each column and a grouping rule which is appropriate for the type of messages, for example:
  - group the messages by the path of the validated file in case of error messages from a validation action or spelling errors reported by the action **Check Spelling in Files**,
  - no grouping rule for the results of *applying an XPath expression*.
- **Expand All** - Expands all the nodes of the tree, which is useful when the messages are presented in a hierarchical mode.
- **Collapse All** - Collapses all the nodes of the tree, which is useful when the messages are presented in a hierarchical mode.

## XSLT Debugger Perspective

The XSLT Debugger perspective allows you to detect problems in an XSLT transformation process by executing the process step by step, in a controlled environment. The workspace is organized as an editing area supported by special helper views. The editing area contains editor panels, *allowing you to split it horizontally or vertically* in a stack of XML editor panels and a stack of XSLT editor panels. The XML files and XSL files are displayed in *Text mode*. The (*Author mode* and *Grid mode*) are available only in *the Editor perspective*.



**Figure 8: XSLT Debugger perspective**

The layout of the XSLT Debugger perspective is composed of the following views:

- Control toolbar - Contains all actions needed in order to configure and control the debug process.
- Source document view - Displays and allows editing of data or document oriented XML files (documents).
- Stylesheet document view - Displays and allows editing of XSL files(stylesheets).
- Output document view - Displays the transformed output that results from the input of a selected document (XML) and selected stylesheet (XSL) to the transformer. The result of transformation is dynamically written as the transformation is processed. There are three types of views for the output: a text view (with XML syntax highlight), an XHTML view and one text view for each `xsl:result-document` element used in the stylesheet (if it is a XSLT 2.0 stylesheet).
- Information views - Distributed in two panes, they are displaying various types of information that can be used to understand the transformation process. For each information type there is a corresponding tab. While running a transformation, relevant events are displayed in the various information views. This allows the developer to obtain a clear view of the transformation progress.

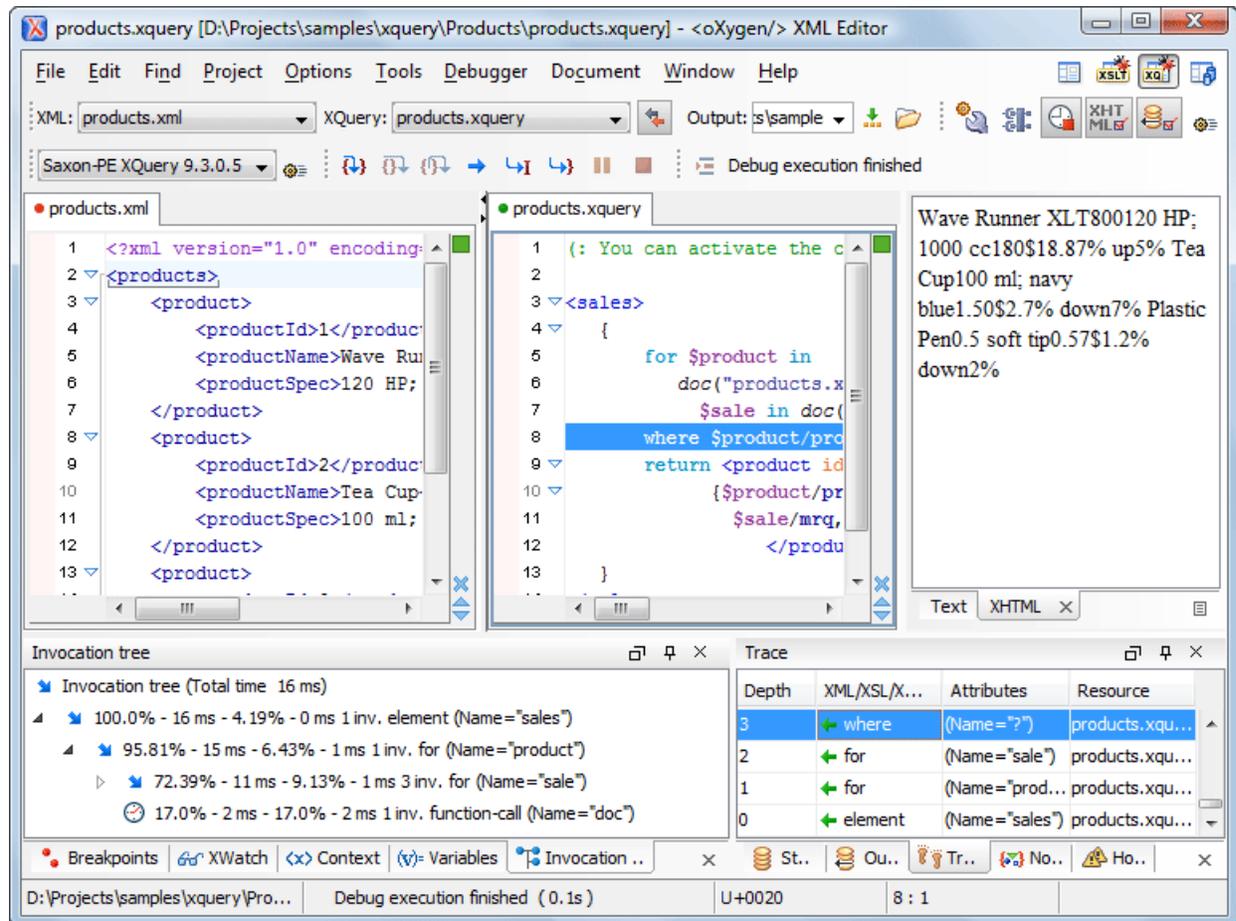
You are able to add XPath expression automatically in the **XWatch** view using the **Watch expression** action from the contextual menu. In case you select an expression or a fragment of it and then click **Watch expression** in the contextual menu, the entire selection is presented in the **XWatch** view. Using **Watch expression** without selecting an expression

displays the value of the attribute from the caret position in the **XWatch** view. Variables detected at the caret position are also displayed.

- 👉 **Note:** Expressions displayed in the **XWatch** view are normalized (unnecessary white spaces are removed from the expression).

## XQuery Debugger Perspective

The XQuery Debugger perspective resembles *the XSLT Debugger perspective*. You can use it to detect problems in an XQuery transformation process by executing the process step by step in a controlled environment and inspecting the information provided in the special views. The workspace is organized as follows:



**Figure 9: XQuery Debugger perspective**

- Source document view - Allows editing of data or document-oriented XML files (documents).
- XQuery document view - Allows editing of XQuery files.
- Output document view - Displays the transformed output that results from the input of a selected document (XML) and selected XQuery document to the XQuery transformer. The result of transformation is dynamically written as the transformation is processed. There are two types of views for the output: a text view (with XML syntax highlight) and an XHTML view.
- Control toolbar - Contains all actions you need for configuring and controlling the debug process.
- Information views - Distributed in two panes they are displaying various types of information that can be used to understand the transformation process. For each information type there is a corresponding tab. While running a transformation, relevant events are displayed in the various information views.

You are able to add XPath expression automatically in the **XWatch** view using the **Watch expression** action from the contextual menu. In case you select an expression or a fragment of it and then click **Watch expression** in the contextual menu, the entire selection is presented in the **XWatch** view.

 **Note:** Expressions displayed in the **XWatch** view are normalized (unnecessary white spaces are removed from the expression).

## Database Perspective

The **Database** perspective is similar to the **Editor** perspective. It allows you to manage a database, offering support for browsing multiple connections at the same time, relational and native XML databases, SQL execution, XQuery execution and data export to XML.

This perspective offers database specific support for:

- Oracle Berkeley DB XML Database;
- eXist XML Database;
- IBM DB2 (Enterprise edition only);
- JDBC-ODBC Bridge;
- MarkLogic (Enterprise edition only);
- Microsoft SQL Server 2005 and Microsoft SQL Server 2008 (Enterprise edition only);
- MySQL;
- Oracle 11g (Enterprise edition only);
- PostgreSQL 8.3 (Enterprise edition only);
- Documentum xDb (X-Hive/DB) 10 XML Database (Enterprise edition only);
- Documentum (CMS) 6.5 (Enterprise edition only).

The XML capabilities of the databases marked in this list with "Enterprise edition only" are available only in the Enterprise edition of Oxygen XML Editor. The non-XML capabilities of any database listed here are available also in the Academic and Professional editions of Oxygen XML Editor by registering the database driver as a generic JDBC driver (the *Generic JDBC* type in the list of driver types) when *defining the data source* for accessing the database in Oxygen XML Editor.

The non-XML capabilities are:

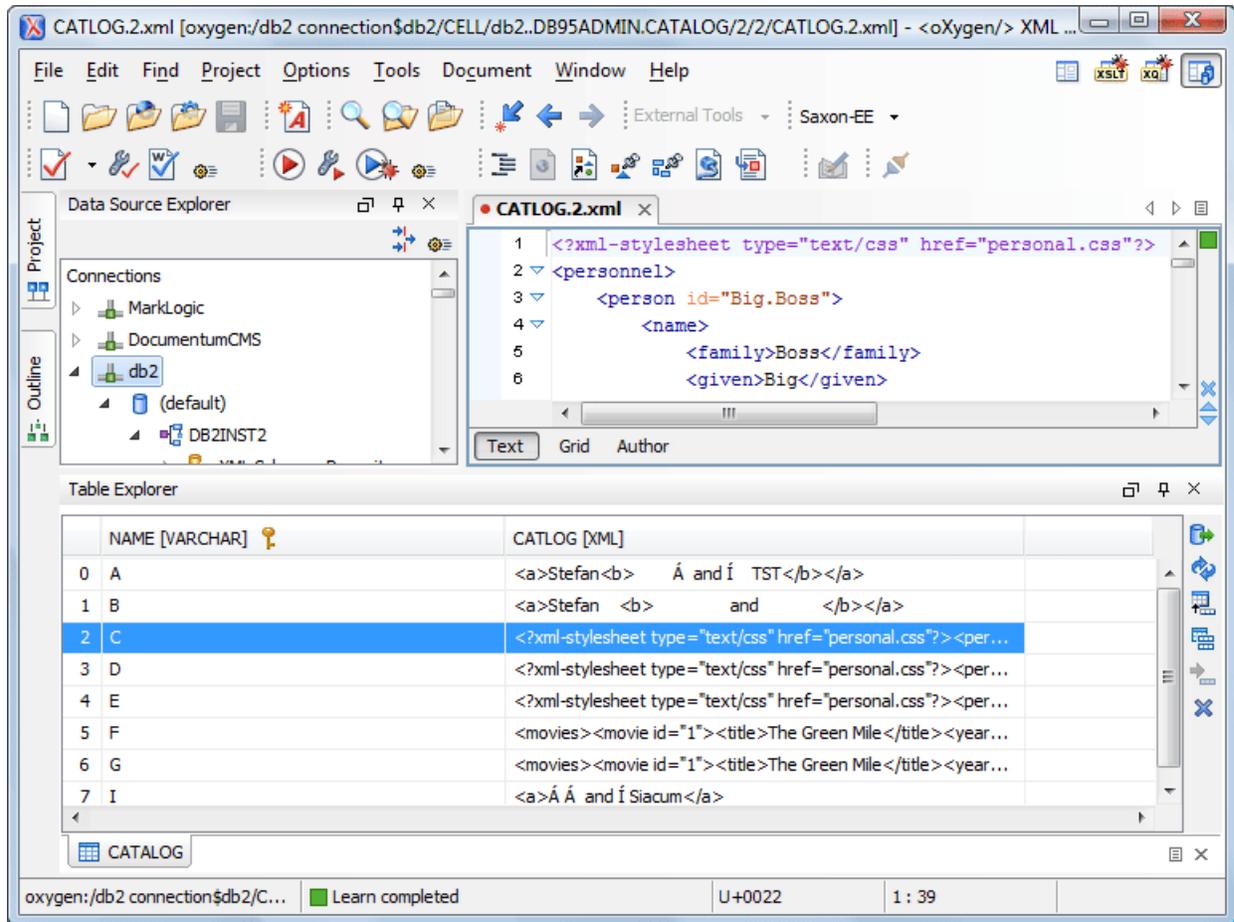
- browsing the structure of the database instance;
- opening a database table in the *Table Explorer* view;
- handling the values from **XML Type** columns as String values.

The XML capabilities are:

- displaying an XML Schema node in the tree of the database structure (for databases with such an XML specific structure) with actions for opening/editing/validating the schemas in an Oxygen XML Editor editor panel;
- handling the values from columns of type XML Type as XML instance documents that can be opened and edited in an Oxygen XML Editor editor panel;
- validating an XML instance document added to an XML Type column of a table, etc.

For a detailed feature matrix that compares the Academic, Professional and Enterprise editions of Oxygen XML Editor please *go to the [Oxygen XML Editor website](#)*.

 **Note:** Only connections configured on relational data sources can be used to import data to XML or to generate XML schemas.

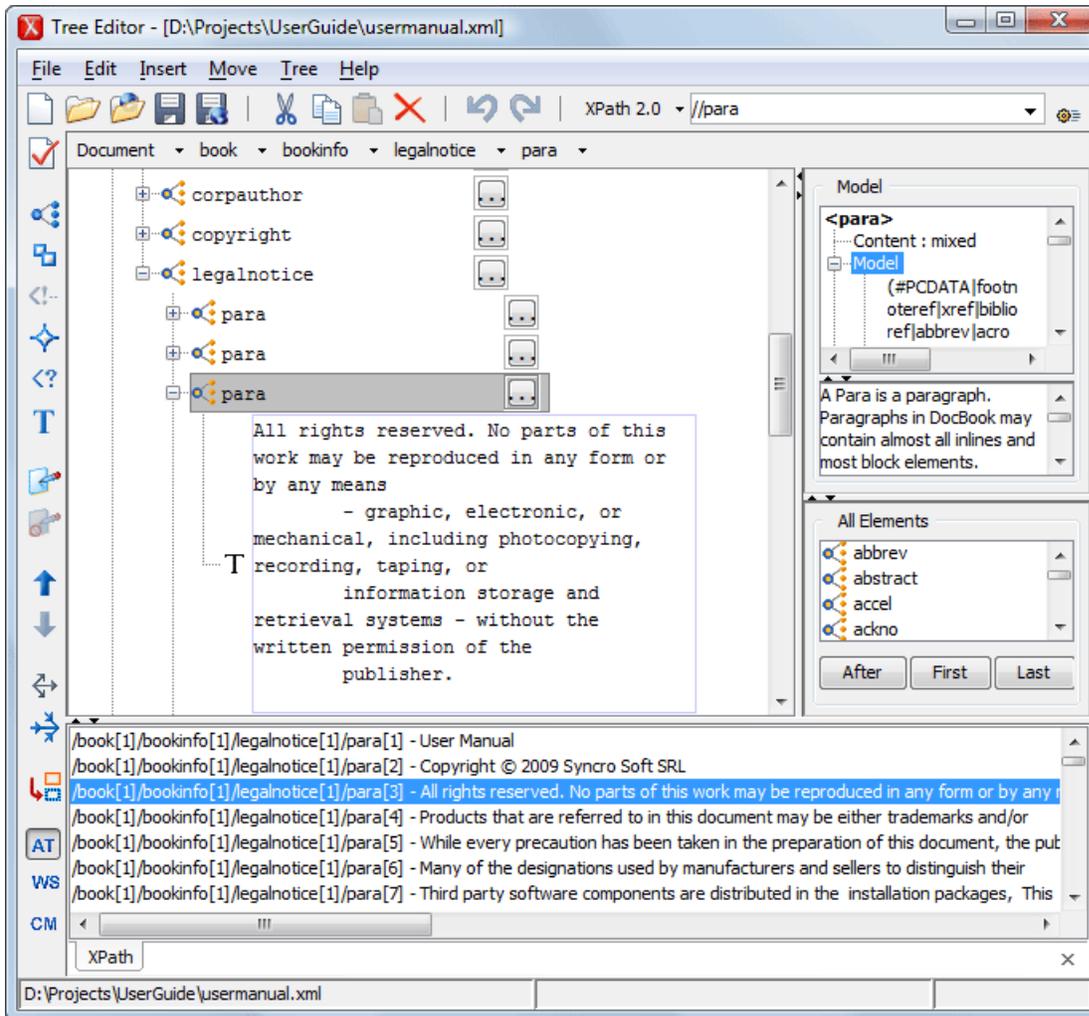


**Figure 10: Database perspective**

- Main menu - provides access to all the features and functions available within Oxygen XML Editor.
- Main toolbar - provides easy access to common and frequently used functions. Each icon is a button that acts as a shortcut to a related function.
- Editor area - the place where you spend most of your time, reading, editing, applying markup and validating your documents.
- Data Source Explorer - provides browsing support for the configured connections.
- Table explorer - provides table content editing support for inserting new rows, deleting table rows, cell value editing, export to XML file.

## Tree Editor Perspective

The **Tree Editor** perspective is used for editing the content of a document viewed as an XML tree. The workspace is organized in:



**Figure 11: Tree Editor perspective**

- Main menu - provides access to all the features and functions available in Oxygen XML Editor Tree Editor perspective.
- Toolbar - provides easy access to common and frequently used functions. Each icon is a button that acts as a shortcut to a related function.
- Editor panel - easy editing of structured mark-up documents. Each token has an associated icon for easier visual identification.
- Message panel - displays messages returned from user operations.
- Model view - shows the detailed information about the attribute or element that you are working on.
- All Elements panel - presents a list of all defined elements that can be inserted within your document.

The tree editor does not offer entity support: entities are not presented with a special type of node in the tree and new entity nodes cannot be inserted in the document.

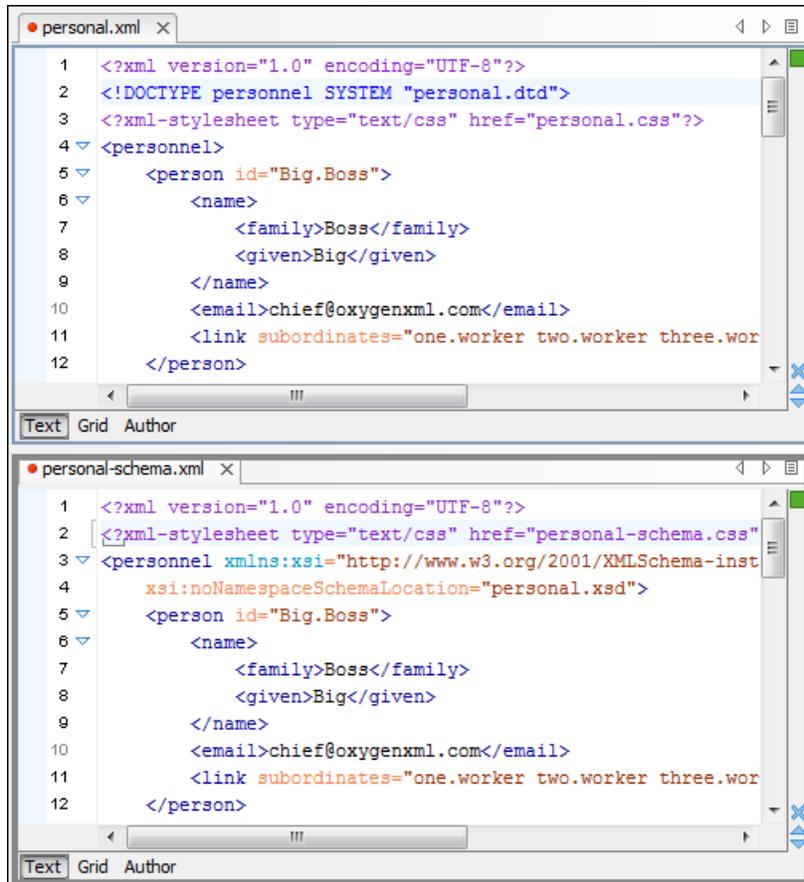
## Dockable Views and Editors

All the Oxygen XML Editor views available in the *Editor Perspective*, *XSLT Debugger Perspective*, and *XQuery Debugger Perspective* are dockable. You can drag them to any margin of another view or editor inside the Oxygen XML Editor window to form any desired layout. Once you create a layout that suites your needs, you are able to save

it from **Window > Save Layout...** Oxygen XML Editor creates a layout file containing the preferences of the saved layout. To load a layout go to **Window > Load Layout...**, or to reset it select **Window > Reset Layout**. A view can also be set to a floating state which means that it can hover over other views and editors.

To gain more editing space in the Oxygen XML Editor window, set one or more views to the *auto hide* state, this way only the title remains visible, attached to one of the margins of the application window, while the rest of the view is restored only when the mouse pointer hovers over the title or when you click it. The view becomes hidden again when the mouse pointer goes out of the screen area covered by that view.

The editors can be arranged side by side or one on top of another by dragging the corresponding editor tab in the desired position. In the following figure, you can see how to unsplit the editing area by dragging the editor title tab of `personal.xml` over `personal-schema.xml` until the drop frame painted in dark gray covers the `personal-schema.xml` editor panel and then dropping it.



**Figure 12: You can split the editing area by drag and drop of the editor:**

All the opened editors can be tiled horizontally/vertically or stacked together in *Editor Perspective* or in *Database Perspective* using actions from the **Window** menu:  **Tile Editors Horizontally**,  **Tile Editors Vertically**,  **Stack Editors**. Tiled editors can be scrolled together by enabling the  **Synchronous scrolling** action (from the same **Window** menu).

The editing area can also be divided vertically and horizontally using the actions available on the **Split** toolbar and the **Window** menu:  **Split horizontally**,  **Split vertically**,  **Unsplit**.

The editor can be maximized or restored (same as double clicking the editor tab) by using the **Maximize/Restore Editor Area** action from the **Window** menu.

When the opened documents titles do not fit in the tab strip, the scroll wheel can be used to scroll the editor title tabs to the left or right the same way the two arrows on the right are acting. The following shortcuts can be used to switch

between edited files: Ctrl-F6 (Meta-F6 on Mac OS X) and Ctrl-Shift-F6 (Meta-Shift-F6 on Mac OS X). These shortcuts display a small popup window that cycles through all opened files.

The default layout of any of the *Editor Perspectives*, *XSLT Debugger Perspective* and *XQuery Debugger Perspective* can be restored at any time with the **Reset Layout** action found in the **Window** menu.

Any Oxygen XML Editor view or toolbar can be opened at any time from the **Window > Show View** and **Window > Show Toolbar** menus. The current (focused) dockable view is made invisible (switched to hidden state) using the shortcut **(Ctrl+Shift+F4) (Meta+Shift+F4)** on Mac OS X). The users who prefer to use the keyboard instead of the mouse may find this shortcut to be a faster way of closing a view than clicking the **Close** button from the title bar of the view. The complementary action (opening a view with a shortcut) requires setting a custom shortcut for each view in *the Menu Shortcut Keys preferences*.

## Localization of the User Interface

Oxygen XML Editor comes with an user interface available in English, French, German, Japanese, Dutch, and Italian. In addition, it provides a mechanisms that allows you to localize the interface to your native language. You have to translate all the messages and labels available in the user interface (menu action names, button names, check box texts, view titles, error messages, status bar messages), store them in a custom XML file and instruct Oxygen XML Editor to read this file.

### Localization of the User Interface Using an XML File

In order to add a new language for the user interface, follow this procedure. For simplicity sake, it is assumed that you are translating the user interface in Spanish, and you are using a standard Oxygen XML Editor Windows distribution.

1. Identify the ISO code for the new language you wish to translate the interface. In this example the language code is **es\_ES**.
2. Write an email to Oxygen XML Editor support team and ask them to send you the *translation.xml* sample file.
3. Open *translation.xml* in Oxygen XML Editor. The file contains all messages available for internationalization and it is updated at every new release with the latest additions. Here is a sample of its content:

```
<translation>
  <languageList>
    <language description="English" lang="en_US"/>
  </languageList>
  <key value="New">
    <comment>The File/New action. Creates a new document.</comment>
    <val lang="en_US">New</val>
  </key>
  <key value="New_folder">
    <comment>Creates a folder in the Project View.</comment>
    <val lang="en_US">New Folder</val>
  </key>
  ....
</translation>
```

4. Update the language element to reflect the new language. Set the *description* attribute to Spanish and the *lang* attribute to **es\_ES**.
5. For each key element translate the *comment* (optional) and *val* elements. Set the *lang* attribute to **es\_ES**.



**Note:** After this step the file should look like:

```
<translation>
  <languageList>
    <language description="Español" lang="es_ES"/>
  </languageList>
  <key value="New">
    <comment>El Archivo / Nueva acción. Crea un nuevo documento.</comment>
    <val lang="en_US">Nuevo</val>
  </key>
  <key value="New_folder">
    <comment>Crea una carpeta en la vista del proyecto.</comment>
    <val lang="en_US">Nueva carpeta</val>
  </key>
  ....
</translation>
```

6. Go to **Options/Preferences** menu, **Global** options page. Enable the **Other language** option and browse for the *translation.xml* file.
7. Restart the application.



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# Chapter

# 4

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## Editing Documents

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### Topics:

- [Working with Unicode](#)
- [Opening and Closing Documents](#)
- [Grouping Documents in XML Projects](#)
- [Editing XML Documents](#)
- [Editing XML Schemas](#)
- [Editing Relax NG Schemas](#)
- [Editing NVDL Schemas](#)
- [Editing XSLT Stylesheets](#)
- [Editing XQuery Documents](#)
- [Editing CSS Stylesheets](#)
- [Editing JSON Documents](#)
- [Editing StratML Documents](#)
- [Editing JavaScript Documents](#)
- [Editing XProc Scripts](#)
- [Editing Schematron Schemas](#)
- [SVG Documents](#)
- [Integrating External Tools](#)
- [Editing Large Documents](#)
- [Insufficient Memory](#)
- [Large File Viewer](#)
- [Handling Bidirectional \(BIDI\) Text](#)
- [Hex Viewer](#)
- [Scratch Buffer](#)
- [Handling Read-Only Files](#)
- [Editing Documents with Long Lines](#)

This chapter explains the editor types available in Oxygen XML Editor and how to work with them for editing different types of documents.

## Working with Unicode

Unicode provides a unique number for every character, independent of the platform and language. Unicode is an internationally recognized standard, adopted by industry leaders. The Unicode is required by modern standards such as XML, Java, ECMAScript (JavaScript), LDAP, CORBA 3.0, WML, etc., and is the official way to implement ISO/IEC 10646.

It is supported in many operating systems, all modern browsers, and many other products. The emergence of the Unicode Standard, and the availability of tools supporting it, are among the most significant recent global software technology trends. Incorporating Unicode into client-server or multi-tiered applications and websites offers significant cost savings over the use of legacy character sets.

As a modern XML Editor, Oxygen XML Editor provides support for the Unicode standard enabling your XML application to be targeted across multiple platforms, languages, and countries without re-engineering. Internally, the Oxygen XML Editor XML Editor uses 16bit characters covering the Unicode Character set.

As a Java application, Oxygen XML Editor comes with a default Java input method for typing characters with Unicode codes. However, the default input method does not cover all the Unicode codes, for example the codes for some accented characters or characters found in East Asian languages. Such characters can be inserted in the editor panel of Oxygen XML Editor either with [the Character Map dialog](#) available from menu **Edit > Insert from Character Map** or by installing a Java input method that supports the insertion of the needed characters. The [installation of a Java input method](#) depends on the platform on which Oxygen XML Editor runs (Windows, Mac OS X, Linux, etc) and is the same for any Java application.

 **Note:** Oxygen XML Editor may not be able to display characters that are not supported by the operating system (either not installed or unavailable).

 **Tip: Windows XP/2003:** You can enable support for **CJK** (Chinese, Japanese, Korean) languages from **Control Panel / Regional and Language Options / Languages / Install files for East Asian languages**.

## Opening and Saving Unicode Documents

On loading documents of the type XML, XSL, XSD, and DTD, Oxygen XML Editor reads the document prolog to determine the specified encoding type. This encoding is then used to instruct the Java Encoder to load support for and to save the document using the specified code chart. When the encoding type cannot be determined, Oxygen XML Editor prompts and display the **Available Java Encodings** dialog which provides a list of all encodings supported by the Java platform.

If the opened document contains an unsupported character, Oxygen XML Editor applies [the policy specified for handling such errors](#). If the policy is set to REPORT, Oxygen XML Editor displays an error dialog about the character not allowed by the encoding. If the policy is set to IGNORE, the character is removed from the document displayed in the editor panel. If the policy is set to REPLACE, the character is replaced with a standard replacement character for that encoding.

While in most cases you are using UTF-8, simply changing the encoding name causes the application to save the file using the new encoding.

On saving the edited document, if it contains characters not included in the encoding declared in the document prolog Oxygen XML Editor detects the problem and signals it to the user. The user is responsible to resolve the conflict before saving the document.

To edit documents written in Japanese or Chinese, change the font to one that supports the specific characters (a Unicode font). For the Windows platform, *Arial Unicode MS* or *MS Gothic* is recommended. Do not expect *Wordpad* or *Notepad* to handle these encodings. Use *Internet Explorer* or *Word* to examine XML documents.

When a document with a UTF-16 encoding is edited and saved in Oxygen XML Editor, the saved document has a byte order mark (BOM) which specifies the byte order of the document content. The default byte order is platform-dependent. That means that a UTF-16 document created on a Windows platform (where the default byte order mark is *UnicodeLittle*) has a different BOM than a UTF-16 document created on a Mac OS platform (where the byte order mark is *UnicodeBig*).

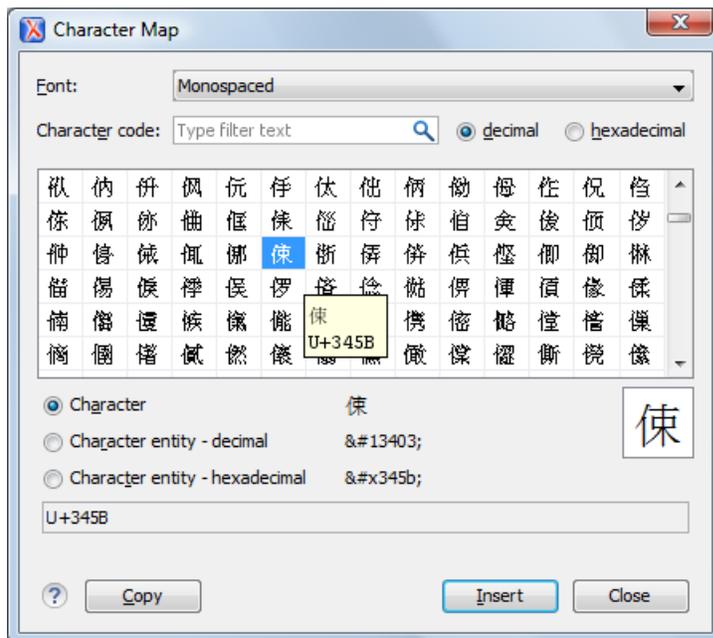
The byte order and the BOM of an existing document are preserved in Oxygen XML Editor when the document is edited and saved. This behavior can be changed in Oxygen XML Editor from the [Encoding preferences panel](#).

## The Unicode Toolbar

The Unicode toolbar is switched on and off from the contextual menu of the toolbar area and contains the actions  **Change text orientation** with [the default shortcut](#) Ctrl + Shift + O and  **Insert from Character Map**

The  **Change text orientation** action enables editing documents in languages with right to left writing (Hebrew, Arabic, etc.). Please note that you may have to [set an appropriate Unicode aware font for the editor panel](#), able to render the characters of the language of the edited file.

The  **Insert from Character Map** action opens a dialog in which you can select one character in the matrix of all characters available in a font and insert it in the edited document. The action is available also in the **Edit** menu.



**Figure 13:** The Character Map dialog

The character selected in the character table or an entity with the decimal code or the hexadecimal code of that character can be inserted in the current editor. You will see it in the editor if [the editor font](#) is able to render it. The **Insert** button inserts the selected character in the editor. The **Copy** button copies it to the clipboard without inserting it in the editor. You can see the name and range name of a character either at the bottom of the dialog, or when hovering the cursor over the character.

A character can be located very quickly in the map if you know the Unicode code: just type the code in the search field above the character map and the character is selected automatically in the map. If the code is hexadecimal the radio button for hexadecimal codes is selected automatically. Selecting a radio button with the mouse starts searching the code in the map.

The *Character Map* dialog cannot be used to insert Unicode characters in [the grid version of a document editor](#). Accordingly, the **Insert** button of the dialog will be disabled if the current document is edited in grid mode.

## Opening and Closing Documents

This section explains the actions and wizards available for creating new files, opening existing files, and closing files.

## Creating New Documents

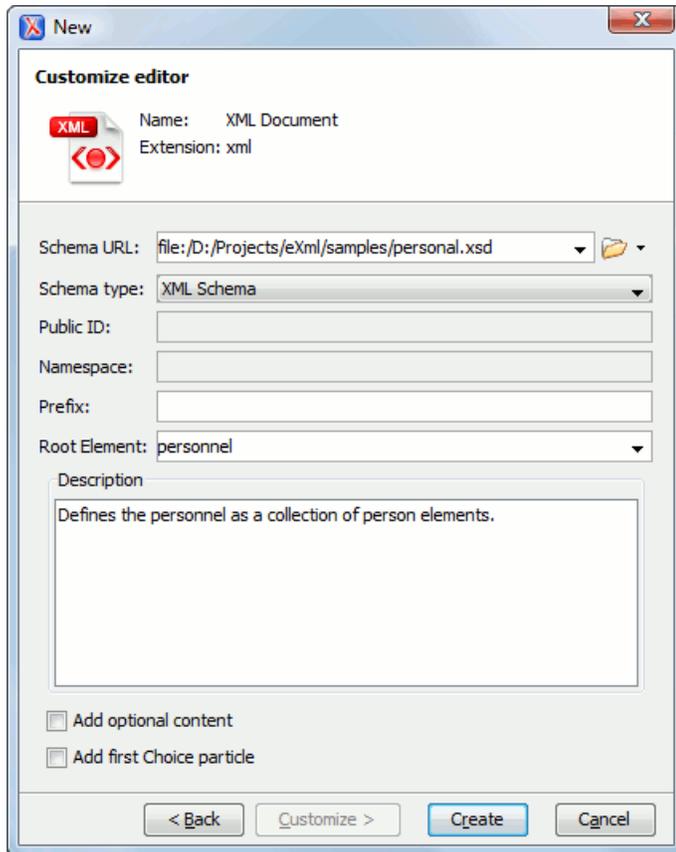
This section details the procedures available for creating new documents.

### The New Document Wizard

Oxygen XML Editor supports a wide range of document types. The **New Document** wizard presents the default associations between a file extension and the type of editor that opens the file. To customize these default associations, go to [Options > Preferences > Editor > File Types](#).

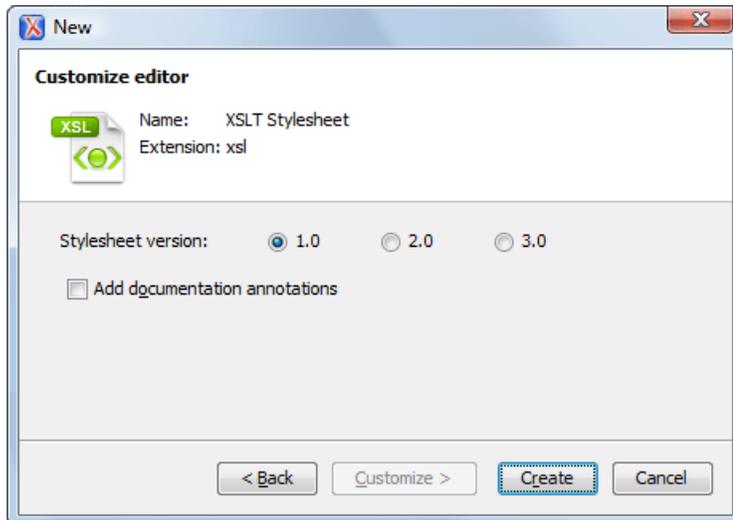
1. To create a document in Oxygen XML Editor, either select **File > New (Ctrl+N)**, or click the  **New** button on the toolbar.  
Oxygen XML Editor displays the **New Document** wizard and groups the supported document types in multiple categories:
  - **Recently used** - contains the list of the most recently used files;
  - **New Document** - contains the list of all supported document types. This list includes XML, XSL, XML Schema, Document Type Definition, Relax NG Schema, XQuery, web Services Definition Language, Schematron Schema, CSS, Text, PHP, JavaScript, Java, C, C++, Batch, Shell, Properties, SQL, XML Catalog, and PERL.
  - **Global templates** - contains the list of predefined templates as well as templates defined in the [Document Templates](#) preferences page.
  - **Framework templates** - contains the list of templates defined in the [Document Type Association](#) preferences page, **Templates** tab.
2. Select a document type.
3. Click one of the following:
  - **Customize** - action available only for XML, XML Schema, Schematron, and XSL documents. Depending on the document type, you can set different properties before you create the file.
  - **Create** - uses default settings to create a file.

If you select **Create**, Oxygen XML Editor opens the new file in the editor view.
4. If you select **Customize**, Oxygen XML Editor opens the following dialog box. You can customize different options depending on the document type you select.



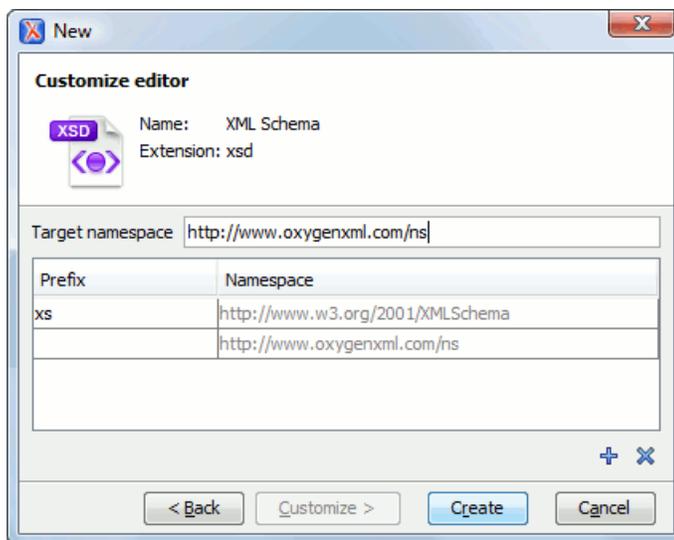
**Figure 14: New XML Document Dialog Box**

- **Schema URL** - specifies the path to the schema file. When you select a file, Oxygen XML Editor analyzes its content and tries to fill the rest of the dialog box;
- **Schema type** - allows you to select the schema type. The following options are available: XML Schema, DTD, RelaxNG XML syntax, RelaxNG compact syntax, and NVDL;
- **Public ID** - specifies the PUBLIC identifier declared in the document prolog;
- **Namespace** - specifies the document namespace;
- **Prefix** - specifies the prefix for the namespace of the document root;
- **Root Element** - populated with elements defined in the specified schema, enables selection of the element used as document root;
- **Description** - shows a small description of the selected document root;
- **Add optional content** - if you select this option, the elements, and attributes defined in the XML Schema as optional, are generated in the skeleton XML document;
- **Add first Choice particle** - if you select this option, Oxygen XML Editor generates the first element of an *xs:choice* schema element in the skeleton XML document. Oxygen XML Editor creates this document in a new editor panel when you click **OK**.



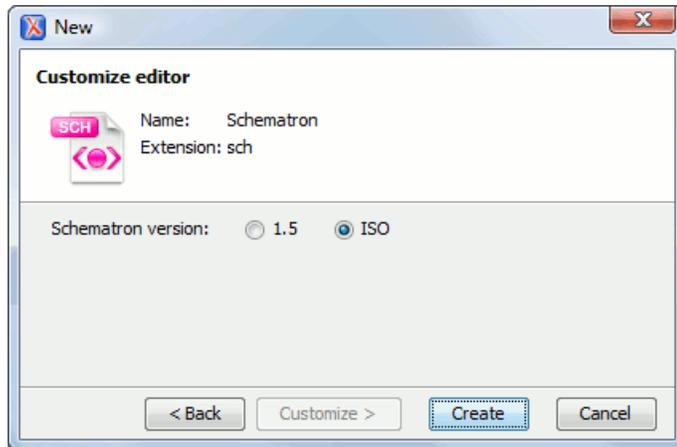
**Figure 15: New XSL Document Dialog Box**

- **Stylesheet version** - allows you to select the Stylesheet version number. You can select from: 1.0, 2.0, and 3.0;
- **Add documentation annotations** - enable this option to generate the stylesheet documentation.



**Figure 16: New XML Schema Document Dialog Box**

- **Target namespace** - specifies the schema target namespace;
- **Namespace prefix declaration table** - contains namespace prefix declarations. Table information can be managed using the + (New) and x (Delete) buttons.



**Figure 17: New Schematron Document Dialog Box**

- **Schematron version** - Specifies the Schematron version. Possible options: 1.5 and ISO.

5. Press **Create** to create the file.

### Creating Documents Based on Templates

The *New wizard* enables you to select predefined templates or custom templates. Custom templates are created in previous sessions or by other users.

The list of templates presented in the dialog includes:

- Document Types templates - Templates supplied with the defined document types.
- User defined templates - The user can add template files in the `templates` folder of the Oxygen XML Editor install directory. Also in the option page **Options > Preferences > Editor > Templates > Document Templates** can be specified a custom templates folder to be scanned.

1. Go to menu **File > New**.
2. Select a document type.
3. Press the **Finish** button.

The newly created document already contains the structure and content provided in the template.

### Document Templates

Templates are documents containing a predefined structure. They provide starting points on which one can rapidly build new documents that repeat the same basic characteristics: file type, prolog, root element, existing content. Oxygen XML Editor installs a rich set of templates for a number of XML applications. You may also create your own templates from **Options > Preferences > Editor > Templates > Document Templates** and share them with other users.

You can also use *editor variables* in the template files' content and they will be expanded when the files are opened.

## Saving Documents

The edited document can be saved with one of the following actions:

- **File > Save**.
- The  **Save** toolbar button. If the document was not saved yet it displays the **Save As** dialog.
- **File > Save As**: displays the **Save As** dialog, used either to name and save an open document to a file or to save an existing file with a new name.
- **File > Save To URL** displays the **Save to URL** dialog, used either to name and save an open document to a file or to save an existing file with a new name, *using FTP/SFTP/WebDAV*.
- **File > Save All**: Saves all open documents. If any document does not have a file, displays the **Save As** dialog.

## Opening Existing Documents

To open a document in Oxygen XML Editor, do one of the following:

- Go to **File > Open (Ctrl+O)**, to display the **Open** dialog. The start folder of the **Open** dialog can be either the last folder visited by this dialog or the folder of the currently edited file. This can be *configured in the user preferences*.
- Click the  **Open** toolbar button to display the **Open** dialog.
- Go to **File > Open URL ...**, to open a document *using FTP/SFTP/WebDAV*.
- Click the  **Open URL ...** toolbar button to run the same action.
- Go to **File > Open/Find Resource ... (Ctrl+Shift+R)** to look for a document from *the current project* or from a DITA map opened in *the DITA Maps Manager view* by typing a part of the file name.
- Click the  **Open/Find Resource ...** toolbar button to run the same action.
- Go to **File > Revert** to load the last saved file content. All unsaved modifications are lost.
- Go to **File > Reopen** to reopen one of the recently opened document files. The list containing recently opened files can be emptied by invoking the **Clear history** action.
- Select the **Open** action from the contextual menu of the **Project** view. This opens the selected file from the **Project** view.
- Start the application from the command line with the paths of one or more local files as parameters. The specified files will be opened automatically when the application is started:
  - `scriptName [pathToXMLFile1] [pathToXMLFile2] ...` where `scriptName` is the name of the startup script for your platform (`oxygen.bat` on Windows, `oxygen.sh` on Unix/Linux, `oxygenMac.sh` on Mac OS) and `pathToXMLFileN` is the name of a local XML file
  - an XML file and a schema file to be associated automatically to the file and used for validation and content completion:

```
scriptName -instance pathToXMLFile -schema pathToSchemaFile -schemaType
XML_SCHEMA|DTD_SCHEMA|RNG_SCHEMA|RNC_SCHEMA -dtName documentTypeName
```

where `scriptName` is the name of the startup script for your platform (`oxygen.bat` on Windows, `oxygen.sh` on Unix/Linux, `oxygenMac.sh` on Mac OS), `pathToXMLFile` is the name of a local XML file, `pathToSchemaFile` is the name of the schema which you want to associate to the XML file, the four constants (`XML_SCHEMA`, `DTD_SCHEMA`, `RNG_SCHEMA`, `RNC_SCHEMA`) are the possible schema types (W3C XML Schema, DTD, Relax NG schema in full syntax, Relax NG schema in compact syntax). The next parameter, `documentTypeName`, specifies the name of the *Document Type* for which the schema is defined. If the Document Type is already set in the options pages, then its schema and type will be updated.

The two possibilities of opening files at startup by specifying them in the command line are explained also if the startup script receives one of the `-h` or `--help` parameters.

### The Open/Find Resource View

The **Open/Find Resource** view is designed to offer advanced search capabilities either by using a simple text search or by using the *Apache Lucene - Query Parser Syntax*. To open this view, go to **Window > Show View > Open/Find Resource**. The view is presented in the left side of the default Oxygen XML Editor layout, next to the **Project** and **DITA Maps Manager** views.



**Figure 18: The Open/Find Resource View**

You can use this view to find a file in the current Oxygen XML Editor project or in one of the DITA maps opened in [the DITA Maps Manager view](#) by typing only a few letters of the file name of a document or a fragment of the content you are searching for.

Search results are presented instantly, after you finish typing the content you are searching for. The matching fragments of text are highlighted in the results list displayed in the view. When you open one of the documents from the results list, the matching fragments of text are highlighted in the editing area. To remove the highlighting from your document close the [Results view](#).

The content of the resources used to search in is parsed from an index. The indexing is performed on request. It is recommended to reindex your documents in case they were modified.

-  **Note:** Searches are case insensitive. For example, if you search for *car* you get the same results as when you search for *Car*.
-  **Note:** Suffix searches are supported, both for searching in the content of your resources and in their name. For this, you can use wildcards. If you search **in content** for *\*ing* you will find documents that contain the word *presenting*. If you search **in file paths** for *\*/samples/\*.gif* you will find all the images from the `samples` directory.
-  **Note:** You can drag resources from the **Open/Find Resource** view and drop them in a document to create a link to that resource.

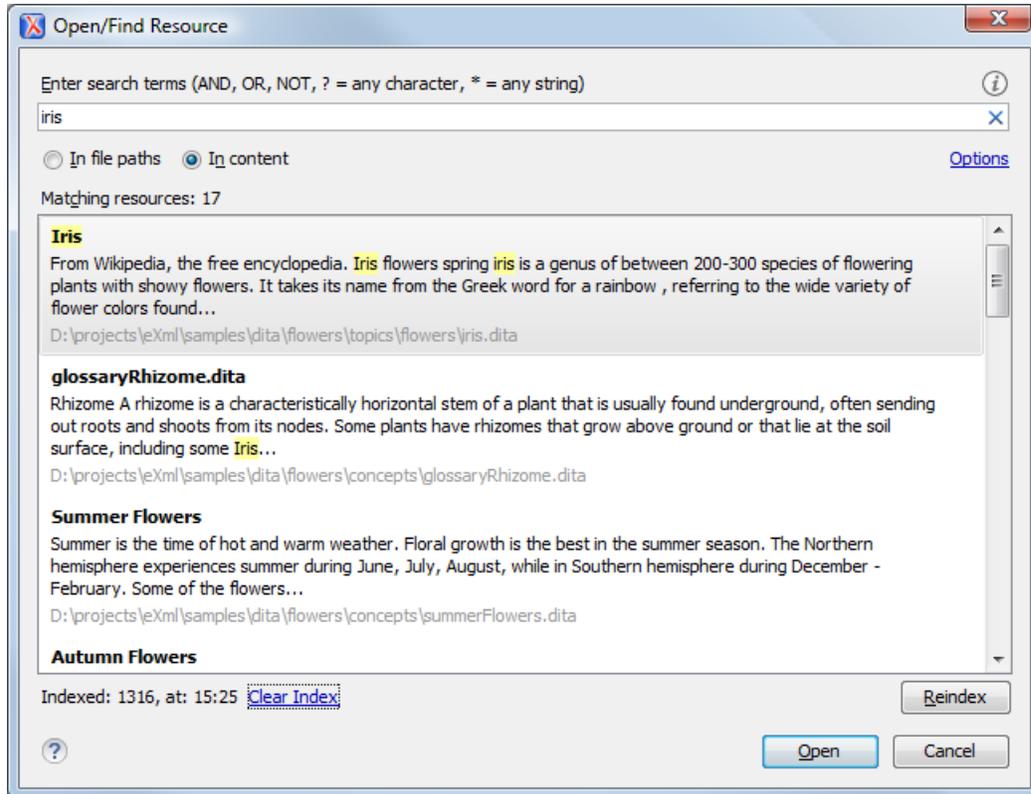
The Open/Find Resource view offers the following options:

- **Settings** - displays settings of the view;
  - **Clear Index** - clears the index;
  - **Show description** - presents the search results in a more compact form, displaying only the title and the location of the resources;
  - **Options** - opens the [Open/Find Resource preferences page](#).
- **In file paths** - select this option to search for resources by their name or by a fragment of their full path

- **In content** - select this option to search through the content of your resources;
- **Reindex** - reindexes your resources.

### The Open/Find Resource Dialog

To open the **Open/Find Resource** dialog, go to **File > Open/Find Resource ... (Ctrl+Shift+R)**. You can also click the  **Open/Find Resource ...** toolbar button or use the  **Search for file** action, available for some URL input fields.



**Figure 19: The Open/Find Resource Dialog**

You can use this dialog to find a file in the current Oxygen XML Editor project or in one of the DITA maps opened in [the DITA Maps Manager view](#) by typing a few letters of the file name of a document or a fragment of the content you are searching for.

Search results are presented instantly, after you finish typing the content. The matching fragments of text are highlighted in the results list displayed in the dialog. When you open one of the documents from the results list, the matching fragments of text are highlighted in the editing area. To remove the highlighting from your document close the [Results view](#).

- 👉 **Note:** Searches are case insensitive. For example, if you search for *car* you get the same results as when you search for *Car*.
- 👉 **Note:** Suffix searches are supported, both for searching in the content of your resources and in their name. For this, you can use wildcards. If you search **in content** for *\*ing* you will find documents that contain the word *presenting*. If you search **in file paths** for *\*/samples/\*.gif* you will find all the images from the *samples* directory.
- 👉 **Note:** You can drag resources from the **Open/Find Resource** view and drop them in a document to create a link to that resource.

The **Open/Find Resource** dialog offers the following options:

- **In file paths** - select this option to search for resources by their name or by a fragment of their full path;

- **In content** - select this option to search through the content of your resources;
- **Options** - opens the [Open/Find Resource preferences page](#);
- **Clear Index** - clears the index;
- **Reindex** - reindexes your resources.

When you perform a search a caching mechanism is used to gather the paths of all files linked in the current project. When the first search is performed, all project files are indexed and added to the cache. The next search operations use the information extracted from the cache, thus improving the processing time. The cache is kept for the currently loaded project only, so when you perform a search in a new project the cache is rewritten. Also, the cache is reset when you press the **Reindex** button.

If there is no file found that matches your file pattern or text search, a possible cause is that the file you are searching for was added to the Oxygen XML Editor project after the last caching operation. In this case, re-indexing the project files from the **Reindex** button enables the file to be found. The date and time of the last index operation are displayed below the file list.

Once you find the files that you want to open, select them in the list and press the **Open** button. Each of the selected files is opened in [the editor associated with the type of the file](#).

### The Open/Find Resources Preferences Page

The **Open/Find Resource** preferences page allows you to configure the **Open/Find Resource** dialog and the **Open/Find Resources** view. To open this page, go to **Options > Preferences > Open/Find Resource**.

The following options are available in the **Open/Find Resource** preferences page:

- **Enable searching in content** - enable this option to activate the **In content** option of the **Open/Find Resource** view and **Open/Find Resource** dialog. In case this option is disabled you can only use the **Open/Find Resource** feature to search in file paths;
- **Ignore content of these files** - allows you to specify file types that are ignored when you perform a search;
- **Index the content of remote resources** - controls indexing of the content of any resource that is not a local file. In case the remote resources do not presents a great interest, disable this option to improve performance.
- **Exact matches** - this option controls whether the search results should exactly match the whole words that you introduce in the search field of the **Open/Find Resource** dialog or **Open/Find Resources** view;
- **Prefix matches** - this option controls whether the search results should match documents containing words starting with the searched terms. For instance searching for "pref page" will find documents containing also "preference pages";
- **Automatically join search terms using:** - select the default boolean operator that Oxygen XML Editor applies when you perform a search. For example if the AND operator is selected and you enter "car assembly" in the dialog, the resulted documents must contain both of the words. If you choose OR, the resulted documents must contain one of the selected search terms. Results containing both words are promoted to the top of the list.
- **Enable XML-aware searching for files with size less than** - allows you to perform an [XML specific search](#) for XML elements and attributes.



**Note:** Enabling this option may slow down the indexing of your documents and increase the index size on the disk.

### Searching in Content

To perform a search through the content of your resources, open the **Open/Find Resources** dialog or the **Open/Find Resource** view, enable the **in content** option, and in the search field enter the terms that you want to search for.

The **Open/Find Resource** feature is powered by [Apache Lucene](#). Apache Lucene is a free open source information retrieval software library.

You can use the **Open/Find Resource** dialog and the **Open/Find Resource** view either to perform a simple text search or to perform a more complex search using the [Apache Lucene - Query Parser Syntax](#). Using the [Apache Lucene - Query Parser Syntax](#) means you can perform any of the following searches:

**Term Searches**

Use the **Open/Find Resource** view or dialog to search for plain text:

```
Garden Preparation
```

**Element Specific Searches**

Use the **Open/Find Resource** view or dialog to search for content that belongs to a specific element:

```
title:"Garden Preparation"
```

**Wildcard Searches**

Use wildcards to make your search more permissive:

```
Garden Prepar?tion
```

**Fuzzy Searches**

In case you are not sure what is the exact form of a term that you are interested in, use the fuzzy search to find the terms that are similar to what you introduce in the **Open/Find Resource** view or dialog. To perform a fuzzy search, use the ~ symbol after the word that you are not sure of:

```
Garden Preparing~
```

**Proximity Searches**

Use proximity searches to find words that are within a specific distance away. To perform a proximity search, use the ~ symbol at the end of your search. For example, to search for the word *Garden* and the word *Preparation* within 6 words of each other use:

```
"Garden Preparation"~6
```

**Range Searches**

Use range searches to match documents whose element values are between the lower and upper bound specified in the range query. For example, to find all documents whose titles are between *Iris* and *Lilac*, use:

```
title:{Iris TO Lilac}
```

The curly brackets denote an exclusive query. The results you get when using this query are all the documents whose titles are between *Iris* and *Lilac*, but not including *Iris* and *Lilac*. To create an inclusive query use square brackets:

```
title:[Iris to Lilac]
```

**Term Prioritising Searches**

Use term prioritising searches in case the fragment of text that you are searching for contains certain words that are more important to your search than the rest of them. For example, if you are searching

for *Autumn Flowers*, a good idea is to prioritise the word *Autumn* since the word *Flowers* occurs more often. To prioritise a word use the ^ symbol:

```
Autumn^6 Flowers
```

### Searches Using Boolean Operators

You are able to use the **AND**, **+**, **OR**, **-**, and **NOT** operators.

To search for documents that contain both the words *Garden* and *Preparation*, use:

```
Garden AND Preparation
```

To search for documents that must contain the word *Garden* and may contain the word *Preparation*, use:

```
+Garden Preparation
```

To search for documents that contain either the word *Garden* or the word *Preparation*, use:

```
Garden OR Preparation
```

To search for documents that contain *Garden Preparation* but not *Preparation of the Flowers*, use:

```
"Garden Preparation" - "Preparation of the Flowers"
```

### Searches Using Grouping

To search either for the word *Garden* or *Preparation*, and the word *Flowers*, use:

```
(Garden OR Preparation) AND Flowers
```

### Searches Using Element Grouping

To search for a title that contains both the word *Flowers* and the phrase *Garden Preparation*, use:

```
title:(+Flowers +"Garden Preparation")
```

## Searching in File Paths

To perform a search in the file paths of your resources, open the **Open/Find Resources** dialog or the **Open/Find Resource** view, enable the **in file paths** option, and in the search field enter the terms that you want to search for.

The **Open/Find Resource** view and dialog allows you to search for a resource either by its name or by a fragment of its full path.

You can use wildcards when you perform such searches:

- Use "\*" to match any sequence of characters;
- Use "?" to match any single character.

For example, if you search for *\*-preferences-page* you will find all the resources that contain the *-preferences-page* fragment in their name. If you search for *\*/samples/\*.gif*, you will find all the *.gif* images from the *samples* directory.

## Technical Aspects

When Oxygen XML Editor performs the indexing of your resources, the refereed content from your documents is not taken into account. For example, when DITA documents are indexed, the content from the `conref` elements is not

parsed. The files that make up the index are stored on the disk in the  
 C:\Users\USER\_NAME\AppData\Roaming\com.oxygenxml\lucene folder.

## Opening and Saving Remote Documents via FTP/SFTP/WebDAV

Oxygen XML Editor supports editing remote files, using the FTP, SFTP and WebDAV protocols. The remote files can be edited exactly as the local ones, for example they can be added to a project, and can be subject to XSL and FO transformations.

You can open one or more remote files in *the dialog [Open using FTP/SFTP/WebDAV](#)*.

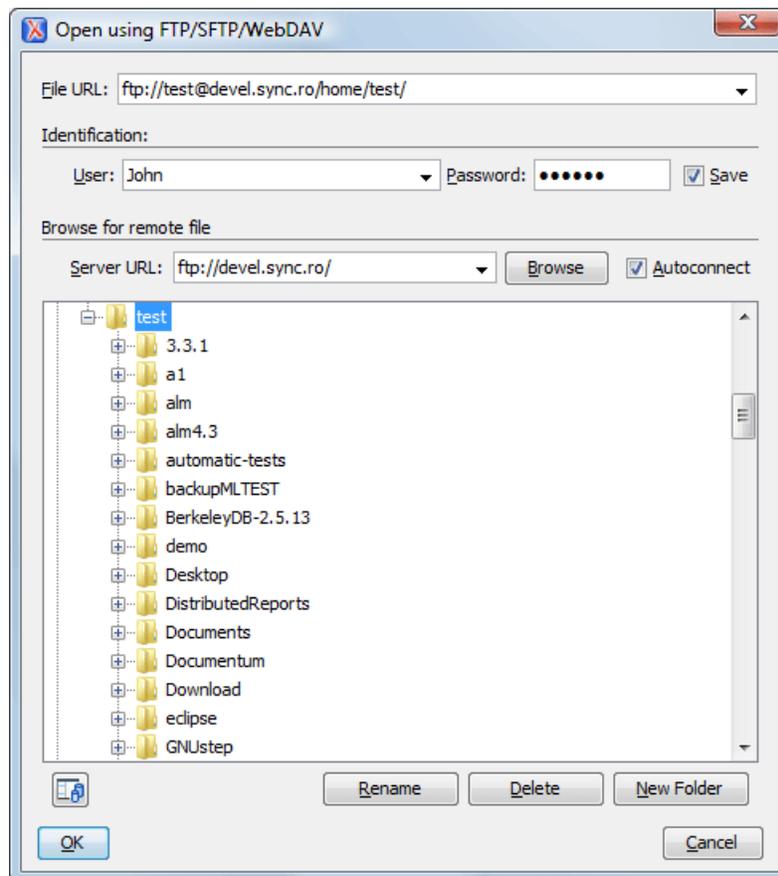
A WebDAV resource can be locked when it is opened in Oxygen XML Editor by checking the *[Lock WebDAV files on open](#)* option to prevent other users to modify it concurrently on the server. If a user tries to edit a locked file, Oxygen XML Editor displays an error message that contains the lock owner's name. The lock is released automatically when the editor for that resource is closed in Oxygen XML Editor.

To improve the transfer speed, the content exchanged between Oxygen XML Editor and the HTTP / WebDAV server is compressed using the GZIP algorithm.

The current *[WebDAV Connection](#)* details can be saved using the  button and then used in the *Data Source Explorer* view.

### The Dialog Open Using FTP/SFTP/WebDAV

The dialog **Open using FTP/SFTP/WebDAV** is displayed from the menu **File > Open URL ...** or from the toolbar button  **Open URL ...**



**Figure 20: Open URL dialog**

The displayed dialog is composed of several parts:

- The editable combo box, in which it can be specified directly the URL to be opened or saved.

**Tip:**

You can type in here an URL like `http://some.site/test.xml`, in case the file is accessible through normal HTTP protocol, or `ftp://anonymous@some.site/home/test.xml` if the file is accessible through anonymous FTP.

This combo box is also displaying the current selection when the user changes selection by browsing the tree of folders and files on the server.

- The *Identification* section contains the access credentials. If you want to browse for a file on a server, you have to specify the user and password. This information is bound to the selected URL displayed in the **File URL** combo box, and used further in opening/saving the file. If the check box **Save** is selected, then the user and password are saved between editing sessions. The password is kept encrypted into the options file.

**Note:**

Your password is well protected. In the case the options file is used on other machine by a user with a different username the password will become unreadable, since the encryption is username dependent. This is also true if you add URLs having user and password to your project.

- The *Browse for remote file* section contains the server combo and the **Autoconnect** check box. Into the server combo it may be specified the protocol (HTTP, HTTPS or FTP), the name or IP of the server and, in case of WebDAV, the path to a WebDAV directory.

**Tip:**

Server URLs

When accessing a FTP server, you need to specify only the protocol and the host, like: `ftp://server.com`, or if using a nonstandard port: `ftp://server.com:7800/`.

When accessing a WebDAV server, along with the protocol and the host, it must be specified also the directory of the WebDAV repository.

**Important:**

Make sure that the repository directory ends in a slash "/".

Ex: `https://www.some-webdav-server.com:443/webdav-repository/`, `http://devel:9090/webdav/`

By pressing the **Browse** button the directory listing will be shown in the component below. When **Autoconnect** is selected then at every time the dialog is shown, the browse action will be performed.

- The tree view of the documents stored on the server. You can browse the directories, and make multiple selections. Additionally, you may use the **Rename**, **Delete**, and **New Folder** to manage the file repository.

The file names are sorted in a case-insensitive way.

## Changing File Permissions on a Remote FTP Server

Some FTP servers allow the modification of permissions of the files served over the FTP protocol. This protocol feature is accessible directly in the FTP/WebDAV file browser dialog by right-clicking on a tree node and selecting the *Change permissions* menu item.

The usual Unix file permissions *Read*, *Write* and *Execute* are granted or denied in this dialog for the file owner, owner group and the rest of the users. The permission's aggregate number is updated in the *Permissions* text field when it is modified with one of the check boxes.

## WebDAV over HTTPS

If you want to access a WebDAV repository across an insecure network, Oxygen XML Editor allows you to load and save the documents over the HTTPS protocol (if the server understands this protocol) so that any data exchange with the WebDAV server is encrypted.

When a WebDAV repository is first accessed over HTTPS, the server hosting the repository will present a security certificate as part of the HTTPS protocol, without any user intervention. Oxygen XML Editor will use this certificate to decrypt any data stream received from the server. For the authentication to succeed you should make sure the security certificate of the server hosting the repository can be read by Oxygen XML Editor. This means that Oxygen XML Editor can find the certificate in the key store of the Java Runtime Environment in which it runs. You know the server certificate is not in the JRE key store if you get the error *No trusted certificate found* when trying to access the WebDAV repository.

## Troubleshooting HTTPS

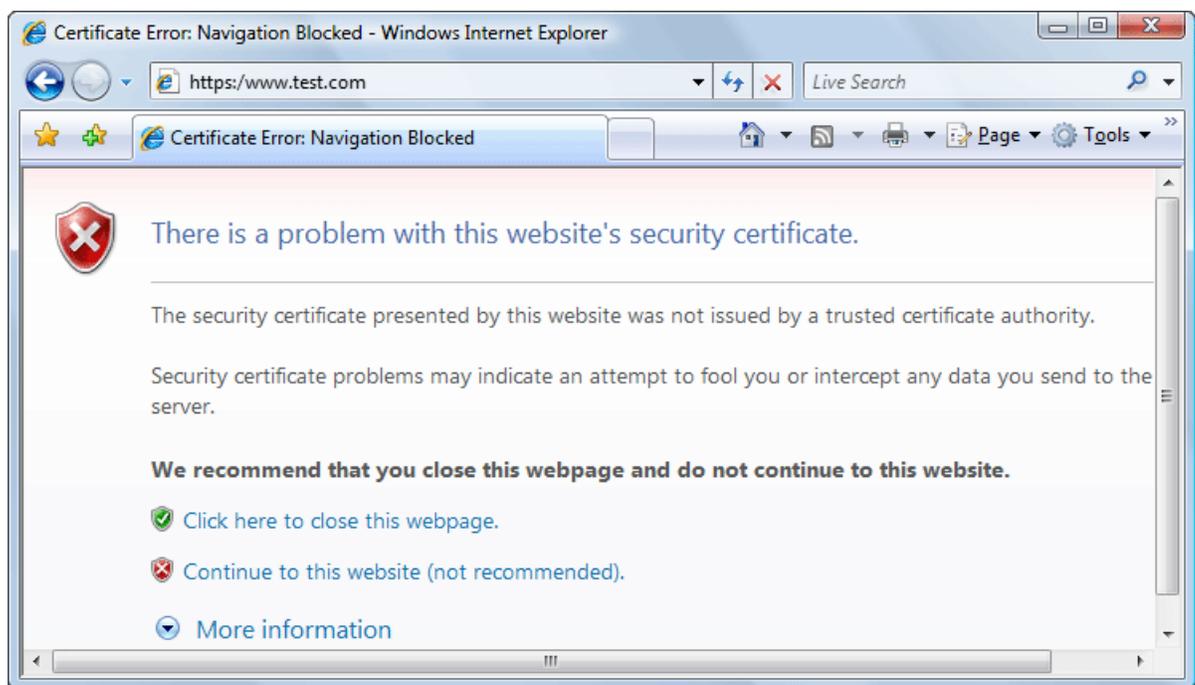
When Oxygen XML Editor cannot connect to an HTTPS-capable server, the most likely case is that there is no certificate set in the *Java Runtime Environment (JRE)* that oXygen runs into. The following procedure describes how to:

- export a certificate to a local file using any HTTPS-capable Web browser (for example Internet Explorer);
- importing the certificate file into the JRE using the **keytool** tool that comes bundled with the Oxygen XML Editor.

### 1. Export the certificate into a local file

- a) Point your HTTPS-aware Web browser to the repository URL.

If this is your first visit to the repository it will be displayed a security alert stating that the security certificate presented by the server is not trusted.



**Figure 21: Security alert - untrusted certificate**

- b) Go to menu **Tools > Internet Options**.  
**Internet Options** dialog is opened.
- c) Select **Security** tab.
- d) Select **Trusted sites** icon.
- e) Press **Sites** button.  
This will open **Trusted sites** dialog.
- f) Add repository URL to **Websites** list.

- g) Close **Trusted sites** dialog and **Internet Options** dialog.
  - h) Try again to connect to the same repository URL in Internet Explorer.  
The same error page as above will be displayed.
  - i) Select **Continue to this website** option.  
A clickable area with a red icon and text **Certificate Error** is added to Internet Explorer address bar.
  - j) Click on **Certificate Error** area.  
A dialog containing **View certificates** link is displayed.
  - k) Click on **View certificates** link.  
**Certificate** dialog is displayed.
  - l) Select **Details** tab of **Certificate** dialog.
  - m) Press **Copy to File** button.  
**Certificate Export Wizard** is started.
  - n) Follow indications of wizard for DER encoded binary X.509 certificate. Save certificate to local file server .cer.
2. Import the local file into the JRE running Oxygen XML Editor.
    - a) Open a text-mode console.
    - b) Go to the `lib/security` directory of the JRE running Oxygen XML Editor. You find the home directory of the JRE in the `java.home` property that is displayed in the **About** dialog, **Installation Details, System properties** tab. On Mac OS X systems, the `lib/security` directory is usually located in `/System/Library/Java/JavaVirtualMachines/1.6.0.jdk/Contents/Home` directory.
    - c) Run the following command:

```
..\..\bin\keytool -import -trustcacerts -file server.cer -keystore cacerts
```

The `local-file.cer` file contains the server certificate, created during the previous step. **keytool** requires a password before adding the certificate to the JRE keystore. The default password is *changeit*. If somebody changed the default password then he is the only one who can perform the import. As a workaround you can delete the `cacerts` file, re-type the command and enter as password any combination of at least 6 characters. This will set the password for future operations with the key store.

3. Restart Oxygen XML Editor.

## Opening the Current Document in System Application

To open the currently edited document in the associated system application, use the **Open in Browser/System Application** action available on the **Document > File** menu and also on the **Document** toolbar. The action is enabled when the current document has the file, FTP, HTTP or SFTP protocol.

## Closing Documents

To close open documents, use one of the following methods:

- Go to menu **File > Close (Ctrl+W)** : Closes only the selected tab. All other tab instances remain opened.
- Go to menu **File > Close All** : If you try to close a modified or a newly created document, you are first prompted to save it.
- Click **Close** in the contextual menu of an open tab to close it.
- Click **Close Other Files** in the contextual menu of an open tab to close all the open tabs except the selected one.
- Click **Close All** in the contextual menu of an open tab to close all open tabs.

## Viewing File Properties

In the **Properties** view, you can quickly access information about the current edited document like:

- character encoding
- full path on the file system
- schema used for content completion and document validation
- document type name and path

- associated transformation scenario
- file's read-only state
- bidirectional text (left to right and right to left) state
- total number of characters in the document
- line width
- indent with tabs state
- indent size

The view can be accessed from **Window > Show View > Properties**.

To copy a value from the **Properties** view in the clipboard, for example the full file path, use the **Copy** action available on the contextual menu of the view.

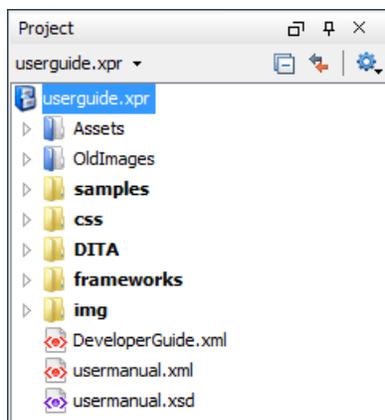
## Grouping Documents in XML Projects

---

This section explains how to create and work with projects.

### Using the Project View

The Project view is designed to assist the user in organizing and managing related files grouped in the same XML project. The actions available on the context menu and toolbar associated to this panel, enable the creation of XML projects and shortcuts to various operations on the project documents.



**Figure 22: The Project View**

The default layout initialized by the **Window > Reset Layout** menu item positions the **Project** view on the left side of the Oxygen XML Editor window, above *the Outline view*. A closed view can be quickly reopened at any time with the **Project > Show Project View** menu action.

The tree structure occupies most of the view area. In the upper left side of the view, there is a drop-down list that holds all recently used projects and project management actions:

- **Open Project ... (Ctrl+F2)** - Opens an existing project. An alternate way to open a project is to drop an Oxygen XML Editor XPR project file from the file explorer in the **Project panel**.
- **New Project** - Creates a new, empty project.

The following actions are grouped in the upper right corner:

- **Collapse All** - Collapses all project tree folders. You can also collapse/expand a project tree folder if you select it and press the **Enter** key.
- **Link with Editor** - When selected, the project tree highlights the currently edited file.

**Note:** This button is disabled automatically when you move to the **Debugger** perspective.

- **Settings** - A sub-menu containing the following actions:
  -  **Filters** - Allows you to filter the information displayed in the **Project** view. Click the toolbar button to set filter patterns for the files you want to show or hide. Also, you can set filter patterns for the linked directories that are hidden.
  - **Show Full Path** - When selected, linked files and folders are presented with a full file path.
  - **Enable Master Files Support** - Select this option to enable the *Master Files support*.
  - **Change Search and Refactor operations scope...** - Allows you to change the collection of documents that define the context of the *search and refactor operations*.
    - **Use only Master Files, if enabled** - Restricts Oxygen XML Editor to perform the search and refactor operations starting from the master files defined for the current resource. This option is available when you select **Project** in the **Select the scope for Search and Refactor operations** dialog and the **Master Files** support is enabled.

The files are organized in an XML project usually as a collection of folders. There are two types of folders:

- *Logical folders* - marked with a blue icon on Windows and Unix/Linux () and a magenta icon on Mac OS X (). This folder type has no correspondent on the physical disk, being used as containers for related items. Creating and deleting them does not affect the file system on disk.
- *Linked folders* - marked with a yellow icon on Windows and a blue icon on Mac OS X which is exactly the folder icon used by the Windows Explorer and Mac OS Finder applications. Their content mirror a real folder existing in the file system on disk.

### Creating New Project Items

A series of actions are available in the contextual menu:

- **New >  File** - Creates a new file and adds it to the project structure.
-  **Add Folder** - Adds a link to a physical folder, whose name and content mirror a real folder existing in the file system on disk. The icon of this action is different on Mac OS X () as the standard folder icon on Mac OS X is not the usual one from Windows and Unix/Linux systems.
- **New >  Logical Folder** - Creates a logical folder in the tree structure (the icon is a magenta folder on Mac OS X - ).
- **New > Logical Folders from Web** - Replicates the structure of a remote folder accessible over FTP/SFTP/WebDAV, as a structure of logical folders. The newly created logical folders contain the file structure of the folder it points to.
- **New > Project** - Creates a new project, after closing the current project and all open files.

### Add Content to a Logical Folder

You can add content to a logical folder using one of the actions available in the contextual menu:

-  **Add Folder** - Adds a link to a physical folder, whose name and content mirror a real folder existing in the file system on disk. The icon of this action is different on Mac OS X () as the standard folder icon on Mac OS X is not the usual one from Windows and Unix/Linux systems.
-  **Add Files** - Adds links to files on disk.
-  **Add Edited File** - Adds a link to the current edited file to the project.

### Managing Project Content

You can create linked folders by dragging and dropping a folder from the Windows Explorer / Mac OS X Finder over the project tree or by selecting in the contextual menu **Add Folder**. Also the structure of the project tree can be changed with drag and drop operations on the files and folders of the tree.

When adding files to a project, the default target is the project root. To change a target, select a new folder. Files may have multiple instances within the folder system, but cannot appear twice within the same folder.

To remove one or more files or folders, select them in the project tree and press the **Delete** key or run the contextual menu action  **Remove from Project**. To remove a file or folder both from project and disk, run the contextual menu action  **Remove from Disk (Shift+Delete)** which is available for both logic and linked files.



**Caution:** In most cases this action is irreversible, deleting the file permanently. Under particular circumstances (if you are running a Windows installation of Oxygen XML Editor and the *Recycle Bin* is active) the file is moved to *Recycle Bin*.

To create a file inside a linked folder, choose the **New** >  **File** action from the contextual menu.

There are three ways yo rename an item in the **Project** view: To begin editing an item name in the **Project** view, select the item and do one of the following:

- invoke the **Rename** action from the contextual menu;
- press **F2**;
- click the selected item.

To finish editing the item name press **Enter**.



**Note:**

- Files or folders are renamed both in the Oxygen XML Editor **Project** view and on the local disk;
- The **Rename** action is also available on logic files.

If a project folder contains many documents, a certain document can be quickly located in the project tree if the user selects with the mouse the folder containing the desired document (or some arbitrary document in this folder) and types the first characters of the document name. The desired document is automatically selected as soon as the typed characters uniquely identify its name in the folder. The selected document can be opened by pressing the **Enter** key, by double-clicking it and with one of the **Open** actions from the pop-up menu. The files with known types are opened in the associated editor while the *binary files* are opened with the associated system application. To open a file of known type with other editor than the default one, use the **Open with** action.

The project file is saved automatically on disk, every time the content of the Project view is modified by actions like adding or removing files or folders and drag and drop to/from the Project view.

## Validate Files

The currently selected files in the **Project** view can be validated against a schema of type Schematron, XML Schema, Relax NG, NVDL, or a combination of the later with Schematron with one of the following contextual menu actions:

-  **Check Well-Formedness** - checks if the selected file or files are well-formed.
-  **Validate** - validates the selected file or files against their associated schema. EPUB files make an exception, because this action triggers a *Validate and Check for Completeness* operation.
- **Validate with Schema...** - validates the selected file of files against a specified schema.
-  **Configure Validation Scenario** - allows you to configure and run a *validation scenario*.

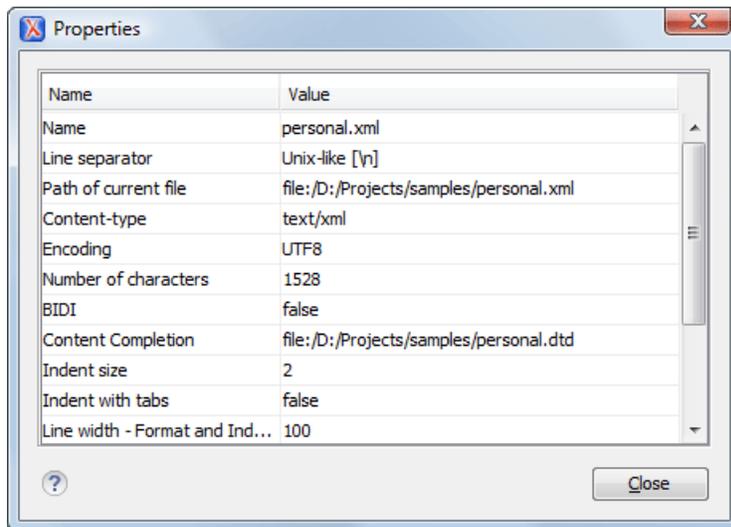
## Applying Transformation Scenarios

The currently selected files in the **Project** view can be transformed in one step with one of the actions **Transform** >

 **Apply Transformation Scenario(s)**, **Transform** >  **Configure Transformation Scenario(s)...** and **Transform** >  **Transform with...** available on the right-click menu of the **Project** view. This, together with the logical folder support of the project allows you to group your files and transform them very easily.

If the resources from a linked folder in the project have been changed outside the view, you can refresh the content of the folder by using the  **Refresh** action from the contextual menu. The action is also performed when selecting the linked resource and pressing F5 key

A list of useful file properties like the ones available in *the Properties view* can be obtained with the  **Properties** action of the contextual menu invoked on a file node of the **Project** view tree, in the following dialog:



**Figure 23: The Properties Dialog**

Right-clicking any object in the tree view displays the **Project** menu with functions that can be performed on, or from the selected object. Options available from the **Project** menu are specific to the object type selected in the tree view.

You can also use drag and drop to arrange the files in logical folders (but not in linked folders). Also, dragging and dropping files from the project tree to the editor area results in the files being opened.

### Other Context-Dependent Actions

Many of the actions available in the **Project** view are grouped in a contextual menu. This menu is displayed after selecting a file or folder and then pressing right-click (or Ctrl+Click on Mac OS X)

- **Show in Explorer** (or **Show in Finder** on Mac OS X) - On Windows, the content of the selected folder, or the selected file is presented in a specific explorer window. On MAC OS X, the parent folder is opened and the selected folder is highlighted in a specific finder window. This window also presents selected files.
- **Open with** - Open selected file with one of internal tools: *SVG Viewer*, *Hex Viewer*, *Large File Viewer*, *MathML Editor*, *WSDL/SOAP Analyzer*, *DITA Maps Manager*, *Archive Browser*.
- **Open All Files** - Opens in the editor view all files contained by the selected resources.
-  **Refresh** - Refreshes the content of the **Project** view;

 **Note:** When you refresh the content of the **Project** view, Oxygen XML Editor also refreshes the dependencies between the resources in *the Master Files directory*.

-  **Find/Replace in Files** - Allows you to *find and replace text in multiple files*.
-  **Check Spelling in Files** - Allows you to *check the spelling of multiple files*.
-  **Open in SVN Client** - *Syncro SVN Client* tool is opened and it highlights the selected resource in its corresponding working copy.

### Menu Level Actions

The following actions are available in the **Project** menu:

-  **New Project** - Creates a new, empty project.
-  **Open Project ... (Ctrl+F2)** - Opens an existing project. An alternate way to open a project is to drop an Oxygen XML Editor XPR project file from the file explorer in the **Project** panel.

- **Save Project As...** - Allows you to save the current project under a different name.
- **Validate all project files** - Checks if the project files are well-formed and their mark-up conforms with the specified DTD, XML Schema, or Relax NG schema rules. It returns an error list in the message panel.
- **Show Project View** - Displays the project view.
- **Reopen Project** - Contains a list of links of previously used projects. This list can be emptied by invoking the **Clear history** action.

### Team Collaboration - Apache Subversion™

There is an *SVN (Subversion) Client* application embedded in Oxygen XML Editor. You may start it from the **Tools** menu and use it for synchronizing your working copy with a central repository.

Another way of starting it is by using the contextual menu of the **Project** tree: **Team > Open in SVN Client**. This action displays Syncro SVN Client and shows the selected project file in the **Working Copy** view.

### Project Level Settings

You can store into the project not only lists of files and directories, but also transformation scenarios and other setting specific to that project. For more information see the *Preference Sharing* and *Sharing the Transformation Scenarios* topics.

## Defining Master Files at Project Level

This chapter details the **Master Files** support available in Oxygen XML Editor.

### Introduction

The **Master Files** support helps you to simplify the configuration and development of XML projects. A master file generally means the root of an import/include tree of modules.

Oxygen XML Editor allows you to define master files at project level. These master files are automatically used by Oxygen XML Editor to determine the context for operations like validation, content-completion, refactoring or search for XSD, XSL and RNG modules. Oxygen XML Editor maintains the hierarchy of the master files, helping you to determine the editing context.

### Master Files Benefits

When you edit a module after defining the master files, you have the following benefits:

- when the module is validated, Oxygen XML Editor automatically identifies the master files which include that module and validate all of them;
- the *Content Completion Assistant* presents all the components collected starting from the master files towards the modules they include;
- *the Outline view* displays all the components defined in the master files hierarchy;
- the master files defined for the current module determines the *scope of the search and refactory actions*. Oxygen XML Editor performs the search and refactory actions in the context that the master files determine, improving the speed of execution.

### Enabling the Master Files Support

Oxygen XML Editor stores the master files in a folder located in the **Project** view, as the first child of the project root. The **Master Files** support is disabled by default. To enable the **Master Files** support, go to the **Settings** menu of the **Project** view and select **Enable Master Files Support**. You can also select **Enable Master Files Support** from the contextual menu of the **Master Files** directory, or from the contextual menu of the project itself. Oxygen XML Editor allows you to enable/disable the **Master Files** support for each project you are working on.

When the master files support is disabled Oxygen XML Editor displays a window tip located at the bottom of the project view. This window contains an **Enable** button and a **read more...** option. Clicking the **read more** option takes you to the user guide. Clicking the **Enable** button opens the **Enable Master Files** dialog. This dialog contains general information about the **Master Files** support and allows you to enable the support. You can also use the **Detect and Enable** option to detect the master files from the current project.

 **Note:** Once you close this window tip, Oxygen XML Editor hides it for all projects. To make the window tip reappear, restore Oxygen XML Editor to its default settings.

 **Note:** Restoring Oxygen XML Editor to its default settings causes loss of your customized options.

## Detecting Master Files

Oxygen XML Editor allows you to detect the master files using the  **Detect Master Files...** option available in the contextual menu of the **Project** view. This action applies to the folders you select in the project. To detect master files over the entire project do one of the following:

- right click the root of the project and select  **Detect Master Files...**;
- use the  **Detect Master Files from Project...** option available in the contextual menu of the **Master Files** folder.

Both these options display the **Detect Master Files** wizard dialog. In the first panel you can select what type of master files you want Oxygen XML Editor to detect (XML schema, XSLT Stylesheets, or Relax NG Schema). In the following panel the detected master files are presented in a tree like fashion. The resources are grouped in three categories:

- Possible master files - the files presented on the first level in this category are not imported/included from other files. These files are most likely to be set as master files.
- Cycles - the files that are presented on the first level have circular dependencies between them. Any of the files presented on the first level of a cycle is a possible master file.
- Standalone - files that do not include/import other files and are also not included/imported themselves. No need to be set as master files.

To set the master files you can enable their check-boxes. Oxygen XML Editor marks all the children of a master file as modules. Modules are rendered in gray and their tool-tip presents a list with their master files. A module can be accessed from more than one master file.

The third panel displays a list with the selected master files. Click the **Finish** button to add the master files in the **Master Files** folder.

You can use the **Select Master Files** option to mark automatically all master files. This action sets as master files all the resources from the **Possible Master Files** category and the first resource of each **Cycle**.

 **Note:** We recommend you to add only top-level files (files that are the root of the include/import graph) in the **Master Files** directory. Keep the file set to a minimum and only add files that import or include other files.

 **Note:** In case the **Master Files** support is disabled, the **Master Files** directory is rendered only if it contains master files.

## Adding/Removing a Master File

The **Master Files** directory contains only logic folders and linked files. To add files in the **Master Files** directory, use one of the following methods:

- right click a file from your project and select  **Add to Master Files** from the contextual menu;
- select  **Add Files** or  **Add Edited File** from the contextual menu of the **Master Files** directory;
- drag and drop files in the **Master Files** directory;
- from the contextual menu of the  **Resource Hierarchy Dependencies** view, using the  **Add to Master Files** action.

The master files already defined in the project are marked automatically in the tree and cannot be removed. The only way to disable a master file is to delete it from the **Master Files** folder.

You can view the master files for the current resource in the **Properties** dialog of the **Project** view and the master files for the current editor in the **Properties** and **Information** views.

## Project Validation and Transformation

The **Master Files** support is also useful for project level validation and transformation. When you hover the mouse cursor over a file in the **Master Files** directory, Oxygen XML Editor displays the  **Validate** and  **Transform** buttons at the right of the file. Select one of these buttons to run a transformation, or validation scenario. In case the current node is selected, Oxygen XML Editor executes a batch transformation and validation. In case the current node is not selected, Oxygen XML Editor executes the validation and transformation for the current node only. The behavior of these actions is the same as the behavior of the transformation actions available in the contextual menu.

 **Note:** The tooltip of the  **Validate** and  **Transform** buttons displays the associated scenarios that you can execute.

When you hover the mouse cursor over the **Master Files** directory itself, apart from the  **Validate** and  **Transform** buttons, Oxygen XML Editor displays a  **Help** button. Either click this button, or press F1 on your keyboard to open the Help section regarding the **Master Files** support.

### The Contextual Menu of the Master Files

The contextual menu of the **Master Files** directory contains the following actions:

- **New** - allows you to create a file, logical folder, or project;
-  **Add Files** - allows you to add master files to the **Master Files** directory;
-  **Add Edited File** - use this option to add the file you are editing to the **Master Files** directory;
- **Open All Files** - opens all the files of the **Master Files** directory;
-  **Paste** - pastes the files you copy in the **Master Files** directory;
- **Rename** - allows you to rename a file of the **Master Files** directory;
-  **Refresh** - refreshes the content of the **Master Files** directory;
-  **Find/Replace in Files...** - opens the *Find/Replace dialog*;
-  **Open/Find Resource** - opens the *Open/Find Resource dialog*;
-  **Check Spelling in Files** - opens the *Check Spelling in files dialog*;
- **Transform** - this action allows you to select one of the following options:
  -  **Apply Transformations Scenario(s)** - applies the transformation scenarios associated with the **Master Files** directory;
  -  **Configure Transformation Scenario(s)...** - opens the *Configure Transformation Scenario dialog*;
  -  **Transform with...** - opens the **Transform with** dialog which allows you to select the transformation scenario you want to execute;
- **Validate** - this action allows you to select one of the following options:
  - **Check Well-Formedness** - allows you to check if a document is *Namespace Well-Formed XML*;
  - **Validate** - Oxygen XML Editor performs the validation of the master files;
  - **Validate with Schema** - opens the **Validate with** dialog. Oxygen XML Editor performs the validation of the master files using a schema;
  - **Configure Validation Scenario** - opens the *Configure validation scenario dialog*.
-  **Detect Master Files from Project...** - enables automatic detection of master files;
- **Enable Master Files Support** - select this option to enable the **Master Files** support.

## Editing XML Documents

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This section explains the XML editing features of the application. All the user interface components and actions available to users are described in detail with appropriate procedures for various tasks.

## Associate a Schema to a Document

This section explains the methods of associating a schema to a document for validation and content completion purposes.

### Setting a Schema for Content Completion

This section explains the available methods of setting a schema for content completion in an XML document edited in Oxygen XML Editor.

### Supported Schema Types for XML Documents

The supported schema types are:

- W3C XML Schema 1.0 and 1.1 (with and without embedded Schematron rules);
- DTD;
- Relax NG - XML syntax (with and without embedded Schematron rules);
- Relax NG - compact syntax;
- NVDL;
- Schematron (both ISO Schematron and Schematron 1.5).

### Setting a Default Schema

Oxygen XML Editor uses the following search pattern when it tries to detect an XML schema:

- in the *validation scenario* associated with the document;
- in the validation scenario associated with the document type (if defined).
- specified in the document;

 **Note:** If a DTD schema is specified in the document, the content completion for Author mode is based on this schema (even if there is already one detected from the validation scenario);

- detected from the document type that matches the edited document - Each document type available in *Document Type Association* preferences page contains a set of rules for associating a schema with the current document.

 **Note:** The locations are sorted by priority, from high to low.

The schema has one of the following types: XML Schema, XML Schema with embedded Schematron rules, Relax NG (XML syntax or compact syntax), Relax NG (XML syntax) with embedded Schematron rules, Schematron, DTD, NVDL.

The rules are applied in the order they appear in the table and take into account the local name of the root element, the default namespace and the file name of the document.

### Important:

The editor is creating the content completion lists by analysing the specified schema and the current context (the position in the editor). If you change the schema, then the list of tags to be inserted is updated.

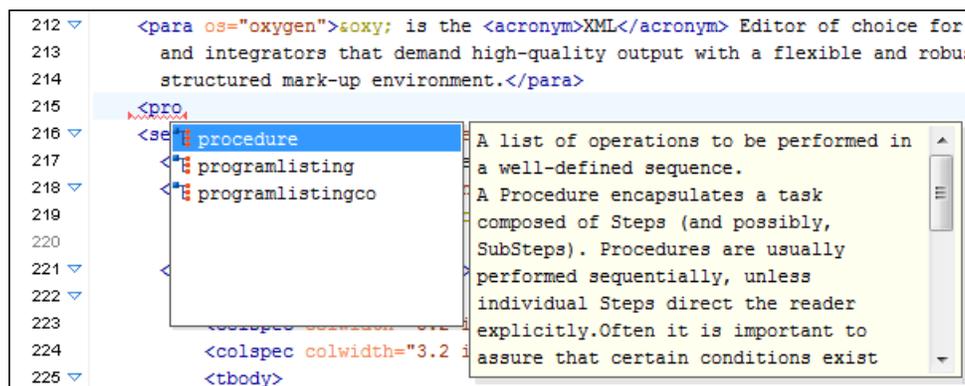


Figure 24: Content Completion Driven by DocBook DTD

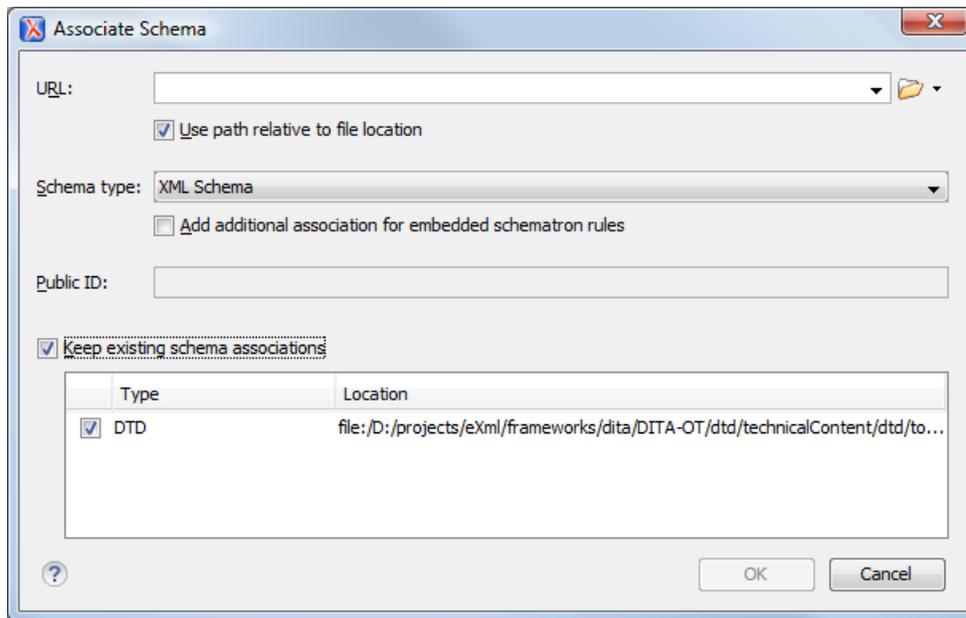
## Making the Schema Association Explicit in the XML Instance Document

The schema used by the *content completion* assistant and *document validation* engine can be associated with the document using the **Associate Schema** action. For most of the schema types, it uses *the xml-model processing instruction*, the exceptions being:

- W3C XML Schema - the `xsi:schemaLocation` attribute is used;
- DTD - the `DOCTYPE` declaration is used.

The association can specify a relative file path or a URL of the schema. The advantage of relative file path is that you can configure the schema at file level instead of document type level.

Go to menu **Document > Schema > Associate schema...** or click the  **Associate schema** toolbar button to select the schema that will be associated with the XML document. The following dialog is displayed:



**Figure 25: The Associate Schema Dialog**

The available options are:

- **URL** - contains a predefined set of schemas that are used more often and it also keeps a history of the last used schemas. The URL must point to the schema file which can be loaded from the local disk or from a remote server through HTTP(S), FTP(S) or a *custom protocol*;
- **Schema type** - selected automatically from the list of possible types in the **Schema type** combo box (XML Schema, DTD, Relax NG, Relax NG Compact, Schematron, NVDL) based on the extension of the schema file that was entered in the **URL** field;
- **Public ID** - Specify a public ID if you have selected a DTD;
- **Add additional association for embedded schematron rules** - if you have selected XML Schema or Relax NG schemas with embedded Schematron rules, enable this option;
- **Use path relative to file location** - enable this option if the XML instance document and the associated schema contain relative paths. The location of the schema file is inserted in the XML instance document as a relative file path. This practice allows you, for example, to share these documents with other users, without running into problems caused by different project locations on physical disk;
- **Keep existing schema associations** - enable this option to keep the associations of the currently edited document with a Schema when you associate a new one.

The association with an XML Schema is added as an attribute of the root element. The **Associate schema** action adds a:

- `xsi:schemaLocation` attribute, if the root element of the document sets a default namespace with an `xmlns` attribute;
- or a `xsi:noNamespaceSchemaLocation` attribute, if the root element does not set a default namespace.

The association with a DTD is added as a DOCTYPE declaration. The association with a Relax NG, Schematron or NVDL schema is added as *xml-model processing instruction*.

### Associating a Schema With the Namespace of the Root Element

The namespace of the root element of an XML document can be associated with an XML Schema using an *XML catalog*. If there is no `xsi:schemaLocation` attribute on the root element and the *XML* document is not matched with a *document type*, the namespace of the root element is searched in *the XML catalogs set in Preferences*.

If the XML catalog contains an `uri` or `rewriteUri` or `delegateUri` element, its schema will be used by the application to drive the *content completion* and document *validation*.

### The xml-model Processing Instruction

The `xml-model` processing instruction associates a schema with the XML document that contains the processing instruction. It must be added at the beginning of the document, just after the XML prologue. The following code snippet contains an `xml-model` processing instruction declaration:

```
<?xml-model href="../schema.sch" type="application/xml" schematypens="http://purl.oclc.org/dsdl/schematron" phase="ALL" title="Main schema"?>
```

It is available in the *content completion* assistant, before XML document root element and has the following attributes:

- `href` - schema file location. Mandatory attribute.
- `type` - content type of schema. Optional attribute with the following possible values:
  - for DTD the recommended value is `application/xml-dtd`;
  - for W3C XML Schema the recommended value is `application/xml` or can be left unspecified;
  - for RELAX NG the recommended value is `application/xml` or can be left unspecified;
  - for RELAX NG - compact syntax the recommended value is `application/relax-ng-compact-syntax`;
  - for Schematron the recommended value is `application/xml` or can be left unspecified;
  - for NVDL the recommended value is `application/xml` or can be left unspecified.
- `schematypens` - namespace of schema language of referenced schema with the following possible values:
  - for DTD - not specified;
  - for W3C XML Schema the recommended value is `http://www.w3.org/2001/XMLSchema`;
  - for RELAX NG the recommended value is `http://relaxng.org/ns/structure/1.0`;
  - for RELAX NG - not specified;
  - for Schematron the recommended value is `http://purl.oclc.org/dsdl/schematron`;
  - for NVDL the recommended value is `http://purl.oclc.org/dsdl/nvd1/ns/structure/1.0`.
- `phase` - phase name of validation function in Schematron schema. Optional attribute.
- `title` - title for associated schema. Optional attribute.

Older versions of Oxygen XML Editor used the `oxygen` processing instruction with the following attributes:

- `RNGSchema` - specifies the path to the Relax NG schema associated with the current document;
- `type` - specifies the type of Relax NG schema. It is used together with the `RNGSchema` attribute and can have the value "xml" or "compact";
- `NVDLSchema` - specifies the path to the NVDL schema associated with the current document;
- `SCHSchema` - specifies the path to the SCH schema associated with the current document.

 **Note:** Documents that use the `oxygen` processing instruction are compatible with newer versions of Oxygen XML Editor.

## Learning Document Structure

When working with documents that do not specify a schema, or for which the schema is not known or does not exist, Oxygen XML Editor is able to learn and translate the document structure to a DTD. You can choose to save the learned structure to a file in order to provide a DTD as an initialization source for *content completion* and *document validation*. This feature is also useful for producing DTD's for documents containing personal or custom element types.

When you open a document that is not associated with a schema, Oxygen XML Editor automatically learns the document structure and uses it for *content completion*. To disable this feature you have to uncheck the checkbox *Learn on open document in the user preferences*.

### Create a DTD from Learned Document Structure

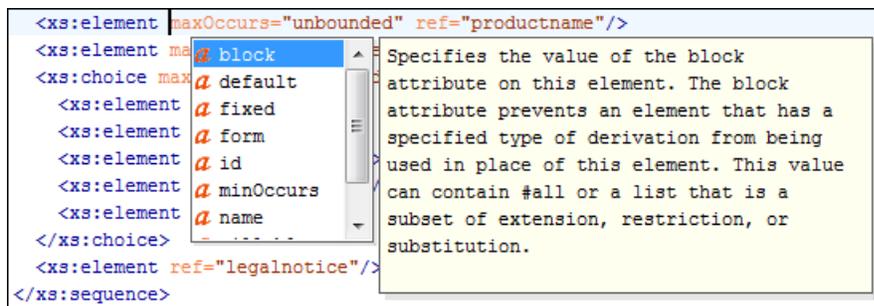
When there is no schema associated with an XML document, Oxygen XML Editor can learn the document structure by parsing the document internally. This feature is enabled with *the option Learn on open document* that is available in the user preferences.

To create a DTD from the learned structure:

1. Open the XML document for which a DTD will be created.
2. Go to menu **Document > XML Document > Learn Structure (Ctrl+Shift+L)**.  
The **Learn Structure** action reads the mark-up structure of the current document. The **Learn completed** message is displayed in the application's status bar when the action is finished.
3. Go to menu **Document > XML Document > Save Structure (Ctrl+Shift+S)**. Enter the DTD file path.
4. Press the *Save* button.

## Streamline with Content Completion

The intelligent Content Completion Assistant available in Oxygen XML Editor enables rapid, in-line identification and insertion of structured language elements, attributes and, in some cases, their parameter options.



**Figure 26: Content Completion Assistant**

The functioning of the Content Completion Assistant feature is schema-driven (XML Schema, DTD, and RELAX NG). When Oxygen XML Editor detects a schema, it logs its URL in the *Information view*.

The Content Completion Assistant is enabled by default, but you can disable it from *Options > Preferences > Editor > Content Completion*. It is activated:

- automatically, after a configurable delay from the last key press of the < character. You can adjust the delay *from the Content Completion preferences page*;
- on demand, by pressing CTRL+Space on a partial element or attribute name.

 **Note:** If the Content Completion list contains only one valid proposal, when you press the CTRL+Space shortcut key, the proposal is automatically inserted.

 **Note:** You can also start the Content Completion Assistant from **Document > Content Completion > Start Content Completion**.

When active, it displays a list of context-sensitive proposals valid at the current caret position. Elements are highlighted in the list using the Up and Down cursor keys on your keyboard. For each selected item in the list, the Content Completion Assistant displays a documentation window. You can customize the size of the documentation window by dragging its top, right, and bottom borders.

To insert the selected content:

- press Enter or Tab on your keyboard to insert both the start and end tags.
- press CTRL + Enter on your keyboard. The application inserts both the start and end tags and positions the cursor between the tags, so you can start typing content.

 **Note:** When the DTD, XML Schema or RELAX NG schema specifies required child elements for the newly added element, they are inserted automatically only if the Add Element Content option (found in **Preferences > Editor > Content Completion** options page) is enabled. The Content Completion assistant can also add optional content and first choice particle, as specified in the DTD or XML Schema or RELAX NG schema. To activate this feature, select the **Add optional content** and **Add first Choice particle** check boxes in the **Preferences > Editor > Content Completion** options page.

After inserting an element, the cursor is positioned:

- before the > character of the start tag, if the element allows attributes, in order to enable rapid insertion of any of the attributes supported by the element. Pressing the space bar displays the Content Completion list once again. This time it contains the list of allowed attribute names. If the attribute supports a fixed set of parameters, the assistant list displays the list of valid parameters. If the parameter setting is user-defined and therefore variable, the assistant is closed to enable manual insertion. The values of the attributes can be learned from the same elements in the current document.
- after the > character of the start tag if the element has no attributes.

The Content Completion assistant is displayed:

- anywhere within a tag name or at the beginning of a tag name in an XML document, XML Schema, DTD, or Relax NG (full or compact syntax) schema;
- anywhere within an attribute name or at the beginning of an attribute name in any XML document with an associated schema;
- within attribute values or at the beginning of attribute values in XML documents where lists of possible values have been defined for that element in the schema associated with the document.

The items that populate the Content Completion Assistant depend on the element structure specified in the DTD, XML Schema, Relax NG (full or compact syntax) schema, or NVDL schema associated with the edited document.

 **Note:** The Content Completion Assistant is able to offer elements defined both by XML Schemas version 1.0 and 1.1.

The number and type of elements displayed by the Content Completion Assistant is dependent on the cursor's current position in the structured document. The child elements displayed within a given element are defined by the structure of the specified DTD, XML Schema, Relax NG (full or compact syntax) schema, or NVDL schema.

A schema may declare certain attributes as *ID* or *IDREF/IDREFS*. When the document is validated, Oxygen XML Editor checks the uniqueness and correctness of the ID attributes. It also collects the attribute values declared in the document to prepare the Content Completion Assistant's list of proposals. This is available for documents that use DTD, XML Schema, and Relax NG schema.

Also, values of all the *xml:id* attributes are handled as ID attributes. They are collected and displayed by the Content Completion Assistant as possible values for *anyURI* attributes defined in the schema of the edited document. This works only for XML Schema and Relax NG schemas.

For documents that use an XML Schema or Relax NG schema, the content assistant offers proposals for attributes and elements values that have as type an enumeration of tokens. Also, if a default value or a fixed value is defined in the XML Schema used in validation for an attribute or element, then that value is offered in the Content Completion Assistant window.

## Set Schema for Content Completion

The DTD, XML Schema, Relax NG, or NVDL schema used to populate the Content Completion assistant is specified in the following methods, in order of precedence:

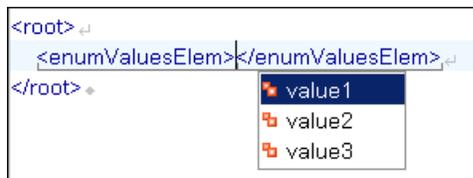
- the schema specified explicitly in the document. In this case Oxygen XML Editor reads the beginning of the document and resolves the location of the DTD, XML Schema, Relax NG schema, or NVDL schema;
- the default schema rule declared in [the Document Type Association preferences panel](#) which matches the edited document;
- for XSLT stylesheets, the schema specified in the Oxygen XML Editor [Content Completion options](#). Oxygen XML Editor will read the Content Completion settings when the prolog fails to provide or resolve the location of a DTD, XML Schema, Relax NG or NVDL schema;
- for XML Schemas, the schema specified in the Oxygen XML Editor [Content Completion options](#). Oxygen XML Editor will read the Content Completion settings and the specified schema will enhance the content completion inside the `xs:annotation/xs:appinfo` elements of the XML Schema.

## Content Completion in Documents with Relax NG Schemas

Inside the documents that use a Relax NG schema the Content Completion assistant is able to present element values if such values are specified in the Relax NG schema. Also in Relax NG documents the Content Completion assistant presents additional values of type ID for an *anyURI* data type. It presents also pattern names defined in the Relax NG schema as possible values for pattern references. For example if the schema defines an *enumValuesElem* element like:

```
<element name="enumValuesElem">
  <choice>
    <value>value1</value>
    <value>value2</value>
    <value>value3</value>
  </choice>
</element>
```

In documents based on this schema, the Content Completion assistant offers the following list of values:



**Figure 27: Content Completion assistant - element values in Relax NG documents**

## Schema Annotations

If the document's schema is an XML Schema, Relax NG (full syntax), NVDL or DTD and it contains element, attributes or attributes values annotations, these will be presented when the content completion window is displayed, only if the option [Show annotations](#) is enabled. Also the annotation is presented in a small tooltip window displayed automatically when the mouse hovers over an element or attribute annotated in the associated schema of the edited document. The tooltip window can be invoked at any time using the F2 shortcut.

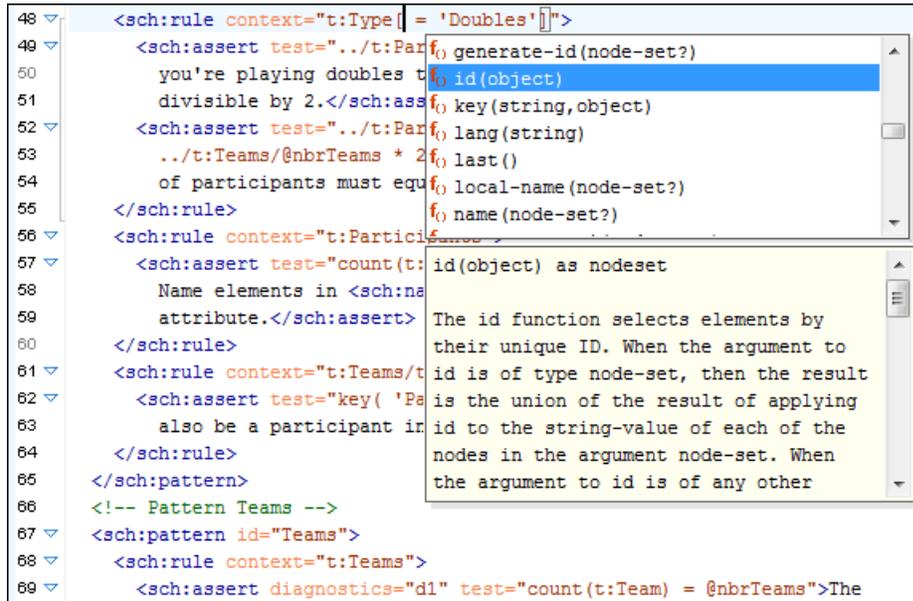
In an XML Schema the annotations are specified in an `<xs:annotation>` element like this:

```
<xs:annotation>
  <xs:documentation>
    Description of the element.
  </xs:documentation>
</xs:annotation>
```

If the current element / attribute in the edited document does not have an annotation in the schema and that schema is an XML Schema, Oxygen XML Editor seeks an annotation in the type definition of the element / attribute or, if no annotation is found there, in the parent type definition of that definition, etc.

When editing a Schematron schema the content completion assistant displays XSLT 1.0 functions and optionally XSLT 2.0 functions in the attributes *path*, *select*, *context*, *subject*, *test* depending on [the Schematron options](#) that are set in

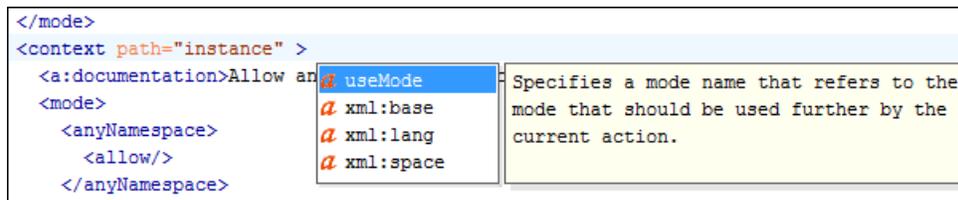
Preferences. If the Saxon 6.5.5 namespace (`xmlns:saxon="http://icl.com/saxon"`) or the Saxon 9.4.0.4 namespace is declared in the Schematron schema (`xmlns:saxon="http://saxon.sf.net/"`) the content completion displays also the XSLT Saxon extension functions as in the following figure:



**Figure 28: XSLT extension functions in Schematron schemas documents**

In a Relax NG schema any element outside the Relax NG namespace (`http://relaxng.org/ns/structure/1.0`) is handled as annotation and the text content is displayed in the annotation window together with the content completion window:

For NVDL schemas annotations for the elements / attributes in the referred schemas (XML Schema, RNG, etc) are presented



**Figure 29: Schema annotations displayed at Content Completion**

The following HTML tags are recognized inside the text content of an XML Schema annotation: `p`, `br`, `ul`, `li`. They are rendered as in an HTML document loaded in a web browser: `p` begins a new paragraph, `br` breaks the current line, `ul` encloses a list of items, `li` encloses an item of the list.

For DTD Oxygen XML Editor defines a custom mechanism for annotation using comments enabled from the option *Use DTD comments as annotations*. The text of a comment with the following format will be presented on content completion:

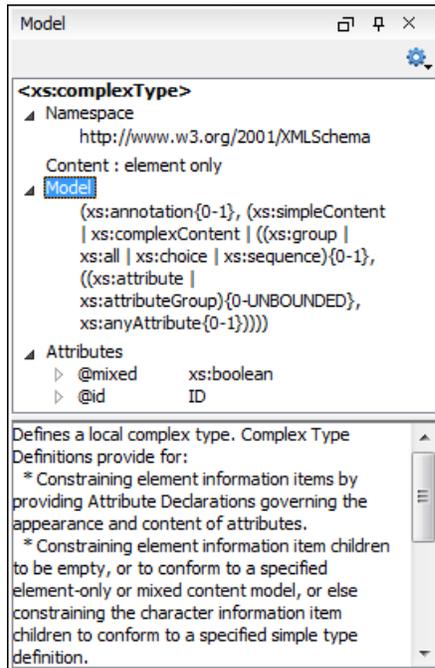
```
<!--doc:Description of the element. -->
```

### Content Completion Helper Views

Information about the current element being edited is also available in the Model view and Attributes view, located on the left-hand side of the main window. The Model view and the Attributes view combined with the powerful Outline view provide spatial and insight information on the edited document.

## The Model View

The Model view presents the structure of the currently edited tag and tag documentation defined as annotation in the schema of the current document.



**Figure 30: The Model View**

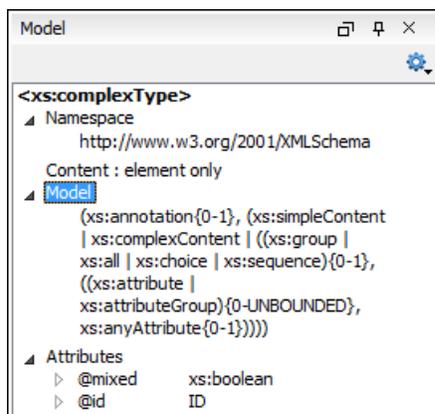
The Model view is comprised of:

- [An element structure panel.](#)
- [An annotation panel.](#)

### *The Element Structure Panel*

The element structure panel shows the structure of the current edited or selected tag in a tree-like format.

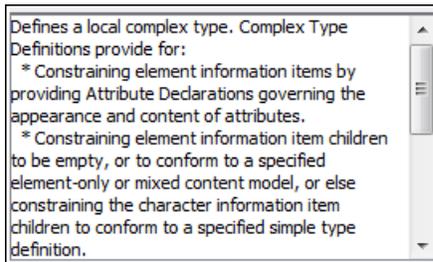
The information includes the name, model and attributes the currently edited tag may have. The allowed attributes are shown along with imposed restrictions, if any.



**Figure 31: The Element Structure Panel**

## The Annotation Panel

The **Annotation** panel displays the annotation information for the currently selected element. This information is collected from the XML schema.



**Figure 32: The Annotation panel**

## The Attributes View

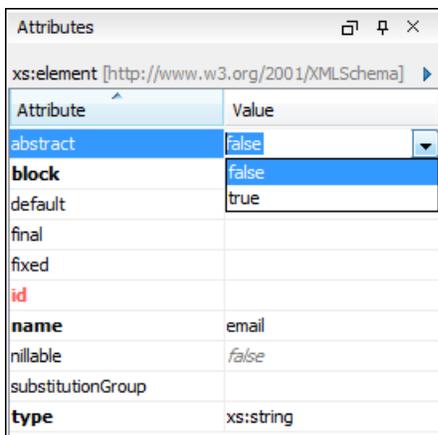
The **Attributes View** presents all possible attributes of the current element.

The view allows you to insert attributes or change the value of the already used attributes for the current editable element. An element is editable if either one of the following is true:

- the CSS stylesheet associated with the document does not specify a **false** value for the *-oxy-editable* property associated with the element.
- the element is entirely included into a deleted *Track Changes* marker.
- the element is part of a content fragment that is referenced in **Author** mode from another document.

The attributes present in the document are painted in the **Attributes View** with a bold font. You can start editing the value of an attribute by clicking the **Value** cell of a table row. If the possible values of the attribute are specified as list in the schema associated with the edited document, the **Value** cell works as a list box where you can select one of the possible values to be inserted in the document.

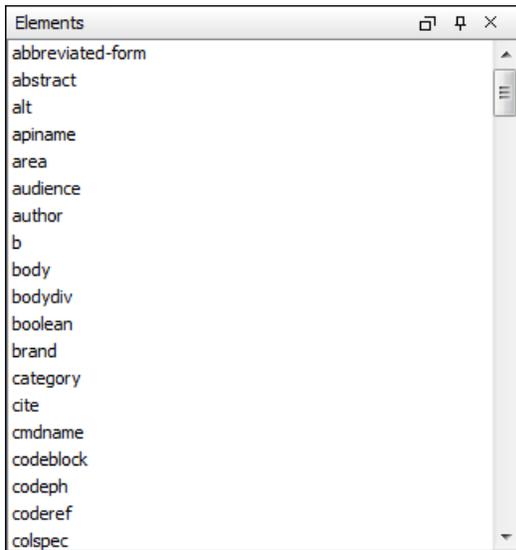
The **Attributes** table is sortable, three sorting modes being available by clicking the **Attribute** column name: alphabetically ascending, alphabetically descending, or custom order. The custom order places the already used attributes at the beginning of the table, as they appear in the element, followed by the rest of the allowed elements, as they are declared in the associated schema.



**Figure 33: The Attributes View**

## The Elements View

The Elements view presents a list of all defined elements that you can insert at the current caret position according to the document's schema. Double-clicking any of the listed elements inserts that element in the edited document. All elements from a sequence are presented but the invalid proposals (which cannot be inserted in the current context) are grayed-out.



**Figure 34: The Elements View**

### The Entities View

This view displays a list with all entities declared in the current document as well as built-in ones. Double clicking one of the entities will insert it at the current cursor position. You can also sort entities by name and value.

 A screenshot of the 'Entities' window in Oxygen XML Editor. It displays a table with two columns: 'Name' and 'Value'. The table contains the following data:
 

Name	Value
lt	<
gt	>
amp	&
apos	'
quot	"
hi-d-att	(topic hi-d)
ut-d-att	(topic ut-d)
indexing-d-att	(topic indexing-d)
hazard-d-att	(topic hazard-d)
abbrev-d-att	(topic abbrev-d)
pr-d-att	(topic pr-d)
sw-d-att	(topic sw-d)
ui-d-att	(topic ui-d)
included-domains	&hi-d-att; ...
nbs	

**Figure 35: The Entities View**

### Code Templates

You can define short names for predefined blocks of code called code templates. The short names are displayed in the Content Completion window when the word at cursor position is a prefix of such a short name. If there is no prefix at cursor position (a whitespace precedes the cursor), all the code templates are listed.

Oxygen XML Editor comes with numerous predefined code templates. You can also *define* your own code templates for any type of editor. For more details, see the [example for XSLT editor code templates](#).

To obtain the template list, you can use the Content Completion on request shortcut key (CTRL+SPACE) or the Code Templates on request shortcut key (CTRL+SHIFT+SPACE). The first shortcut displays the code templates in the same *content completion list with elements from the schema of the document*. The second shortcut displays only the code templates and is the default shortcut of the action **Document > Content Completion > Show Code Templates**.

The syntax of the code templates allows you to use the following *editor variables*:

- **`\${caret}`** - The position where the caret is inserted. This variable can be used in a *code template*, in **Author** operations, or in a *selection plugin*.
- **`\${selection}`** - The XML content of the current selection in the editor panel. This variable can be used in a *code template* and Author operations, or in a *selection plugin*.
- **`\${ask('message', type, ('real\_value1':'rendered\_value1'; 'real\_value2':'rendered\_value2'; ...), 'default\_value')}`** - To prompt for values at runtime, use the *ask('message', type, ('real\_value1':'rendered\_value1'; 'real\_value2':'rendered\_value2'; ...), 'default-value')* editor variable. The following parameters can be set:
  - 'message' - the displayed message. Note the quotes that enclose the message.
  - type - optional parameter. Can have one of the following values:
    - url - input is considered an URL. Oxygen XML Editor checks that the URL is valid before passing it to the transformation;
    - password - input characters are hidden;
    - generic - the input is treated as generic text that requires no special handling;
    - relative\_url - input is considered an URL. Oxygen XML Editor tries to make the URL relative to that of the document you are editing.

 **Note:** You can use the `$ask` editor variable in file templates. In this case, Oxygen XML Editor keeps an absolute URL.

  - combobox - displays a dialog that contains a non-editable combo-box;
  - editable\_combobox - displays a dialog that contains an editable combo-box;
  - radio - displays a dialog that contains radio buttons;
- 'default-value' - optional parameter. Provides a default value in the input text box.

#### Examples:

- ``${ask('message')}`` - Only the message displayed for the user is specified.
  - ``${ask('message', generic, 'default')}`` - 'message' is displayed, the type is not specified (the default is string), the default value is 'default'.
  - ``${ask('message', password)}`` - 'message' is displayed, the characters typed are masked with a circle symbol.
  - ``${ask('message', password, 'default')}`` - same as before, the default value is 'default'.
  - ``${ask('message', url)}`` - 'message' is displayed, the parameter type is URL.
  - ``${ask('message', url, 'default')}`` - same as before, the default value is 'default'.
- **`\${timeStamp}`** - Time stamp, that is the current time in Unix format. It can be used for example to save transformation results in different output files on each transform.
  - **`\${uuid}`** - Universally unique identifier.
  - **`\${id}`** - Application-level unique identifier.
  - **`\${cfn}`** - Current file name without extension and without parent folder.
  - **`\${cfne}`** - Current file name with extension.
  - **`\${cf}`** - Current file as file path, that is the absolute file path of the current edited document.
  - **`\${cfd}`** - Current file folder as file path, that is the path of the current edited document up to the name of the parent folder.
  - **`\${frameworksDir}`** - The path (as file path) of the `frameworks` subfolder of the Oxygen XML Editor installation folder.
  - **`\${pd}`** - Current project folder as file path.
  - **`\${oxygenInstallDir}`** - Oxygen XML Editor installation folder as file path.
  - **`\${homeDir}`** - The path (as file path) of the user home folder.
  - **`\${pn}`** - Current project name.
  - **`\${env(VAR\_NAME)}`** - Value of the `VAR_NAME` environment variable. The environment variables are managed by the operating system. If you are looking for Java System Properties, use the **`\${system(var.name)}`** editor variable.

- `#{system(var.name)}` - Value of the *var.name* Java system property. The Java system properties can be specified in the command line arguments of the Java runtime as `-Dvar.name=var.value`. If you are looking for operating system environment variables, use the `#{env(VAR_NAME)}` editor variable instead.
- `#{date(pattern)}` - Current date. Follows the given pattern. Example: `yyyy-MM-dd`.

## Validating XML Documents

The W3C XML specification states that a program should not continue to process an XML document if it finds a validation error. The reason is that XML software should be easy to write, and that all XML documents should be compatible. With HTML it was possible to create documents with lots of errors (like when you forget an end tag). One of the main reasons that HTML browsers are so big and incompatible, is that they have their own ways to figure out what a document should look like when they encounter an HTML error. With XML this should not be possible.

However, when creating an XML document, errors are very easily introduced. When working with large projects or many files, the probability that errors will occur is even greater. Determining that your project is error-free can be time consuming and even frustrating. For this reason Oxygen XML Editor provides functions that enable easy error identification and rapid error location.

### Checking XML Well-Formedness

A *Well-Formed XML* document is a document that conforms to the XML syntax rules. A *Namespace Well-Formed XML* document is a document that is XML Well-Formed and is also namespace-wellformed and namespace-valid.

The XML Syntax rules for Well-Formed XML are:

- All XML elements must have a closing tag.
- XML tags are case-sensitive.
- All XML elements must be properly nested.
- All XML documents must have a root element.
- Attribute values must always be quoted.
- With XML, white space is preserved.

The namespace-wellformed rules are:

- All element and attribute names contain either zero or one colon.
- No entity names, processing instruction targets, or notation names contain any colons.

The namespace-valid rules are:

- The prefix *xml* is by definition bound to the namespace name *http://www.w3.org/XML/1998/namespace*. It MAY, but need not, be declared, and MUST NOT be undeclared or bound to any other namespace name. Other prefixes MUST NOT be bound to this namespace name.
- The prefix *xmlns* is used only to declare namespace bindings and is by definition bound to the namespace name *http://www.w3.org/2000/xmlns/*. It MUST NOT be declared or undeclared. Other prefixes MUST NOT be bound to this namespace name.
- All other prefixes beginning with the three-letter sequence *x, m, l*, in any case combination, are reserved. This means that users SHOULD NOT use them except as defined by later specifications and processors MUST NOT treat them as fatal errors.
- The namespace prefix, unless it is *xml* or *xmlns*, MUST have been declared in a namespace declaration attribute in either the start-tag of the element where the prefix is used or in an ancestor element (i.e. an element in whose content the prefixed markup occurs). Furthermore, the attribute value in the innermost such declaration MUST NOT be an empty string.

To check if a document is *Namespace Well-Formed XML*, go to **Document > Validate > Check**

**Well-Formedness(Ctrl+Shift+W)**. You can also open the drop-down menu of the  validate button on the toolbar and select  **Check Well-Formedness**. If any error is found the result is returned to the message panel. Each error is one record in the result list and is accompanied by an error message. Clicking the record will open the document containing the error and highlight its approximate location.

**A not Well-Formed XML Document**

```
<root><tag></root>
```

When **Check Well-Formedness** is performed the following error is raised:

```
The element type "tag" must be terminated by the matching end-tag "</tag>"
```

To resolve the error, click in the result list record which will locate and highlight the errors approximate position. Identify which start tag is missing an end tag and insert `</tag>`.

**A not namespace-wellformed document**

```
<x:y></x:y>
```

When **Check document form** is performed the following error is raised:

```
Element or attribute do not match QName production:
QName ::= (NCName ':' )?NCName.
```

**A not namespace-valid document**

```
<x:y></x:y>
```

When **Check document form** is performed the following error is raised:

```
The prefix "x" for element "x:y" is not bound.
```

Also the files contained in the current project and selected with the mouse in *the Project view* can be checked for well-formedness with one action available on the popup menu of the Project view :  **Check Well-Formedness**.

**Validating XML Documents Against a Schema**

A *Valid XML* document is a *Well Formed XML* document, which also conforms to the rules of a schema which defines the legal elements of an XML document. The schema type can be: XML Schema, Relax NG (full or compact syntax), Schematron, Document Type Definition (DTD), or Namespace-based Validation Dispatching Language (NVDL).

The purpose of the schema is to define the legal building blocks of an XML document. It defines the document structure with a list of legal elements.

The  **Validate** function ensures that your document is compliant with the rules defined by an associated DTD, XML Schema, Relax NG, or Schematron schema. XML Schema or Relax NG Schema can embed Schematron rules. For Schematron validations you can select the validation phase.

**Marking Validation Errors and Warnings**

A line with a validation error or warning will be marked in the editor panel by underlining the error region with a red color. Also a red sign will mark the position in the document of that line on the right side ruler of the editor panel. The same will happen for a validation warning, only the color will be yellow instead of red.

The ruler on the right side of the document is designed to display the errors and warnings found during the validation process and also to help the user to locate them more easily. The ruler contains the following areas:

- Top area containing a success validation indicator that will turn green in case the validation succeeded or red otherwise.

A more detailed report of the errors is displayed in the tooltip of the validation indicator. In case there are errors, only the first three of them will be presented in the tooltip.

- Middle area where the error markers are depicted in red (with a darker color tone for the current selected one). The number of markers shown can be limited by modifying the setting **Options > Preferences > Editor > Document checking > Maximum number of problems reported per document**.

Clicking on a marker will highlight the corresponding text area in the editor. The error message is displayed both in the tool tip and in the error area on the bottom of the editor panel.

The *Document checking user preferences* are easily accessible from the button displayed at the beginning of the error message on the bottom of the editor panel.

- Bottom area containing two navigation arrows that will go to the next or to the previous error and a button for clearing all the error markers from the ruler. The same actions can be triggered from menu **Document > Automatic validation > Next Error (Ctrl + .)** and **Document > Automatic validation > Previous Error (Ctrl + ,)**.

The validation status area is the line at the bottom of the editor panel that presents the message of the current validation error selected on the right side ruler. Clicking on  opens the *document checking* page in Oxygen XML Editor user preferences.

Status messages from every validation action are logged into the *Information view*.

If you want to see all the validation error messages *grouped in a view* you should run the action **Validate** which is available both on the **Validate** toolbar and on the **Document > Validate** menu. This action collects all error messages in the **Errors** view.

### Customising Assert Error Messages

To customise the error messages that the Xerces or Saxon validation engines display for the `assert` and `assertion` elements, set the message attribute on these elements. For Xerces, the message attribute has to belong to the <http://xerces.apache.org/> namespace. For Saxon, the message attribute has to belong to the <http://saxon.sourceforge.net/> namespace. The value of the message attribute is the error message displayed in case the assertion fails.

### Validation Example - A DocBook Validation Error

In the following DocBook 4 document the content of the `listitem` element does not match the rules of the DocBook 4 schema, that is `docbookx.dtd`.

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE article PUBLIC "-//OASIS//DTD DocBook XML V4.4//EN"
"http://www.docbook.org/xml/4.4/docbookx.dtd">
<article>
  <title>Article Title</title>
  <sect1>
    <title>Section1 Title</title>
    <itemizedlist>
      <listitem>
        <link>a link here</link>
      </listitem>
    </itemizedlist>
  </sect1>
</article>
```

The **Validate Document** action will return the following error:

Unexpected element "link". The content of the parent element type must match "(calloutlist|glosslist|bibliolist|itemizedlist|orderedlist|segmentedlist|simplelist|variablelist|caution|important|note|tip|warning|literallayout|programlisting|programlistingco|screen|screenco|screenshot|synopsis|cmdsynopsis|funcsynopsis|classsynopsis|fieldsynopsis|constructorsynopsis|destructorsynopsis|methodsynopsis|formalpara|para|simpara|address|blockquote|graphic|graphicco|mediaobject|mediaobjectco|informalequation|informalexample|informalfigure|informaltable|equation|example|figure|table|msgset|procedure|sidebar|qandaset|task|anchor|bridgehead|remark|highlights|abstract|authorblurb|epigraph|indexterm|beginpage)+".

This error message is a little more difficult to understand, so understanding of the syntax or processing rules for the DocBook XML DTD's `listitem` element is recommended. However, the error message does give us a clue as to the source of the problem, indicating that "The content of element type `c` must match".

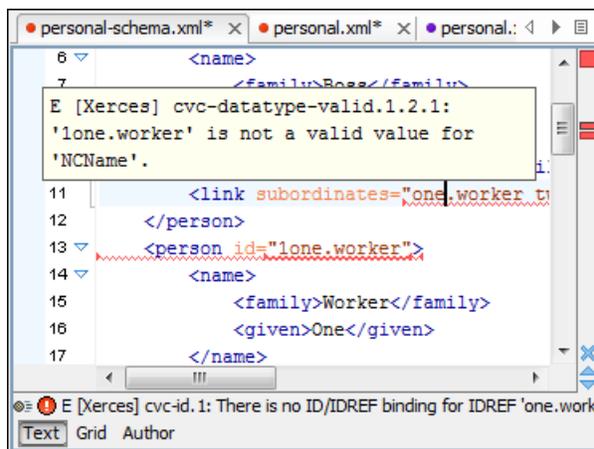
Luckily most standards based DTD's, XML Schema's and Relax NG schemas are supplied with reference documentation. This enables us to lookup the element and read about it. In this case you should learn about the child elements of `listitem` and their nesting rules. Once you have correctly inserted the required child element and nested it in accordance with the XML rules, the document will become valid on the next validation test.

### Caching the Schema Used for Validation

If you don't change the active editor and you don't switch to other application, the schema associated to the current document is parsed and cached by the first **Validate Document** action and is reused by the next actions without re-parsing it. This increases the speed of the validate actions if the schema is large or is located on a remote server on the Web. To reset the cache and re-parse the schema you have to use the  **Reset Cache and Validate** action. This action will also re-parse the catalogs and reset the schema used for content completion.

### Automatic Validation

Oxygen XML Editor *can be configured* to mark validation errors in the document as you are editing. If you *enable the Automatic validation option* any validation errors and warnings will be *highlighted automatically in the editor panel*. The automatic validation starts parsing the document and marking the errors after a *configurable delay* from the last key typed. Errors are highlighted with underline markers in the main editor panel and small rectangles on the right side ruler of the editor panel, *in the same way as for manual validation invoked by the user*.



**Figure 36: Automatic Validation on the Edited Document**

If the error message is long and it is not displayed completely in the error line at the bottom of the editing area, double-clicking on the error icon at the left of the error line or on the error line displays an information dialog with the full error message. The arrow buttons of the dialog enable the navigation to other errors issued by the Automatic Validation feature.

### Custom Validators

If you need to validate the edited document with other validation engine than the built-in one you have the possibility to configure external validators in the Oxygen XML Editor user preferences. After such a custom validator is *properly configured* it can be applied on the current document with just one click on the **Custom Validation Engines** toolbar. The document is validated against the schema declared in the document.

Some validators are configured by default but they are third party processors which do not support the *output message format* of Oxygen XML Editor for linked messages:

- **LIBXML** - Included in Oxygen XML Editor (Windows edition only). It is associated to XML Editor. It is able to validate the edited document against XML Schema, Relax NG schema full syntax, internal DTD (included in the XML document) or a custom schema type. XML catalogs support (the `--catalogs` parameter) and XInclude processing (`--xinclude`) are enabled by default in the preconfigured LIBXML validator. The `--postvalid` parameter is also set by default which allows LIBXML to validate correctly the main document even if the XInclude fragments contain IDREFS to ID's located in other fragments.

For validation against an external DTD specified by URI in the XML document, the parameter `--dtdvalid ${ds}` must be added manually to the DTD validation command line. `${ds}` represents the detected DTD declaration in the XML document.



**Caution:** Known problem: file paths containing spaces are not handled correctly in the LIBXML processor. For example the built-in XML catalog files of the predefined document types (DocBook, TEI, DITA, etc) are not handled by LIBXML if Oxygen XML Editor is installed in the default location on Windows (C:\Program Files) because the built-in XML catalog files are stored in the `frameworks` subfolder of the installation folder which in this case contains at least one space character in the file path.



**Attention:**

On Mac OS X if the full path to the LIBXML executable file is not specified in the **Executable path** text field, some errors may occur on validation against a W3C XML Schema like:

Unimplemented block at ... xmlschema.c

These errors can be avoided by specifying the full path to the LIBXML executable file.

- **Saxon SA** - Included in Oxygen XML Editor. It is associated to XML Editor and XSD Editor. It is able to validate XML Schema schemas and XML documents against XML Schema schemas. The validation is done according to the W3C XML Schema 1.0 or 1.0. This can be [configured in Preferences](#).
- **MSXML 4.0** - Included in Oxygen XML Editor (Windows edition only). It is associated to XML Editor, XSD Editor and XSL Editor. It is able to validate the edited document against XML Schema, internal DTD (included in the XML document), external DTD or a custom schema type.
- **MSXML.NET** - Included in Oxygen XML Editor (Windows edition only). It is associated to XML Editor, XSD Editor and XSL Editor. It is able to validate the edited document against XML Schema, internal DTD (included in the XML document), external DTD or a custom schema type.
- **XSV** - Not included in Oxygen XML Editor. Windows and Linux distributions of XSV can be downloaded from <http://www.cogsci.ed.ac.uk/~ht/xsv-status.html>. The executable path is [already configured in Oxygen XML Editor](#) for the `[Oxygen-install-folder]/xsv` installation folder. If it is installed in a different folder the predefined executable path must be [corrected in Preferences](#). It is associated to XML Editor and XSD Editor. It is able to validate the edited document against XML Schema or a custom schema type.
- **SQC (Schema Quality Checker from IBM)** - Not included in Oxygen XML Editor. It can be downloaded [from here](#) (it comes as a .zip file, at the time of this writing SQC2.2.1.zip is about 3 megabytes). The executable path and working directory are already configured for the SQC installation directory `[Oxygen-install-folder]/sqc`. If it is installed in a different folder the predefined executable path and working directory must be [corrected in the Preferences page](#). It is associated to XSD Editor.

A custom validator cannot be applied on files loaded through an [Oxygen XML Editor custom protocol plugin](#) developed independently and added to Oxygen XML Editor after installation.

### *Linked Output Messages of an External Engine*

Validation engines display messages in an output view at the bottom of the Oxygen XML Editor window. If such an output message (warning, error, fatal error, etc) spans between three to six lines of text and has the following format then the message is linked to a location in the validated document so that a click on the message in the output view highlights the location of the message in an editor panel containing the file referred in the message. This behavior is similar to the linked messages generated by the default built-in validator. The format for linked messages is:

- *Type*:`[F|E|W]` (the string *Type*: followed by a letter for the type of the message: fatal error, error, warning) - this line is optional in a linked message.
- *SystemID*: a system ID of a file (the string *SystemID*: followed by the system ID of the file that will be opened for highlighting when the message is clicked in the output message - usually the validated file, the schema file or an included file).
- *Line*: a line number (the string *Line*: followed by the number of the line that will be highlighted).
- *Column*: a column number (the string *Column*: followed by the number of the column where the highlight will start on the highlighted line) - this line is optional in a linked message.

- *AdditionalInfoURL*: the URL string pointing to a remote location where additional information about the error can be found - this line is optional in a linked message.
- *Description*: message content (the string *Description*: followed by the content of the message that will be displayed in the output view).

Example of how a custom validation engine can report an error using the format specified above:

```
Type: E
SystemID: file:///c:/path/to/validatedFile.xml
Line: 10
Column: 20
AdditionalInfoURL: http://www.host.com/path/to/errors.html#errorID
Description: custom validator message
```

## Validation Scenario

A complex XML document is split in smaller interrelated modules. These modules do not make much sense individually and cannot be validated in isolation due to interdependencies with other modules. Oxygen XML Editor validates the main module of the document when an imported module is checked for errors.

A typical example is the chunking DocBook XSL stylesheet which has `chunk.xsl` as the main module and `param.xsl`, `chunk-common.xsl`, and `chunk-code.xsl` as imported modules. `param.xsl` only defines XSLT parameters. The module `chunk-common.xsl` defines an XSLT template with the name `chunk`. `Chunk-code.xsl` calls this template. The parameters defined in `param.xsl` are used in the other modules without being redefined.

Validating `chunk-code.xsl` as an individual XSLT stylesheet generates misleading errors referring to parameters and templates used but undefined. These errors are only caused by ignoring the context in which this module is used in real XSLT transformations and in which it is validated. To validate such a module, define a validation scenario to set the main module of the stylesheet and the validation engine used to find the errors. Usually this engine applies the transformation during the validation process to detect the errors that the transformation generates.

You can validate a stylesheet with several engines to make sure that you can use it in different environments and have the same results. For example an XSLT stylesheet is applied with Saxon 6.5, Xalan and MSXML 4.0 in different production systems.

Other examples of documents which can benefit of a validation scenario are:

- A complex XQuery with a main module which imports modules developed independently but validated in the context of the main module of the query. In an XQuery validation scenario the default validator of Oxygen XML Editor (Saxon 9) or any connection to a database that supports validation (Berkeley DB XML Database, eXist XML Database, Documentum xDb (X-Hive/DB) 10 XML Database, MarkLogic version 5 or newer) can be set as a validation engine.
- An XML document in which the master file includes smaller fragment files using XML entity references.

 **Note:** When you validate a document for which a master file is defined, Oxygen XML Editor uses the scenarios defined in *the Master Files directory*.

### How to Create a Validation Scenario

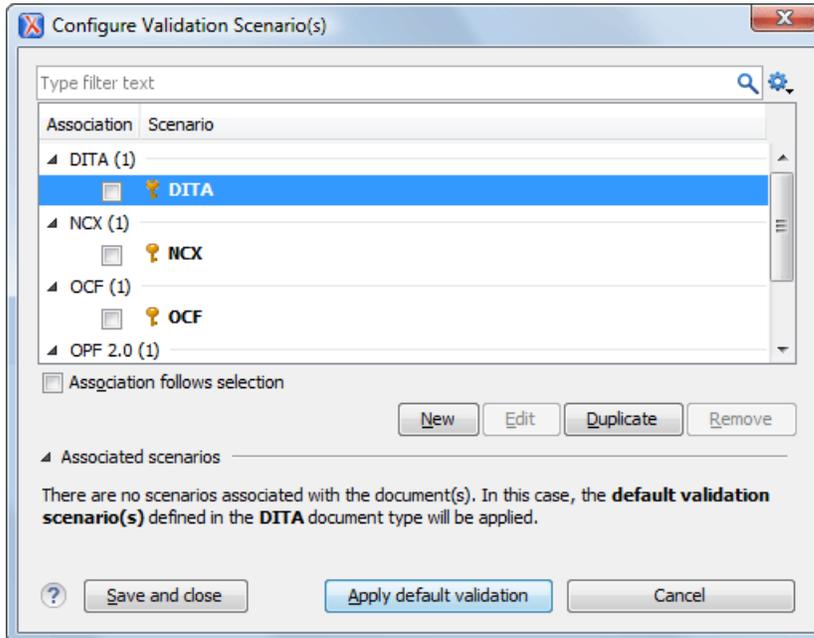
Follow these steps for creating a validation scenario:

1. To open the **Configure Validation Scenario** dialog, go to **Document > Validate > Configure Validation Scenario**. You can also open this dialog from the **Validate** toolbar.

The following dialog is displayed. It contains the following types of scenarios:

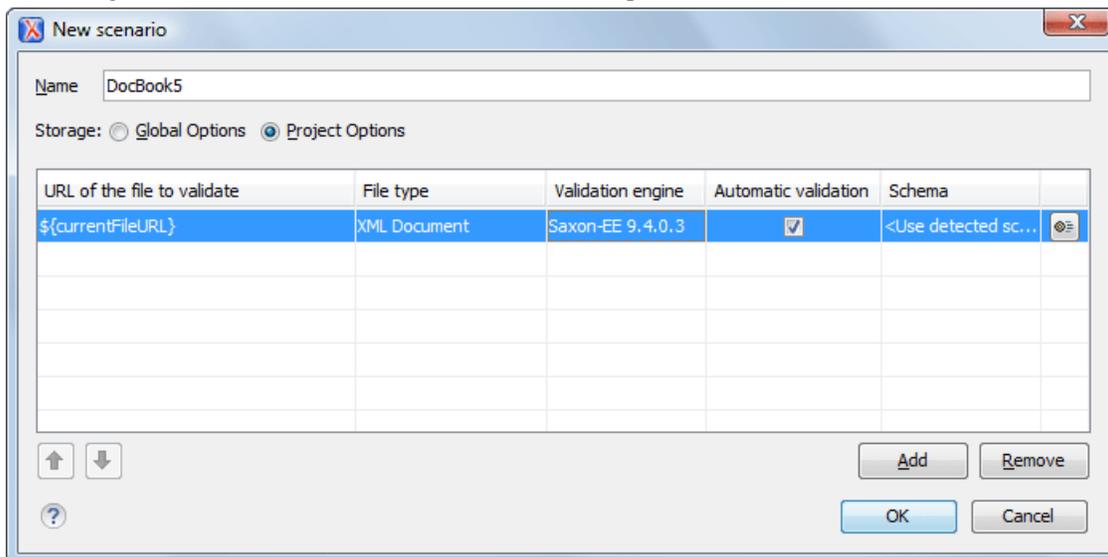
- **Predefined** scenarios are organized in categories depending on the type of file they apply to. You can identify **Predefined** scenarios by a yellow key icon that marks them as *read-only*. If the predefined scenario is the default scenario of the framework, its name is written in bold font. If you try to edit one of these scenarios, Oxygen XML Editor creates a customizable duplicate;
- **User defined** scenarios are organized under a single category, but you can use the drop-down option box to filter them by the type of file they validate;

-  **Note:** The default validation scenarios are not displayed in the scenarios list. If the current file has no associated scenarios, the preview area displays a message to let you know that you can apply the default validation.



**Figure 37: Configure Validation Scenario**

2. Press the **New** button to add a new scenario.
3. Press the **Add** button to add a new validation unit with default settings. The dialog that lists all validation units of the scenario is opened.



**Figure 38: Add / Edit a Validation Unit**

The table holds the following information:

- **Storage** - allows you to create a scenario at project level, or as global;
- **URL of the file to validate** - the URL of the main module which includes the current module. It is also the entry module of the validation process when the current one is validated;

- **File type** - the type of the document validated in the current validation unit. Oxygen XML Editor automatically selects the file type depending on the value of the **URL of the file to validate** field;
- **Validation engine** - one of the engines available in Oxygen XML Editor for validation of the type of document to which the current module belongs. **Default engine** is the default setting and means that the default engine executes the validation. This engine is set in **Preferences** pages for the type of the current document (XML document, XML Schema, XSLT stylesheet, XQuery file, and others) instead of a validation scenario;
- **Automatic validation** - if this option is checked, then the validation operation defined by this row of the table is applied also by *the automatic validation feature*. If the **Automatic validation** feature is *disabled in Preferences* then this option does not take effect as the Preference setting has higher priority;
- **Schema** - active when you set the **File type** to **XML Document**;
- **Settings** - contains an action that allows you to set a schema, when validating XML documents, or a list of extensions when validating XSL or XQuery documents.

#### 4. Edit the URL of the main validation module.

Specify the URL of the main module:

- browsing for a local, remote, or archived file;
- using an *editor variable* or a *custom editor variable*, available in the following pop-up menu, opened after pressing the  button:

```

${Desktop} - My Desktop
${start-dir} - Start directory of custom validator
${standard-params} - List of standard params for command line
${cfn} - The current file name without extension
${currentFileURL} - The path of the currently edited file (URL)
${cfdu} - The path of current file directory (URL)
${frameworks} - Oxygen frameworks directory (URL)
${pdu} - Project directory (URL)
${oxygenHome} - Oxygen installation directory (URL)
${home} - The path to user home directory (URL)
${pn} - Project name
${env(VAR_NAME)} - Value of environment variable VAR_NAME
${system(var.name)} - Value of system variable var.name

```

**Figure 39: Insert an Editor Variable**

#### 5. Select the type of the validated document.

Note that it determines the list of possible validation engines.

#### 6. Select the validation engine.

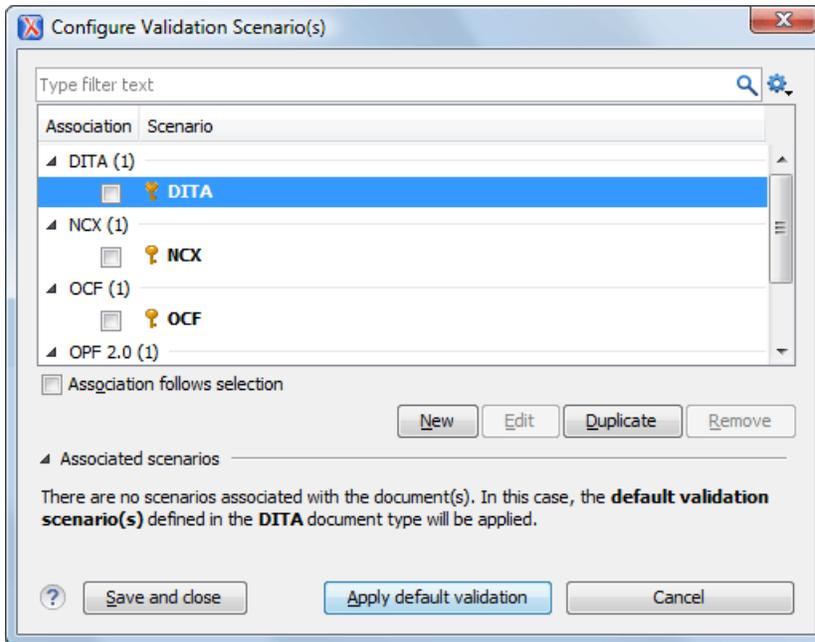
#### 7. Select the **Automatic validation** option if you want to validate the current unit when *automatic validation feature is turned on in Preferences*.

#### 8. Choose what schema is used during validation: the one detected after parsing the document or a custom one.

### Sharing Validation Scenarios

Sometimes a group of users want to apply the same validation settings, like the main module where the validation starts, the validation engine, the schema, extensions of the engine. In order to apply the same settings consistently it is preferable to share the validation scenario with the settings by storing it at project level and sharing the project file using a source version control system (like CVS, SVN, Source Safe).

You can specify that you want to store a scenario at project level by selecting the option **Project Scenarios** instead of the default option **Global Scenarios**.



**Figure 40: Configure Validation Scenario**

The option **Global Scenarios** ensures that the scenarios are saved in the user home directory. After changing the selection to **Project Scenarios** the scenario list is stored in the project file.

### Validation Actions in the User Interface

Use one of the actions for validating the currently edited document:

- Go to **Document > Validate > Validate Document (Ctrl+Shift+V)** or click the  **Validate** button from the **Validate** toolbar. An error list is presented in the message panel. Mark-up of current document is checked to conform with the specified DTD, XML Schema or Relax NG schema rules. This action also re-parses the XML catalogs and resets the schema used for content completion.
- Go to **Document > Validate > Validate (cached)** or click the  **Validate (cached)** button from the **Validate** toolbar. This action caches the schema, allowing it to be reused for the next validation. Mark-up of the current document is checked to conform with the specified DTD, XML Schema or Relax NG schema rules.

 **Note:** Automatic validation also caches the associated schema.

- Go to **Document > Validate > Validate with (Ctrl+Shift+H)** or click the  **Validate with** button from the **Validate** toolbar. You can use this action to validate the current document using a schema of your choice (XML Schema, DTD, Relax NG, NVDL, Schematron schema), other than the associated one. An error list is presented in the message panel. Mark-up of current document is checked to conform with the specified schema rules. The **Validate with** action does not work for files loaded through an *Oxygen XML Editor custom protocol plugin* developed independently and added to Oxygen XML Editor after installation.
- Go to **Document > Schema > Open External Schema** or click the  **Open External Schema** button from the **Document** toolbar to open the schema used for validating the current document in a new editor.
- Select submenu **Validate Selection > Validate** in the contextual menu of **Project** panel, to validate all selected files with their declared schemas.
- Select **Validate Selection with Schema ... > Validate With ...** from the contextual menu of the **Project** panel, to choose a schema and validate all selected files with it.
- Select the submenu **Validate > Configure Validation Scenario ...** of the contextual menu of **Project** panel, to configure and apply a validation scenario in one action to all the selected files in the **Project** panel, .

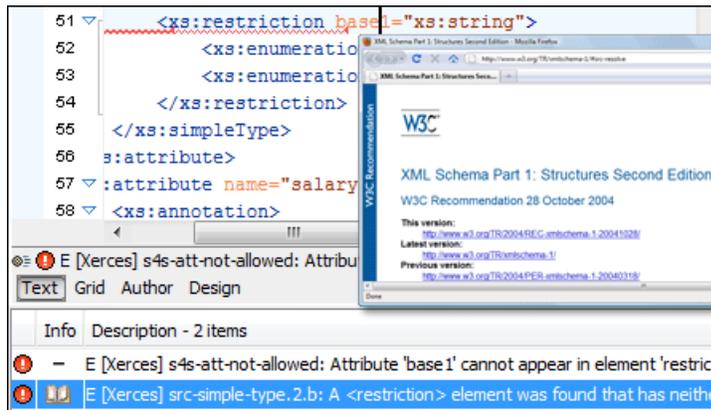
The  **Validation options** button available on the **Validate** toolbar allows quick access to the *validation options* of the built-in validator in the Oxygen XML Editor user preferences page.

Also you can select several files in the **Project** panel and validate them with one click by selecting the action **Validate selection**, the action **Validate selection with Schema ...** or the action **Configure Validation Scenario ...** available from the contextual menu of the **Project** view.

In case too many validation errors are detected and the validation process takes too long, you can *limit the maximum number of reported errors from the Preferences page*.

## References to XML Schema Specification

If validation is done against XML Schema Oxygen XML Editor indicates a specification reference relevant for each validation error. The error messages contain an **Info** field that when clicked will open the browser on the *XML Schema Part 1: Structures* specification at exactly the point where the error is described. This allows you to understand the reason for that error.



**Figure 41: Link to Specification for XML Schema Errors**

## Resolving References to Remote Schemas with an XML Catalog

When a reference to a remote schema must be used in the validated XML document for interoperability purposes, but a local copy of the schema should be actually used for validation for performance reasons, the reference can be resolved to the local copy of the schema with an *XML catalog*. For example, if the XML document contains a reference to a remote schema `docbook.rng` like this:

```
<?xml-model href="http://www.oasis-open.org/docbook/xml/5.0/rng/docbook.rng" type="application/xml"
schematypens="http://relaxng.org/ns/structure/1.0" ?>
```

it can be resolved to a local copy with a catalog entry:

```
<uri name="http://www.oasis-open.org/docbook/xml/5.0/rng/docbook.rng"
uri="rng/docbook.rng" />
```

An XML catalog can be used also to map a W3C XML Schema specified with an URN in the `xsi:schemaLocation` attribute of an XML document to a local copy of the schema. For example, if the XML document specifies the schema with:

```
<topic xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="urn:oasis:names:tc:dita:xsd:topic.xsd:1.1">
```

the URN can be resolved to a local schema file with a catalog entry like:

```
<uri name="urn:oasis:names:tc:dita:xsd:topic.xsd:1.1"
uri="topic.xsd" />
```

## Document Navigation

This section explains various methods for navigating the edited XML document.

### Quick Document Browsing Using Bookmarks

The bookmark concept is the same as in other IDEs: you can mark a position in an edited document so that you can return after further editing and browsing through one or more documents opened at the same time. Up to nine distinct bookmarks can be placed in any opened document. Configurable shortcut key strokes are available to place bookmarks and to return to any of the marked positions.

```

<xsl:output omit-xml-declaration="yes" method="html"/>
<xsl:template match="/">
  <xsl:apply-templates/>
</xsl:template>
<xsl:template match="anchor">
  <a name="{@target}"/>
</xsl:template>
<xsl:template match="articledescription">
  <table width="100%" border="0" cellpadding="0" cellspacing="0">

```

**Figure 42: Editor Bookmarks**

The key strokes *can be configured* from **Options > Preferences->Menu** shortcut keys.

A bookmark can be placed from **Edit > Bookmarks->Create**, from **(F9) > Edit > Bookmarks > Bookmarks Quick Creation (F9)**, by clicking the toolbar button  **Bookmarks Quick Creation** and by clicking in the margin of the editing area, to the left of the line number area, reserved for bookmarks.

Quickly switching to a position marked by a bookmark can be done by **Edit > Bookmarks->Go to**.

Two contextual menu actions are available:

- **Remove** - Removes the current bookmark;
- **Remove all** - Removes all bookmarks set in the document.

### Folding of the XML Elements

An XML document is organized as a tree of elements. When working on a large document you can collapse some elements leaving in the focus only the ones you need to edit. Expanding and collapsing works on individual elements: expanding an element leaves the child elements unchanged.

```

<xsl:template match="articledescription"> [28 lines]
<xsl:template match="articledescriptions">
  <xsl:apply-templates/>
</xsl:template>
<xsl:template match="code">
  <ul>
    <p class="textSmall">
      <xsl:for-each select="coderow"> [2 lines]
    </p>
  </ul>
</xsl:template>

```

**Figure 43: Folding of the XML Elements**

An unique feature of Oxygen XML Editor is the fact that the folds are persistent: the next time you will open the document the folds are restored to the last state so you won't have to collapse the uninteresting parts again.

To toggle the folded state of an element click on the special mark displayed in the left part of the document editor next to the start tag of that element or click on the action **Toggle fold** available from the contextual menu or from the menu **Document > Folding > Toggle fold**. The element extent is marked with a grey line displayed in the left part of the edited

document. The grey line always covers the lines of text comprised between the start tag and end tag of the element where the cursor is positioned.

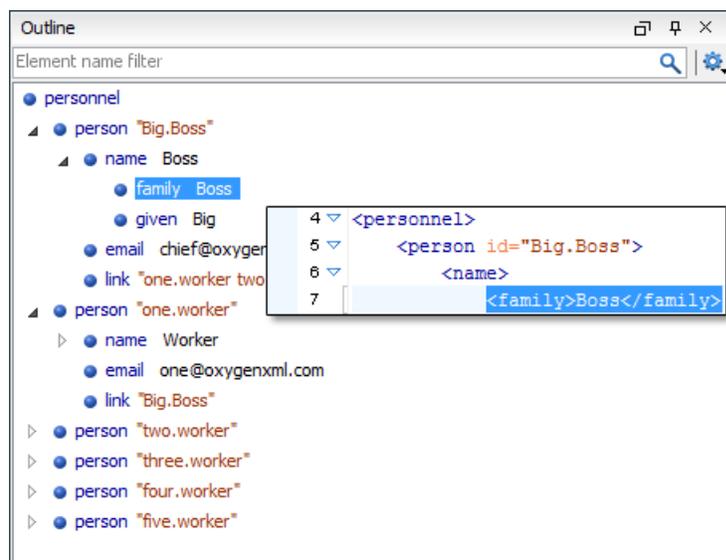
Other menu actions related to folding of XML elements are available from the contextual menu of the folding stripe of the current editor:

-  **Close Other Folds (Ctrl+NumPad+)** - Folds all the elements except the current element.
-  **Collapse Child Folds (Ctrl+Decimal)** - Folds the elements indented with one level inside the current element.
-  **Expand Child Folds (Ctrl+Equals)** - Unfolds all child elements of the currently selected element.
-  **Expand All (Ctrl+NumPad+\*)** - Unfolds all elements in the current document.
-  **Toggle Fold** - Toggles the state of the current fold.

## Outline View

The Outline view offers the following functionality:

- [XML Document Overview](#) on page 107
- [Outline Specific Actions](#) on page 108
- [Modification Follow-up](#) on page 108
- [Document Structure Change](#) on page 108
- [Document Tag Selection](#) on page 109



**Figure 44: The Outline View**

## XML Document Overview

The **Outline** view displays a general tag overview of the current edited XML document. It also shows the correct hierarchical dependencies between the tag elements. This functionality makes it easier for the user to be aware of the document structure and the way tags are nested.

The **Outline** view allows you to:

- insert or delete nodes using pop-up menu actions;
- move elements by dragging them to a new position in the tree structure;
- highlight elements in the **Author** editor area.

 **Note:** The **Outline** view is synchronized with the **Author** editor area. When you make a selection in the **Author** editor area, the corresponding elements of the selection are highlighted in the **Outline** view and vice versa. This functionality is available both for single and multiple selection. To deselect one of the elements, use **Ctrl + Click**.

Document errors (such as an element inserted in an invalid position, or a wrong attribute name, or a missing required attribute value) are highlighted in the **Outline** tree:

- a red exclamation mark decorates the element icon;
- a dotted red underline decorates the element name and value;
- a tooltip provides more information about the nature of the error, when you hover with the mouse pointer over the faulted element.

### Outline Specific Actions

The following actions are available in the **Settings** menu on the Outline view's toolbar:

-  **Selection update on caret move** - Allows a synchronization between **Outline** view and schema diagram. The selected view from the diagram will be also selected in the **Outline** view.
-  **Flat presentation mode of the filtered results** - when active, the application flattens the filtered result elements to a single level.
-  **Show comments and processing instructions** - show/hide comments and processing instructions in the **Outline** view.
-  **Show element name** - show/hide element name.
-  **Show text** - show/hide additional text content for the displayed elements.
-  **Show attributes** - show/hide attribute values for the displayed elements. The displayed attribute values can be changed from [the Outline preferences panel](#).
-  **Configure displayed attributes** - displays the [XML Structured Outline preferences page](#).

The upper part of the view contains a filter box which allows you to focus on the relevant components. Type a text fragment in the filter box and only the components that match it are presented. For advanced usage you can use wildcard characters (\*, ?) and separate multiple patterns with commas.

### Modification Follow-up

When editing, the Outline view dynamically follows the modifications introduced by the user, showing in the middle of the panel the node which is currently being modified. This gives the user better insight on location where in the document one is positioned and how the structure of the document is affected by one's modifications.

### Document Structure Change

Entire XML elements can be moved or copied in the edited document using only the mouse in the **Outline** view in drag-and-drop operations. Several drag and drop actions are possible:

- If you drag an XML element in the **Outline** view and drop it on another one in the same panel then the dragged element will be moved after the drop target element.
- If you hold the mouse pointer over the drop target for a short time before the drop then the drop target element will be expanded first and the dragged element will be moved inside the drop target element after its opening tag.
- You can also drop an element before or after another element if you hold the mouse pointer towards the upper or lower part of the targeted element. A marker will indicate whether the drop will be performed before or after the target element.
- If you hold down the **(Ctrl)** key after dragging, there will be performed a copy operation instead of a move one.

The drag and drop action in the **Outline** view can be [disabled and enabled from the Preferences dialog](#).

 **Tip:** You can select and drag multiple nodes in the Author Outline tree.

### The Popup Menu of the Outline Tree

The *Append Child*, *Insert Before* and *Insert After* submenus of the outline tree popup menu allow to quickly insert new tags in the document at the place of the element currently selected in the Outline tree. The *Append Child* submenu lists the names of all the elements which are allowed by the schema associated with the current document as child of the current element. The *Insert Before* and *Insert After* submenus of the Outline tree popup menu list the elements which are allowed by the schema associated with the current document as siblings of the current element inserted immediately before respectively after the current element.

*Edit attributes* for the selected node. A dialog is presented allowing the user to see and edit the attributes of the selected node.

The *Toggle comment* item of the outline tree popup menu is the same item as in the editor popup menu with the same name. It encloses the currently selected element of the outline tree in an XML comment, if the element is not commented, or uncomments it, if it is commented.

The *Cut*, *Copy* and *Delete* items of the popup menu execute *the same actions as the Edit menu items with the same name* on the elements currently selected in the outline tree.

## Document Tag Selection

The Outline view can also be used to search for a specific tag's location and contents in the edited document. Intuitively, by selecting with the left mouse button the desired tag in the Outline view, the document is scrolled to the position of the selected tag. Moreover, the tag's contents are selected in the document, making it easy to notice the part of the document contained by that specific tag and furthermore to easily copy and paste the tag's contents in other parts of the document or in other documents.

You can double click the tag in the Outliner tree to move focus to the editor.

You can also use key search to look for a particular tag name in the Outline tree.

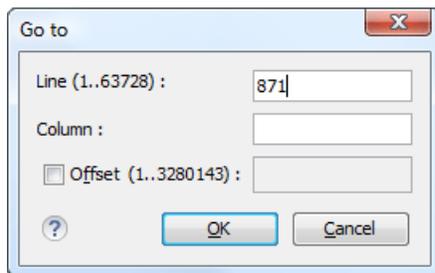
## Navigation Buttons

These buttons are available in the editor's main toolbar:

-  **Go to Last Modification** : Moves the cursor to the last modification in any opened document.
-  **Back** : Moves the cursor to the previous position.
-  **Forward** : Moves the cursor to the next position. Enabled after at least one press of the **Back** button.

## Using the Go To Dialog

The *Go to* dialog available from **Find > Go to ... (Ctrl+L (Cmd+L on Mac))** enables you to go to a precise location in the current edited file specified by line and column or by an offset relative to the beginning of the file.



**Figure 45: Go to Dialog**

Complete the dialog as follows:

- **Line** - destination line in the current document;
- **Column** - destination column in the current document;
- **Offset** - destination offset relative to the beginning of document.

## Large Documents

Let's consider the case of documenting a large project. It is likely to be several people involved. The resulting document can be few megabytes in size. How to deal with this amount of data in such a way the work parallelism would not be affected ?

Fortunately, XML provides two solutions for this: DTD entities and XInclude. It can be created a master document, with references to the other document parts, containing the document sections. The users can edit individually the sections, then apply an XSLT stylesheet over the master and obtain the result files, let say PDF or HTML.

## Including Document Parts with DTD Entities

There are two conditions for including a part using DTD entities:

- The master document should declare the DTD to be used, while the external entities should declare the XML sections to be referred;
- The document containing the section must not define again the DTD.

A master document looks like this:

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE book SYSTEM "../xml/docbookx.dtd" [
<!ENTITY testing SYSTEM "testing.xml" > ]
>
<book>
<chapter> ...
```

The referred document looks like this:

```
<section> ... here comes the section content ... </section>
```



### Note:

The indicated DTD and the element names (*section*, *chapter*) are used here only for illustrating the inclusion mechanism. You can use any DTD and element names you need.

At a certain point in the master document there can be inserted the section *testing.xml* entity:

```
... &testing; ...
```

When splitting a large document and including the separate parts in the master file using external entities, only the master file will contain the Document Type Definition (the DTD) or other type of schema. The included sections can't define again the schema because the main document will not be valid. If you want to validate the parts separately you have to [use XInclude](#) for assembling the parts together with the master file.

## Including Document Parts with XInclude

XInclude is a standard for assembling XML instances into another XML document through inclusion. It enables larger documents to be dynamically created from smaller XML documents without having to physically duplicate the content of the smaller files in the main file. XInclude is targeted as the replacement for External Entities. The advantage of using XInclude is that, unlike the entities method, each of the assembled documents is permitted to contain a Document Type Declaration (DOCTYPE Decl.). This means that each file is a valid XML instance and can be independently validated. It also means that the main document to which smaller instances are included can be validated without having to remove or comment the DOCTYPE Decl. as is the case with External Entities. This makes XInclude a more convenient and effective method for managing XML instances that need to be stand-alone documents and part of a much larger project.

The main application for XInclude is in the document-oriented content frameworks such as manuals and Web pages. Employing XInclude enables authors and content managers to manage content in a modular fashion that is akin to Object Oriented methods used in languages such as Java, C++ or C#.

The advantages of modular documentation include: reusable content units, smaller file units that are easier to be edited, better version control and distributed authoring.

### Include a chapter in an article using XInclude

Create a chapter file and an article file in the `samples` folder of the Oxygen XML Editor install folder.

Chapter file (`introduction.xml`) looks like this:

```
<?xml version="1.0"?>
<!DOCTYPE chapter PUBLIC "-//OASIS//DTD DocBook XML V4.3//EN"
"http://www.oasis-open.org/docbook/xml/4.3/docbookx.dtd">
<chapter>
  <title>Getting started</title>
  <section>
    <title>Section title</title>
    <para>Para text</para>
  </section>
</chapter>
```

Main article file looks like this:

```
<?xml version="1.0"?>
<!DOCTYPE article PUBLIC "-//OASIS//DTD DocBook XML V4.3//EN"
"http://www.docbook.org/xml/4.3/docbookx.dtd"
[ <!ENTITY % xinclude SYSTEM "../frameworks/docbook/dtd/xinclude.mod">
%xinclude;
]>
<article>
  <title>Install guide</title>
  <para>This is the install guide.</para>
  <xi:include xmlns:xi="http://www.w3.org/2001/XInclude"
             href="introduction.dita">
    <xi:fallback>
      <para>
        <emphasis>FIXME: MISSING XINCLUDE CONTENT</emphasis>
      </para>
    </xi:fallback>
  </xi:include>
</article>
```

In this example the following is of note:

- the DOCTYPE Decl. defines an entity that references a file containing the information to add the *xi* namespace to certain elements defined by the DocBook DTD;
- the href attribute of the *xi:include* element specifies that the `introduction.xml` file will replace the *xi:include* element when the document is parsed;
- if the `introduction.xml` file cannot be found, the parser will use the value of the *xi:fallback* element - a FIXME message.

If you want to include only a fragment of a file in the master file, the fragment must be contained in a tag having an *xml:id* attribute and you must use an XPointer expression pointing to the *xml:id* value. For example if the master file is:

```
<?xml version="1.0" encoding="UTF-8"?>
<?xml-model href="test.rng" type="application/xml" schematypens="http://relaxng.org/ns/structure/1.0"?>
<test>
  <xi:include href="a.xml" xpointer="a1"
             xmlns:xi="http://www.w3.org/2001/XInclude"/>
</test>
```

and the `a.xml` file is:

```
<?xml version="1.0" encoding="UTF-8"?>
<test>
  <a xml:id="a1">test</a>
</test>
```

after resolving the XPointer reference the document is:

```
<?xml version="1.0" encoding="UTF-8"?>
<?xml-model href="test.rng" type="application/xml" schematypens="http://relaxng.org/ns/structure/1.0"?>
<test>
  <a xml:id="a1" xml:base="a.xml">test</a>
</test>
```

The XInclude support in Oxygen XML Editor is turned on by default. You can *toggle it* by going to the entry **Enable XInclude processing** in the menu **Options > Preferences ... > XML > XML Parser**. When enabled, Oxygen XML Editor will be able to validate and transform documents comprised of parts added using XInclude.

## Working with XML Catalogs

An *XML Catalog* maps a system ID or an URI reference pointing to a resource (stored either remotely or locally) to a local copy of the same resource. If XML processing relies on external resources (like referred schemas and stylesheets, for example), the use of an XML Catalog becomes a necessity when Internet access is not available or the Internet connection is slow.

Oxygen XML Editor supports any XML Catalog file that conforms to one of:

1. *OASIS XML Catalogs Committee Specification v1.1*
2. *OASIS Technical Resolution 9401:1997* including the plain-text flavor described in that resolution

The version 1.1 of the OASIS XML Catalog specification introduces the possibility to map a system ID, a public ID or a URI to a local copy using only a suffix of the ID or URI used in the actual document. This is done using the new catalog elements *systemSuffix* and *uriSuffix*.

Depending on the resource type, Oxygen XML Editor uses different catalog mappings.

**Table 2: Catalog Mappings**

Document	Referred Resource	Mappings
XML	DTD	<p><i>system</i> or <i>public</i></p> <p>The <i>Prefer</i> option controls which one of the mappings should be used.</p>
	XML Schema	<p>The following strategy is used (if one step fails to provide a resource, the next is applied):</p> <ol style="list-style-type: none"> <li>1. resolve the schema using <i>uri</i> catalog mappings.</li> <li>2. resolve the schema using <i>system</i> catalog mappings.</li> </ol>
	Relax NG	
	Schematron NVDL	
		<p>This happens only if the <i>Resolve schema locations also through system mappings</i> option is enabled (it is by default);</p> <ol style="list-style-type: none"> <li>3. resolve the root <i>namespace</i> using <i>uri</i> catalog mappings.</li> </ol>
XSL	XSL/ANY	<i>uri</i>
XML Schema	XML Schema	<p>The following strategy is used (if one step fails to provide a resource, the next is applied):</p> <ol style="list-style-type: none"> <li>1. resolve schema reference using <i>uri</i> catalog mappings.</li> <li>2. resolve schema reference using <i>system</i> catalog mappings.</li> </ol>
Relax NG	Relax NG	
		<p>This happens only if the <i>Resolve schema locations also through system mappings</i> option is enabled (it is by default);</p> <ol style="list-style-type: none"> <li>3. resolve schema <i>namespace</i> using <i>uri</i> catalog mappings.</li> </ol> <p>This happens only if the <i>Process namespaces through URI mappings for XML Schema</i> option is enabled (it is not by default);</p>

An XML Catalog file can be created quickly in Oxygen XML Editor starting from the two XML Catalog document templates called *OASIS XML Catalog 1.0* and *OASIS XML Catalog 1.1* and available in *the document templates dialog*.

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE catalog
PUBLIC "-//OASIS//DTD XML Catalogs V1.1//EN"
"http://www.oasis-open.org/committees/entity/release/1.1/catalog.dtd">
```

```

<catalog xmlns="urn:oasis:names:tc:entity:xmlns:xml:catalog">
  <!-- Use "system" and "public" mappings when resolving DTDs -->
  <system
    systemId="http://www.docbook.org/xml/4.4/docbookx.dtd"
    uri="frameworks/docbook/4.4/dtd/docbookx.dtd"/>
  <!-- The "systemSuffix" matches any system ID ending in a specified string -->
  <systemSuffix
    systemIdSuffix="docbookx.dtd"
    uri="frameworks/docbook/dtd/docbookx.dtd"/>

  <!-- Use "uri" for resolving XML Schema and XSLT stylesheets -->
  <uri
    name="http://www.oasis-open.org/docbook/xml/5.0/rng/docbook.rng"
    uri="frameworks/docbook/5.0/rng/docbookxi.rng"/>

  <!-- The "uriSuffix" matches any URI ending in a specified string -->
  <uriSuffix
    uriSuffix="docbook.xsl"
    uri="frameworks/docbook/xsl/fo/docbook.xsl"/>
</catalog>

```

Oxygen XML Editor comes with a built-in catalog set as default, but you can also create your own one. Oxygen XML Editor looks for a catalog in the following order:

- user-defined catalog set globally in the *XML Catalog preferences* page;
- user-defined catalog set at document type level, in the *Document Type Association preferences pages*;
- built-in catalogs.

An XML catalog can be used to map a W3C XML Schema specified with an URN in the `xsi:noNamespaceSchemaLocation` attribute of an XML document to a local copy of the schema.

Considering the following XML document code snippet:

```

<topic xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:noNamespaceSchemaLocation="urn:oasis:names:tc:dita:xsd:topic.xsd:1.1">

```

The URN can be resolved to a local schema file with a catalog entry like:

```

<uri name="urn:oasis:names:tc:dita:xsd:topic.xsd:1.1"
      uri="topic.xsd"/>

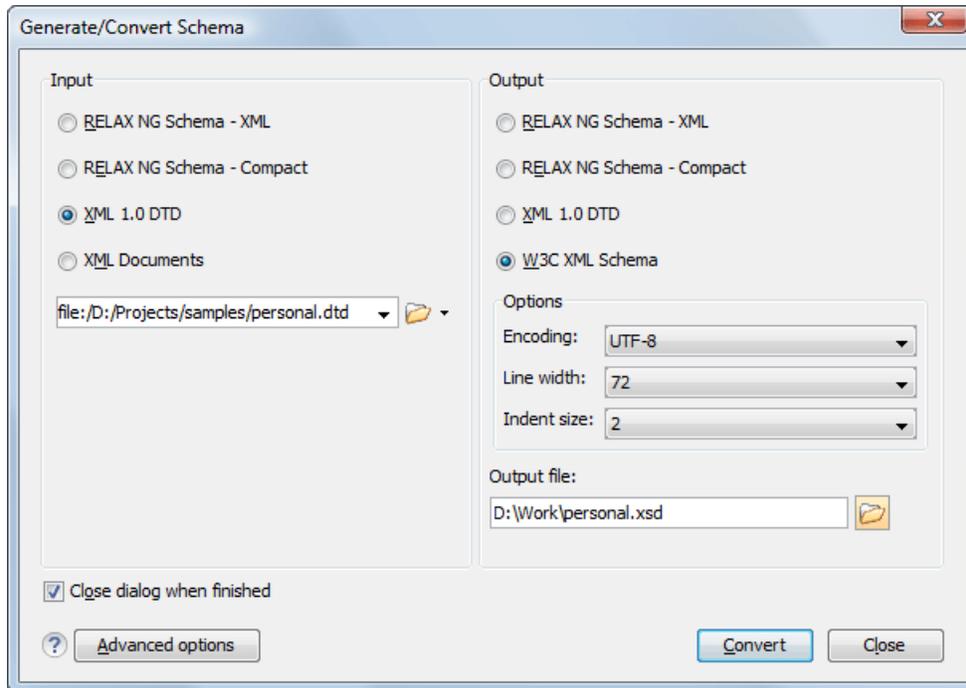
```

## Converting Between Schema Languages

The **Generate/Convert Schema** allows you to convert a DTD or Relax NG (full or compact syntax) schema or a set of XML files to an equivalent XML Schema, DTD or Relax NG (full or compact syntax) schema. Where perfect equivalence is not possible due to limitations of the target language Oxygen XML Editor will generate an approximation of the source schema.

The conversion functionality is available from **Tools > Generate/Convert Schema... (Ctrl+Alt+T)**, from the **Project** view contextual menu - the action **Open with > Generate/Convert Schema** and from the toolbar button  **Generate/Convert Schema...**

A schema being edited can be converted with just one click on a toolbar button if that schema can be the subject of a supported conversion.

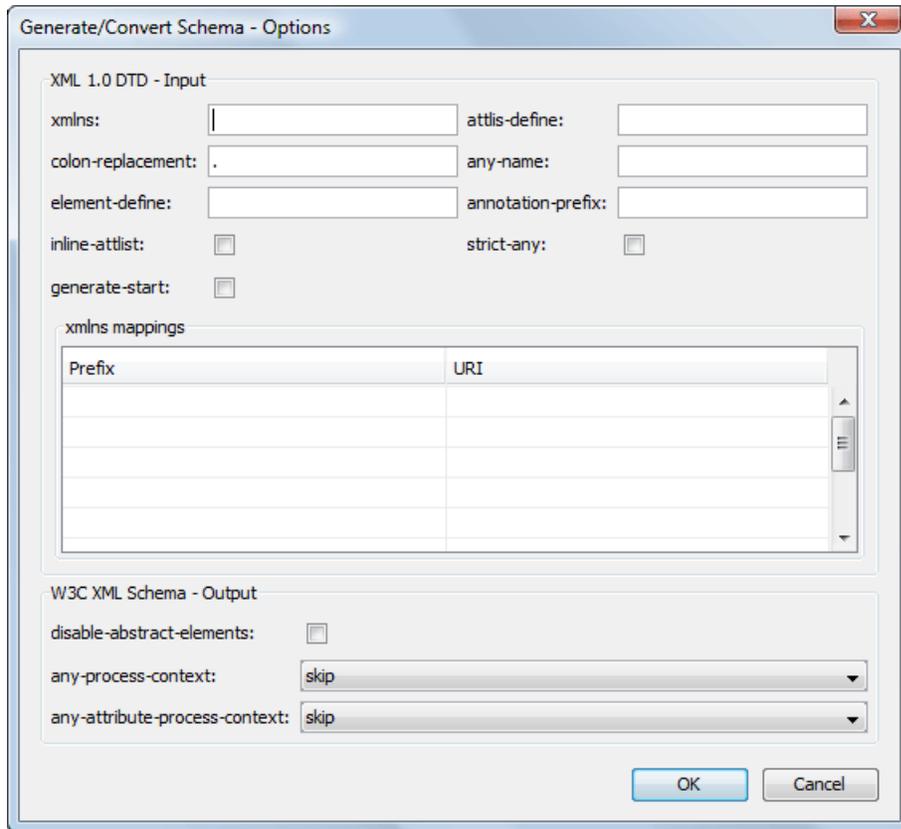


**Figure 46: Convert a Schema to Other Schema Language**

The language of the source schema is specified with one of the four radio buttons of the **Input** panel. If the **XML Documents** button is selected more than one file selection is allowed in the list below the group of radio buttons in case the conversion is based on a set of XML files instead of a single file.

The language of the target schema is specified with one of the four radio buttons of the **Output** panel. The encoding, the maximum line width and the number of spaces for one level of indentation can be also specified in this panel.

The conversion can be further fine-tuned by specifying more advanced options available from the **Advanced options** button. For example if the input is a DTD and the output is an XML Schema the advanced options are:



**Figure 47: Convert a Schema to Other Schema Language - Advanced Options**

For the **Input** panel:

- **xmlns** field - Specifies the default namespace, that is the namespace used for unqualified element names;
- **xmlns** table - Each row specifies in the prefix used for a namespace in the input schema;
- **colon-replacement** - Replaces colons in element names with the specified chars when constructing the names of definitions used to represent the element declarations and attribute list declarations in the DTD;
- **element-define** - Specifies how to construct the name of the definition representing an element declaration from the name of the element. The specified value must contain exactly one percent character. This percent character is replaced by the name of element (after colon replacement) and the result is used as the name of the definition;
- **inline-attlist** - Instructs the application not to generate definitions for attribute list declarations, but instead move attributes declared in attribute list declarations into the definitions generated for element declarations. This is the default behavior when the output language is XSD;
- **attlist-define** - Specifies how to construct the name of the definition representing an attribute list declaration from the name of the element. The specified value must contain exactly one percent character. This percent character is replaced by the name of element (after colon replacement) and the result is used as the name of the definition;
- **any-name** - Specifies the name of the definition generated for the content of elements declared in the DTD as having a content model of ANY;
- **strict-any** - Preserves the exact semantics of ANY content models by using an explicit choice of references to all declared elements. By default, Trang uses a wildcard that allows any element;
- **generate-start** - Specifies whether Trang should generate a start element. DTD's do not indicate what elements are allowed as document elements. Trang assumes that all elements that are defined but never referenced are allowed as document elements;
- **annotation-prefix** - Default values are represented using an annotation attribute *prefix:defaultValue* where prefix is the specified value and is bound to <http://relaxng.org/ns/compatibility/annotations/1.0> as defined by the RELAX NG DTD Compatibility Committee Specification. By default, Trang will use a for prefix unless that conflicts with a prefix used in the DTD.

For the **Output** panel:

- `disable-abstract-elements` - Disables the use of abstract elements and substitution groups in the generated XML Schema. This can also be controlled using an annotation attribute;
- `any-process-contents` - One of the values: `strict`, `lax`, `skip`. Specifies the value for the `processContents` attribute of any elements. The default is `skip` (corresponding to RELAX NG semantics) unless the input format is `dtd`, in which case the default is `strict` (corresponding to DTD semantics);
- `any-attribute-process-contents` - Specifies the value for the `processContents` attribute of any `Attribute` elements. The default is `skip` (corresponding to RELAX NG semantics).

## Editing XML Tree Nodes

A *Well-Formed XML document* can be viewed and edited in Oxygen XML Editor also as a tree of XML elements. This is possible in the Tree Editor perspective, available from **Tools > Tree Editor**. The **Tree Editor** provides specially designed views, toolbars and an editable tree allowing you to execute common tree actions like create/delete nodes, edit node names, move nodes with drag and drop.

If you want to be able to edit XML documents that are not well-formed and still have a tree view of the document you should use the *Outline view* in the Editor perspective.

## Formatting and Indenting Documents (Pretty Print)

In structured markup languages, the whitespace between elements that is created using the *Space bar*, *Tab* or multiple line breaks is not recognized by the parsing tools. Often this means that when structured markup documents are opened, they are arranged as one long, unbroken line, that seems to be a single paragraph.

While this is a perfectly acceptable practice, it makes editing difficult and increases the likelihood of errors being introduced. It also makes the identification of exact error positions difficult. Formatting and Indenting, also called **Pretty Print**, enables such documents to be neatly arranged, in a manner that is consistent and promotes easier reading on screen and in print output.

Pretty print is in no way associated with the layout or formatting that will be used in the transformed document. This layout and formatting is supplied by the XSL stylesheet specified at the time of transformation.

To change the formatting of just one XML element see the action *Pretty print element*. To change the indenting of the current selected text see the *Indent selection* action.

For user preferences related to formatting and indenting like **Detect indent on open** and **Indent on paste** see *the corresponding Preferences panel*.

XML elements can be excepted from the reformatting performed by the pretty-print operation by including them in the *Preserve space elements (XPath)* list. That means that when the *Format and Indent* (pretty-print) action encounters in the document an element with the name contained in this list, the whitespace is preserved inside that element. This is useful when most of the elements must be reformatted with the exception of a few ones which are listed here.

For the situation when whitespace should be preserved in most elements with the exception of a few elements, the names of these elements must be added to the *Strip space elements (XPath)* list.

In addition to simple element names, both the *Preserve space elements (XPath)* list and the *Strip space elements (XPath)* one accept a restricted set of XPath expressions to cover a pattern of XML elements with only one expression. The allowed types of expressions are:

<b>//xs:documentation</b>	the XPath descendant axis can be used only at the beginning of the expression; the namespace prefix can be attached to any namespace, no namespace binding check is performed when applying the pretty-print operation
<b>/chapter/abstract/title</b>	note the use of the XPath child axis
<b>//section/title</b>	the descendant axis can be followed by the child axis

The value of an *xml:space* attribute present in the XML document on which the pretty-print operation is applied always takes precedence over the *Preserve space elements (XPath)* and the *Strip space elements (XPath)* lists.

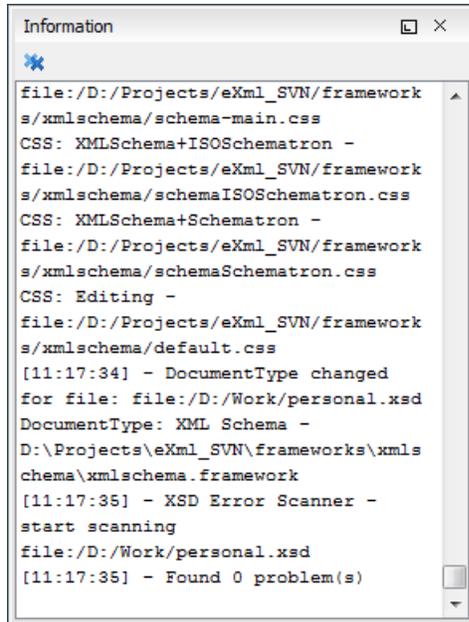
## How to use zero size indent

When you use pretty print, or when you save a document from the **Author**, Oxygen XML Editor allows you to use zero size indent. To stop indenting text depending on the depth of the nodes in an XML document, follow the next steps:

1. Go to **Option > Preferences > Editor > Format**;
2. Disable **Detect indent on option**;
3. Set **Indent size** to zero.

## Viewing Status Information

Status information generated by the **Schema Detection**, **Validation**, **Automatic validation**, and **Transformation** threads are fed into the **Information** view allowing you to monitor how the operation is being executed.



**Figure 48: Information view messages**

Messages contain a timestamp, the name of the thread that generated it and the actual status information. The number of displayed messages can be controlled from the [Options panel](#).

In order to make the view visible go to menu **Window > Show View > Information**.

## Image Preview

Images and SVG files from the **Project** view can be previewed in a separate panel.

To preview an image, either double click the image name or click the **Preview** action from the **Project** view's contextual menu. Supported image types are GIF, JPEG/JPG, PNG, BMP. Once the image is displayed in the **Preview** panel using the actions from the contextual menu, you can scale the image to its original size (1:1 action) or scale it down to fit in the view's available area (**Scale to fit** action).

To preview an *SVG file*, click the **Preview** action from the **Project** view's contextual menu. Once the SVG is displayed in the **Preview** panel, the following actions are available on the contextual menu: **Zoom in**, **Zoom out**, **Rotate** and **Refresh**.

 **Note:** You can drag an image from the **Image Preview** view and drop it in a DITA, Docbook, or TEI document.

## Making a Persistent Copy of Results

The **Results** panel displays the results from the following operations:

- *document validation*
- *checking the form of documents*
- *XSLT or FO transformation*
- *find all occurrences of a string in a file*
- *find all occurrences of a string in multiple files*
- *applying an XPath expression to the current document*

To make a persistent copy of the **Results** panel use one of the actions:

- **File > Save Results** - displays the **Save Results** dialog, used to save the result list of the current message tab. The action is also available on the right click menu of the **Results** panel.
- **File > Print Results** - displays the **Page Setup** dialog used to define the page size and orientation properties for printing the result list of the current **Results panel**. The action is also available on the right click menu of the **Results** panel.
- **Save Results as XML** on the contextual menu - saves the content of the **Results** panel in an XML file with the format:

```
<Report>
  <Incident>
    <engine>The engine who provide the error.<engine>
    <severity>The severity level<severity>
    <Description>Description of output message.</Description>
    <SystemID>The location of the file linked to the message.</SystemID>
    <Location>
      <start>
        <line>Start line number in file.<line>
        <column>Start column number in file<column>
      </start>
      <end>
        <line>End line number in file.<line>
        <column>End column number in file<column>
      </end>
    </Location>
  </Incident>
</Report>
```

## Locking and Unlocking XML Markup

For documents with fixed markup such as forms in which the XML tags are not allowed to be modified but only their text content, editing of the XML tag names can be disabled and re-enabled with the action available from:

- **Document** main menu, **Source > Lock / Unlock the XML Tags** action;
- contextual menu, **Source > Lock / Unlock the XML Tags** action;
-  **Lock / Unlock the XML tags** toolbar action.

You can set the default lock state for all opened editors in the [Preferences XML Editor Format](#) preferences page.

## Adjusting the Transparency of XML Markup

Most of the time you want the content of a document displayed on screen with zero transparency. When you want to focus your attention only on editing text content inside XML tags Oxygen XML Editor offers the option of reducing the visibility of the tags by increasing their transparency when they are displayed. There are two levels of tag transparency: semi-transparent markup and transparent markup. For the opposite case, when you want to focus on the tag names, the text transparency can be set to one of two levels: semi-transparent text and transparent text. To change the level of

transparency click the toolbar button  **Adjust Contrast** available on the **Edit** toolbar.

 **Note:** On Windows XP and Windows Vista, depending on antialiasing settings and JVM used, this functionality could have no effect.

## XML Editor Specific Actions

Oxygen XML Editor offers groups of actions for working on single XML elements. They are available from the **Document** menu and the context menu of the main editor panel.

## Split Actions

The editing area can be divided vertically and horizontally with the split / unsplit actions available in the **Split** toolbar, the **Window** menu and in the contextual menu of the editor panel of XML files:

-  **Split Editor Horizontally**
-  **Split Editor Vertically**
-  **Unsplit Editor**

## Edit Actions

The following XML specific editing actions are available in Text mode:

- **Document > Edit > Toggle Line Wrap - (Ctrl + Shift + Y)** Turns on line wrapping in the editor panel if it was off and vice versa. It has the same effect as the *Line wrap* preference.
- **Document > Edit > Toggle comment (Ctrl + Shift + ,)** - Comments the current selection of the current editor. If the selection already contains a comment the action removes the comment from around the selection. If there is no selection in the current editor and the cursor is not positioned inside a comment the current line is commented. If the cursor is positioned inside a comment then the commented text is uncommented. The action is also available on the popup menu of the editor panel.

## Select Actions

In Text mode of the XML editor these actions are enabled when the caret is positioned inside a tag name:

- **Document > Select > Element** - Selects the entire current element.
- **Document > Select > Content** - Selects the content of the current element, excluding the start tag and end tag. If it is applied repeatedly, starts with selecting the XML element from the cursor position and extends the selection to the ancestor XML elements. Each execution of the action extends the current selection to the surrounding element.
- **Document > Select > Attributes** - Selects all the attributes of the current element.
- **Document > Select > Parent** - Selects the parent element of the current element.
- Triple click on an element or processing instruction - If the triple click is done before the start tag of an element or after the end tag of an element then all the element is selected by the triple click action. If it is done after the start tag or before the end tag then only the element content without the start tag and end tag is selected.
- Double click after the opening quote or before the closing quote of an attribute value - Select the whole attribute value.

## Source Actions

The following actions can be applied on the text content of the XML editor:

- **Document > Source > Lock / Unlock the XML Tags ** - Disables / Enables editing of XML tags.
- **Document > Source > To Lower Case** - Converts the selection content to lower case characters.
- **Document > Source > To Upper Case** - Converts the selection content to upper case characters.
- **Document > Source > Capitalize lines** - Converts to upper case the first character of every selected line.
- **Document > Source >  Shift Right (Tab)** - Shifts the currently selected block to the right.
- **(Shift+Tab) > Document > Source >  Shift Left (Shift+Tab)** - Shifts the selected block to the left.
- **Document > Source > Escape Selection ...  &** - Escapes a range of characters by replacing them with the corresponding character entities.
- **Document > Source > Unescape Selection ...  &+** - Replaces the character entities with the corresponding characters.
- **Document > Source >  Indent selection (Ctrl + I)** - Corrects the indentation of the selected block of lines if it does not follow the current *indenting preferences of the user*.
- **Document > Source >  Format and Indent Element (Ctrl + Shift + I)** - Pretty prints the element that surrounds the caret position.

- **Document > Source > Insert XInclude**  - Shows a dialog that allows you to browse and select the content to be included and generates automatically the corresponding XInclude instruction.



**Note:** In the **Author** mode, this dialog presents a preview of the inserted document as an author page in the **preview** tab and as a text page in the **source** tab. In the **Text** mode only the **source** tab is presented.

- **Document > Source > Import entities list**  - Shows a dialog that allows you to select a list of files as sources for external DTD entities. The internal subset of the DOCTYPE declaration of your document will be updated with the chosen entities. For instance, if choosing the file `chapter1.xml` and `chapter2.xml`, the following section is inserted in the DOCTYPE:

```
<!ENTITY chapter1 SYSTEM "chapter1.xml">
<!ENTITY chapter2 SYSTEM "chapter2.xml">
```

- **Document > Source > Capitalize lines** - It capitalizes the first letter found on every new line that is selected. Only the first letter is affected, the rest of the line remains the same. If the first character on the new line is not a letter then no changes are made.
- **Document > Source > Join and normalize** - The action works on the selection. It joins the lines by replacing the *line separator* with a single space character. It also normalizes the whitespaces by replacing a sequence of such characters with a single space.
- **Document > Source > Insert new line after:** This useful action has the same result with moving the caret to the end of the current line and pressing *ENTER*.

## XML Document Actions

The **Text** mode of the XML editor provides the following document level actions:

- **Document > Schema > Show Definition** (also available on the contextual menu of the editor panel) - Moves the cursor to the definition of the current element or attribute in the schema (DTD, XML Schema, Relax NG schema) associated with the edited XML document. In case the current attribute is “type” belonging to the “<http://www.w3.org/2001/XMLSchema-instance>” namespace, the cursor is moved in the XML schema, to the definition of the type referred in the value of the attribute.



**Note:** Alternatively you can use any of the following shortcuts:

- **Ctrl+Shift+Enter** on your keyboard;
- press and hold **Ctrl** (**Meta** on Mac OS) and click an element or attribute name.
- **Document > XML Document > Copy XPath (Ctrl+Alt+.)** - Copies the XPath expression of the current element or attribute from the current editor to the clipboard.
- **Document > XML Document > Go to Matching Tag (Ctrl+Shift+G)** - Moves the cursor to the end tag that matches the start tag, or vice versa.
- **Document > XML Document > Go after Next Tag (Ctrl+])** - Moves the cursor to the end of the next tag.
- **Document > XML Document > Go after Previous Tag (Ctrl+[)** - Moves the cursor to the end of the previous tag.
- **Document > XML Document > Associate XSLT/CSS Stylesheet**  - Inserts an `xml-stylesheet` processing instruction at the beginning of the document referencing either an XSLT or a CSS file depending on the user selection. Either reference is useful for rendering the document in a Web browser when the action **Open in browser** is executed. Referencing the XSLT file is also useful for automatic detection of the XSLT stylesheet when there is no scenario associated with the current document.

When associating the CSS stylesheet, the user can also specify a title for it if it is an alternate one. Setting a *Title* for the CSS makes it the author's preferred stylesheet. Selecting the **Alternate** checkbox makes the CSS an alternate stylesheet.

Oxygen XML Editor fully implements the W3C recommendation regarding [Associating Style Sheets with XML documents](#). See also [Specifying external style sheets](#) in HTML documents.

You can use the **Ctrl + Click** (**Meta+click** on Mac OS) action to open:

- any absolute URLs (URLs that have a protocol) regardless of their location in the document;
- URI attributes such as: *schemaLocation*, *noNamespaceSchemaLocation*, *href* and others;
- processing instructions used for associating resources, xml-models, xml-stylesheets.

## XML Refactoring Actions

The following refactoring actions are available while editing an XML document:

- **Document > XML Refactoring >  Surround with tag... (Ctrl+E)** - Allows you to choose a tag that encloses a selected portion of content. If there is no selection, the start and end tags are inserted at the caret position. The caret is placed:
  - between the start and end tag, if the **Cursor position between tags** option is set;
  - at the end of the start tag, in an insert-attribute position, if the **Cursor position between tags** option is not set.
- **Document > XML Refactoring >  Surround with <tag> (Ctrl+I)** - Similar in behavior with the **Surround with tag...** action, except that it inserts the last tag used by the **Surround with tag...** action.
- **Document > XML Refactoring >  Rename element (Alt+Shift+R)** - the element from the caret position and the elements that have the same name as the current element can be renamed according with the options from the **Rename** dialog.

**Document > XML Refactoring >  Rename prefix (Alt+Shift+P)** - the prefix of the element from the caret position and the elements that have the same prefix as the current element can be renamed according with the options from the **Rename** dialog.

Selecting the **Rename current element prefix** option, the application will recursively traverse the current element and all its children.

For example, to change the `xmlns:p1="ns1"` association existing in the current element to `xmlns:p5="ns1"`, just select this option and press **OK**. If the association `xmlns:p1="ns1"` is applied on the parent of the current element, then Oxygen XML Editor will introduce a new declaration `xmlns:p5="ns1"` in the current element and will change the prefix from `p1` to `p5`. If `p5` is already associated in the current element with another namespace, let's say `ns5`, then a dialog showing the conflict will be displayed. Pressing the **OK** button, the prefix will be modified from `p1` to `p5` without inserting a new declaration `xmlns:p5="ns1"`. On **Cancel** no modification is made.

Selecting the **Rename current prefix in all document** option, the application will apply the change on the entire document.

To apply the action also inside attribute values one must check the **Rename also attribute values that start with the same prefix** checkbox.

- **Document > XML Refactoring >  Split element (Ctrl+Alt+D)** - Split the element from the caret position in two identical elements. The caret must be inside the element.
- **Document > XML Refactoring >  Join elements (Ctrl+Alt+J)** - Joins the left and right elements relative to the current caret position. The elements must have the same name, attributes and attributes values.
- **Document > XML Refactoring >  Delete element tags (Ctrl+Alt+X)** - Deletes the start and end tag of the current element.

## Smart Editing

The following helper actions are available in the XML editor:

- *Closing tag auto-expansion* - If you want to insert content into an auto closing tag like `<tag/>` deleting the `/` character saves some keystrokes by inserting a separate closing tag automatically and placing the cursor between the start and end tags: `<tag></tag>`
- *Auto-rename matching tag* - When you edit the name of the start tag, Oxygen XML Editor will mirror-edit the name of the matching end tag. This feature can be controlled from the [Content Completion option page](#).

- *Auto-breaking the edited line* - The *Hard line wrap option* breaks the edited line automatically when its length exceeds the maximum line length *defined* for *the pretty-print operation*.
- *Indent on Enter* - The *Indent on Enter option* indents the new line inserted when Enter is pressed.
- *Smart Enter* - The *Smart Enter option* inserts an empty line between the start and end tags. If Enter is pressed between a start and an end tag the action places the cursor in an indented position on the empty line between the lines that contain the start and end tag.
- *Triple click* - A triple click with the left mouse button selects a different region of text of the current document depending on the position of the click in the document:
  - if the click position is inside a start tag or an end tag then the entire element enclosed by that tag is selected
  - if the click position is immediately after a start tag or immediately before an end tag then the entire content of the element enclosed by that tag is selected, including all the child elements but excluding the start tag and the end tag of the element
  - otherwise the triple click selects the entire current line of text

### Syntax Highlight Depending on Namespace Prefix

The *syntax highlight scheme of an XML file type* allows the configuration of a color per each type of token which can appear in an XML file. Distinguishing between the XML tag tokens based on the namespace prefix brings additional visual help in editing some XML file types. For example in XSLT stylesheets elements from different namespaces like XSLT, XHTML, XSL:FO or XForms are inserted in the same document and the editor panel can become cluttered.

*Marking tags with different colors based on the namespace prefix* allows easier identification of the tags.

```

3 <xsl:template match="name">
4   <fo:list-item>
5     <fo:list-item-label end-indent="label-end0">
6       <fo:block text-align="end" font-weight="bold">Full Name</fo:block>
7     </fo:list-item-label>
8     <fo:list-item-body start-indent="body-start0">
9       <xsl:apply-templates select="*" />
10    </fo:list-item-body>
11  </fo:list-item>
12 </xsl:template>

```

Figure 49: Example of Coloring XML Tags by Prefix

### Editor Highlights

An editor highlight is a text fragment emphasized by a colored background. Highlights are generated in both **Editor** and **Author** mode, when the following actions generate results: **XPath**, **Find All**, **Find in Files**, **Search References**, and **Search Declarations**.

By default, Oxygen XML Editor uses a different color for each type of highlight: *XPath*, *Find*, *Search References*, and *Search Declarations*. You can customize these colors and the maximum number of highlights displayed in a document from *Options > Preferences > Editor options page*. The default maximum number of highlights is 10000.

You are able to navigate in the current document through the highlights using one of the following methods:

- clicking the markers from the range ruler, located at the right side of the document;
- clicking the **Next** and **Previous** buttons from the bottom of the range ruler;
  -  **Note:** When there are multiple types of highlights in the document, the **Next** and **Previous** buttons navigate through highlights of the same type.
- clicking the messages displayed in the *Results view*.

To remove the highlights, you can:

- click the **Remove all** button from bottom of the range ruler;
- close the results tab which contains the output of the action that generated the highlights;
- click the  **Remove all** button from the results panel.

 **Note:** Use the **Highlight all results in editor** button to either display all the highlights or hide them.

## Editing XHTML Documents

XHTML documents with embedded CSS, JS, PHP, and JSP scripts are rendered with dedicated coloring schemes. You can customize them in the **Options > Preferences > Editor > Colors** preferences page.

## Editing XML Schemas

An XML Schema describes the structure of an XML document and is used to validate XML document instances against it, to check that the XML instances conform to the specified requirements. If an XML instance conforms to the schema then it is said to be valid, otherwise it is invalid.

Two editing modes are provided for working with XML Schema: the usual *Text* editing mode and the visual *Design* editing mode.

Oxygen XML Editor 14.2 offers support both for XML schema 1.0 and 1.1.

### XML Schema Text Editor

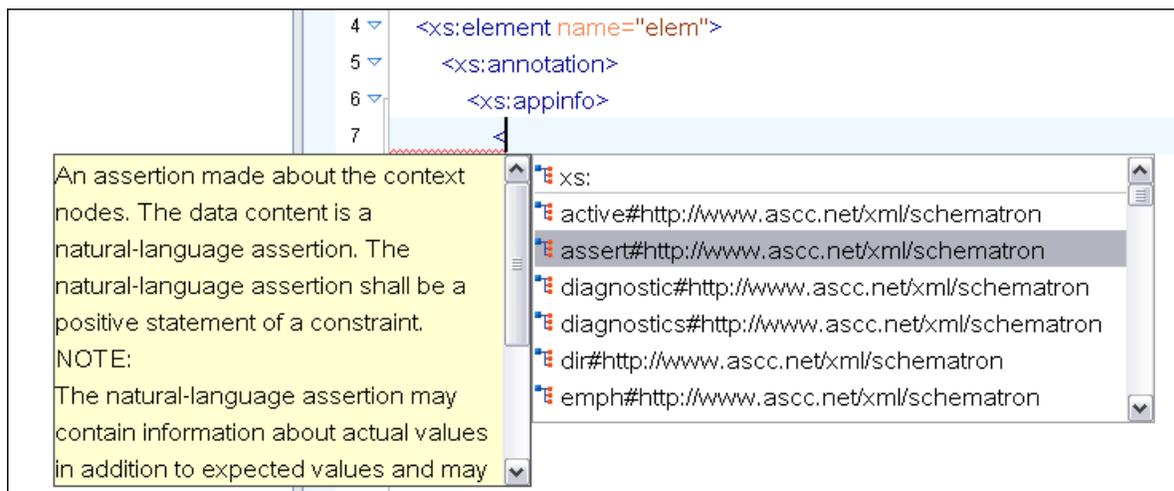
This page is used for editing the XML Schema in a text mode. It offers powerful content completion support, a synchronized Outline view, and multiple *refactory actions*. The Outline view has two display modes: the *standard outline* mode and the *components* mode.

A diagram of the XML Schema can be presented side by side with the text. To activate the diagram presentation, enable the *Show Full Model XML Schema diagram* check box from the *Diagram* preferences page.

### Special Content Completion Features

The editor enhances *the content completion of the XML editor* inside the `xs:annotation/xs:appinfo` elements of an XML Schema with special support for the elements and attributes from a custom schema (by default ISO Schematron). This content completion enhancement can be configured from the *XSD Content Completion* preferences page.

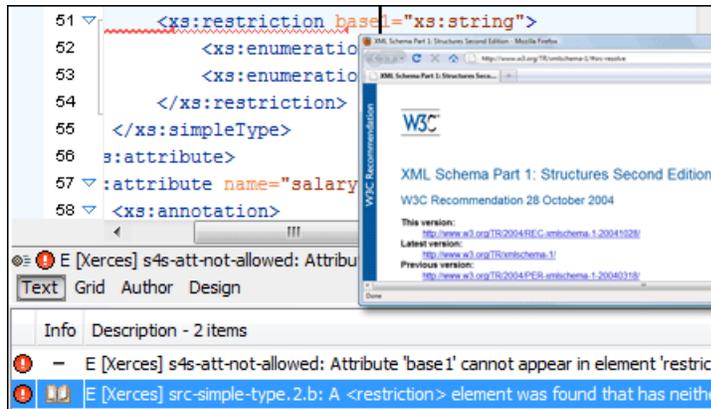
If the current XML Schema schema imports or includes other XML Schema schemas then the global types and elements defined in the imported / included schemas are available in the content completion window together with the ones defined in the current file.



**Figure 50: Schematron Support in XML Schema Content Completion**

## References to XML Schema Specification

The same as in editing XML documents, the message of an error obtained by validation of an XML Schema document includes a reference to the W3C specification for XML Schema. An error message contains an *Info* field that will open the browser on the "XML Schema Part 1:Structures" specification at exactly the point where the error is described thus allowing you to understand the reason for that error.



**Figure 51: Link to Specification for XML Schema Errors**

Validation of an XML Schema containing a type definition with a `minOccurs` or `maxOccurs` attribute having a value larger than 256 limits the value to 256 and issues a warning about this restriction in the Message panel at the bottom of the Oxygen XML Editor window. Otherwise, for large values of the `minOccurs` and `maxOccurs` attributes the validator fails with an OutOfMemory error which practically makes Oxygen XML Editor unusable without a restart of the entire application.

### Important:

If the schema imports only a namespace without specifying the schema location and a *catalog is set-up* mapping the namespace to a certain location both validation and the schema components outline will correctly identify the imported schema.

## XML Schema Actions

- The **Show Definition** action accessed from the menu **Document > Schema > Show Definition (Ctrl + Shift + ENTER)** moves the cursor to the definition of the referenced XML Schema item. You can also use the **Ctrl + Click** shortcut on a reference to display its definition. The referenced item can be an element, group, simple type or complex type. The same action is executed on a double click on a component name in the *Schema Outline view*. You can define a scope for this action in the same manner you define it for *Search Declarations*.

## Flatten an XML Schema

An XML Schema can be organized on several levels linked by `xs:include` statements. In some cases, working on such a schema as on a single file is more convenient.

To flatten an XML schema, Oxygen XML Editor recursively adds included files to the master one. This means Oxygen XML Editor replaces the `xs:include`, `xs:redefine`, and `xs:override` elements with the ones coming from the included files.

This action works at file level, not at schema document level. It is available only in **Text** mode of the XML Schema editor, in the contextual menu. You can also select one or more schemas in the **Project** view and invoke the **Flatten Schema** action from the contextual menu of the view. In this last case, the feedback of the action is presented in the **Information** view.

To flatten a schema from the command line, run one of the following scripts that come with Oxygen XML Editor:

- `flattenSchema.bat` on Windows;
- `flattenSchema.sh` on Mac OS X and Unix/Linux.

The input file is the first argument of the script and the output file is the second argument.

The references to the included schema files can be resolved through an [XML Catalog](#).

## XML Schema Diagram Editor

This section explains how to use the graphical diagram of a W3C XML Schema.

### Introduction

XML Schemas enable document designers to specify the allowed structure and content of an XML document and to check if an XML document is valid.

Oxygen XML Editor provides a simple and expressive **Design** mode for editing XML Schemas. The schema diagram helps both the content authors who want to understand a schema and schema designers who develop complex schemas.

The diagram font can be increased using the usual Oxygen XML Editor shortcuts: **(Ctrl - +)**, **(Ctrl - -)**, **(Ctrl - 0)** or **(Ctrl - mouse wheel)**. The whole diagram can also be zoomed with one of the predefined factors [available in the Schema preferences panel](#). The same zoom factor is applied for the print and save actions.





The following topics explain in detail all available components and their symbols as they appear in an XML schema diagram.

### xs:schema

schema

Target Namespace <http://www.oxygenxml.com/supported-grammars>

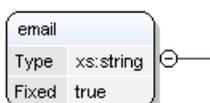
Defines the root element of a schema. A schema document contains representations for a collection of schema components, e.g. type definitions and element declarations, which have a common target namespace. See more info at <http://www.w3.org/TR/xmlschema11-1/#element-schema>.

By default it displays the *targetNamespace* property when rendered.

xs:schema properties

Property Name	Description	Possible Values
<b>Target Namespace</b>	The schema target namespace.	Any URI
<b>Element Form Default</b>	Determining whether local element declarations will be namespace-qualified by default.	qualified, unqualified, [Empty]. Default value is unqualified.
<b>Attribute Form Default</b>	Determining whether local attribute declarations will be namespace-qualified by default.	qualified, unqualified, [Empty]. Default value is unqualified.
<b>Block Default</b>	Default value of the <code>block</code> attribute of <code>xs:element</code> and <code>xs:complexType</code> .	#all, extension, restriction, substitution, restriction extension, restriction substitution, extension substitution, restriction extension substitution, [Empty].
<b>Final Default</b>	Default value of the <code>final</code> attribute of <code>xs:element</code> and <code>xs:complexType</code> .	#all, restriction, extension, restriction extension, [Empty].
<b>Default Attributes</b>	Specifies a set of attributes that apply to every complex Type in a schema document.	Any.
<b>Xpath Default Namespace</b>	The default namespace used when the XPath expression is evaluated.	##defaultNamespace, ##targetNamespace, ##local.
<b>Version</b>	Schema version	Any token.
<b>ID</b>	The schema id	Any ID.
<b>Component</b>	The edited component name.	Not editable property.
<b>SystemID</b>	The schema system id	Not editable property.

### xs:element



Defines an element. An element declaration is an association of a name with a type definition, either simple or complex, an (optional) default value and a (possibly empty) set of identity-constraint definitions. See more info at <http://www.w3.org/TR/xmlschema11-1/#element-element>.

An element by default displays the following properties when rendered in the diagram: *default*, *fixed*, *abstract* and *type*. When referenced or declared locally, the element graphical representation also contains the value for the *minOccurs* and *maxOccurs* properties (for 0..1 and 1..1 occurs the values are implied by the connector style) and the connectors to the element are drawn using dotted lines if the element is optional.

xs:element properties

Property Name	Description	Possible Values	Mentions
<b>Name</b>	The element name. Always required.	Any NCName for global or local elements, any QName for element references.	If missing, will be displayed as '[element]' in diagram.
<b>Is Reference</b>	When set, the local element is a reference to a global element.	true/false	Appears only for local elements.
<b>Type</b>	The element type.	All declared or built-in types. In addition, the following anonymous types are available: [ST-restriction], [ST-union], [ST-list], [CT-anonymous], [CT-extension SC], [CT-restriction SC], [CT-restriction CC], [CT-extension CC].	For all elements. For references, the value is set in the referred element.
<b>Base Type</b>	The extended/restricted base type.	All declared or built-in types	For elements with complex type, with simple or complex content.
<b>Mixed</b>	Defines if the complex type content model will be mixed.	true/false	For elements with complex type.
<b>Content</b>	The content of the complex type.	simple/complex	For elements with complex type which extends/restricts a base type. It is automatically detected.
<b>Content Mixed</b>	Defines if the complex content model will be mixed.	true/false	For elements with complex type which has a complex content.
<b>Default</b>	Default value of the element. A default value is automatically assigned to the element when no other value is specified.	Any string	The fixed and default attributes are mutually exclusive.

Property Name	Description	Possible Values	Mentions
<b>Fixed</b>	A simple content element may be fixed to a specific value using this attribute. A fixed value is also automatically assigned to the element and you cannot specify another value.	Any string	The fixed and default attributes are mutually exclusive.
<b>Min Occurs</b>	Minimum number of occurrences of the element.	A numeric positive value. Default value is 1	Only for references/local elements
<b>Max Occurs</b>	Maximum number of occurrences of the element.	A numeric positive value. Default value is 1	Only for references/local elements
<b>Substitution Group</b>	Qualified name of the head of the substitution group to which this element belongs.	All declared elements. For XML Schema 1.1 this property supports multiple values.	For global and reference elements
<b>Abstract</b>	Controls whether the element may be used directly in instance XML documents. When set to true, the element may still be used to define content models, but it must be substituted through a substitution group in the instance document.	true/false	For global elements and element references
<b>Form</b>	Defines if the element is "qualified" (i.e., belongs to the target namespace) or "unqualified" (i.e., doesn't belong to any namespace).	unqualified/qualified	Only for local elements
<b>Nilable</b>	When this attribute is set to true, the element can be declared as nil using an <code>xsi:nil</code> attribute in the instance documents.	true/false	For global elements and element references
<b>Target Namespace</b>	Specifies the target namespace for local element and attribute declarations. The namespace URI may be different from the schema target	Not editable property.	For all elements.

Property Name	Description	Possible Values	Mentions
	namespace. This property is available for local elements only.		
<b>Block</b>	Controls whether the element can be subject to a type or substitution group substitution. '#all' blocks any substitution, 'substitution' blocks any substitution through substitution groups and 'extension'/'restriction' block any substitution (both through <code>xsi:type</code> and substitution groups) by elements or types, derived respectively by extension or restriction from the type of the element. Its default value is defined by the <code>blockDefault</code> attribute of the parent <code>xs:schema</code> .	#all, restriction, extension,substitution, extension restriction, extension substitution, restriction substitution, restriction extension substitution	For global elements and element references
<b>Final</b>	Controls whether the element can be used as the head of a substitution group for elements whose types are derived by extension or restriction from the type of the element. Its default value is defined by the <code>finalDefault</code> attribute of the parent <code>xs:schema</code> .	#all, restriction, extension, restriction extension, [Empty]	For global elements and element references
<b>ID</b>	The component id.	Any id	For all elements.
<b>Component</b>	The edited component name.	Not editable property.	For all elements.
<b>Namespace</b>	The component namespace.	Not editable property.	For all elements.
<b>System ID</b>	The component system id.	Not editable property.	For all elements.

**xs:attribute**

Defines an attribute. See more info at <http://www.w3.org/TR/xmlschema11-1/#element-attribute>.

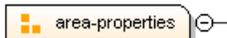
An attribute by default displays the following properties when rendered in the diagram: *default*, *fixed*, *use* and *type*. Connectors to the attribute are drawn using dotted lines if the attribute use is optional. The attribute name is stroked out if prohibited.

xs:attribute properties

Property Name	Description	Possible Value	Mentions
<b>Name</b>	Attribute name. Always required.	Any NCName for global/local attributes, all declared attributes' QName for references.	For all local or global attributes. If missing, will be displayed as '[attribute]' in the diagram.
<b>Is Reference</b>	When set, the local attribute is a reference.	true/false	For local attributes.
<b>Type</b>	Qualified name of a simple type.	All global simple types and built-in simple types. In addition another 3 proposals are present: [anonymous restriction], [anonymous list], [anonymous union] for creating anonymous simple types more easily.	For all attributes. For references, the type is set to the referred attribute.
<b>Default</b>	Default value. When specified, an attribute is added by the schema processor (if it is missing from the instance XML document) and it is given this value. The default and fixed attributes are mutually exclusive.	Any string	For all local or global attributes. For references the value is from the referred attribute.
<b>Fixed</b>	When specified, the value of the attribute is fixed and must be equal to this value. The default and fixed attributes are mutually exclusive.	Any string	For all local or global attributes. For references the value is from the referred attribute.
<b>Use</b>	Possible usage of the attribute. Marking an attribute "prohibited" is useful to exclude attributes during derivations by restriction.	optional, required, prohibited	For local attributes
<b>Form</b>	Specifies if the attribute is qualified (i.e., must have a namespace prefix in the instance XML document) or	unqualified/qualified	For local attributes.

Property Name	Description	Possible Value	Mentions
	not. The default value for this attribute is specified by the <code>attributeFormDefault</code> attribute of the <code>xs:schema</code> document element.		
<b>Inheritable</b>	Specifies if the attribute is inheritable. Inheritable attributes can be used by <alternative> element on descendant elements.	true/false	For all local or global attributes. The default value is false. This property is available for XML Schema 1.1.
<b>Target Namespace</b>	Specifies the target namespace for local attribute declarations. The namespace URI may be different from the schema target namespace.	Any URI	Setting a target namespace for local attribute is useful only when restricts attributes of a complex type that is declared in other schema with different target namespace. This property is available for XML Schema 1.1.
<b>ID</b>	The component id.	Any id	For all attributes.
<b>Component</b>	The edited component name.	Not editable property.	For all attributes.
<b>Namespace</b>	The component namespace.	Not editable property.	For all attributes.
<b>System ID</b>	The component system id.	Not editable property.	For all attributes.

### xs:attributeGroup



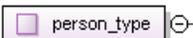
The properties of an area.

Defines an attribute group to be used in complex type definitions. See more info at <http://www.w3.org/TR/xmlschema11-1/#element-attributeGroup>.

xs:attributeGroup properties

Property Name	Description	Possible Values	Mentions
<b>Name</b>	Attribute group name. Always required.	Any NCName for global attribute groups, all declared attribute groups for reference.	For all global or referred attribute groups. If missing, will be displayed as '[attributeGroup]' in diagram.
<b>ID</b>	The component id.	Any id	For all attribute groups.
<b>Component</b>	The edited component name.	Not editable property.	For all attribute groups.
<b>Namespace</b>	The component namespace.	Not editable property.	For all attribute groups.
<b>System ID</b>	The component system id.	Not editable property.	For all attribute groups.

### xs:complexType



Defines a top level complex type. Complex Type Definitions provide for: See more data at

<http://www.w3.org/TR/xmlschema11-1/#element-complexType>.

- Constraining element information items by providing Attribute Declarations governing the appearance and content of attributes.
- Constraining element information item children to be empty, or to conform to a specified element-only or mixed content model, or else constraining the character information item children to conform to a specified simple type definition.
- Using the mechanisms of Type Definition Hierarchy to derive a complex type from another simple or complex type.
- Specifying post-schema-validation infoset contributions for elements.
- Limiting the ability to derive additional types from a given complex type.
- Controlling the permission to substitute, in an instance, elements of a derived type for elements declared in a content model to be of a given complex type.

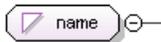
 **Tip:** A complex type which is a base type to another type will be rendered with yellow background.

xs:complexType properties

Property Name	Description	Possible Values	Mentions
<b>Name</b>	The name of the complex type. Always required.	Any NCName	Only for global complex types. If missing, will be displayed as '[complexType]' in diagram.
<b>Base Type Definition</b>	The name of the extended/restricted types.	Any from the declared simple or complex types.	For complex types with simple or complex content.
<b>Derivation Method</b>	The derivation method.	restriction/ extension	Only when base type is set. If the base type is a simple type, the derivation method is always extension.
<b>Content</b>	The content of the complex type.	simple/ complex	For complex types which extend/restrict a base type. It is automatically detected.
<b>Content Mixed</b>	Specifies if the complex content model will be mixed.	true/false	For complex contents.
<b>Mixed</b>	Specifies if the complex type content model will be mixed.	true/false	For global and anonymous complex types.
<b>Abstract</b>	When set to <code>true</code> , this complex type cannot be used directly in the instance documents and needs to be substituted using an <code>xsi:type</code> attribute.	true/false	For global and anonymous complex types.
<b>Block</b>	Controls whether a substitution (either through a <code>xsi:type</code> or substitution groups) can be performed for a complex type, which is an extension or a restriction of the current complex type. This attribute can only block such substitutions (it cannot "unblock" them), which can	all, extension, restriction, extension restriction, [Empty]	For global complex types.

Property Name	Description	Possible Values	Mentions
	also be blocked in the element definition. The default value is defined by the <code>blockDefault</code> attribute of <code>xs:schema</code> .		
<b>Final</b>	Controls whether the complex type can be further derived by extension or restriction to create new complex types.	all, extension, restriction, extension restriction, [Empty]	For global complex types.
<b>Default Attributes Apply</b>	The schema element can carry a <code>defaultAttributes</code> attribute, which identifies an attribute group. Each <code>complexType</code> defined in the schema document then automatically includes that attribute group, unless this is overridden by the <code>defaultAttributesApply</code> attribute on the <code>complexType</code> element.	true/false	This property is available only for XML Schema 1.1.
<b>ID</b>	The component id.	Any id	For all complex types.
<b>Component</b>	The edited component name.	Not editable property.	For all complex types.
<b>Namespace</b>	The component namespace.	Not editable property.	For all complex types.
<b>System ID</b>	The component system id.	Not editable property.	For all complex types.

### xs:simpleType



The person name.

Defines a simple type. A simple type definition is a set of constraints on strings and information about the values they encode, applicable to the normalized value of an attribute information item or of an element information item with no element children. Informally, it applies to the values of attributes and the text-only content of elements. See more info at <http://www.w3.org/TR/xmlschema11-1/#element-simpleType>.

 **Tip:** A simple type which is a base type to another type will be rendered with yellow background.

xs:simpleType properties

Name	Description	Possible Values	Scope
<b>Name</b>	Simple type name. Always required.	Any NCName.	Only for global simple types. If missing, will be displayed as '[simpleType]' in diagram.
<b>Derivation</b>	The simple type category: restriction, list or union.	restriction, list or union	For all simple types.
<b>Base Type</b>	A simple type definition component. Required if	All global simple types and built-in simple types. In	For global and anonymous simple types with the

Name	Description	Possible Values	Scope
<b>Item Type</b>	derivation method is set to restriction.  A simple type definition component. Required if derivation method is set to list.	addition another 3 proposals are present: [anonymous restriction], [anonymous list], [anonymous union] for easily create anonymous simple types.  All global simple types and built-in simple types(from schema for schema). In addition another 3 proposals are present: [anonymous restriction], [anonymous list], [anonymous union] for easily create anonymous simple types.	derivation method set to restriction.  For global and anonymous simple types with the derivation method set to list. Derivation by list is the process of transforming a simple datatype (named the item type) into a whitespace-separated list of values from this datatype. The item type can be defined inline by adding a simpleType definition as a child element of the list element, or by reference, using the itemType attribute (it is an error to use both).
<b>Member Types</b>	Category for grouping union members.	Not editable property.	For global and anonymous simple types with the derivation method set to union.
<b>Member</b>	A simple type definition component. Required if derivation method is set to union.	All global simple types and built-in simple types(from schema for schema). In addition another 3 proposals are present: [anonymous restriction], [anonymous list], [anonymous union] for easily create anonymous simple types.	For global and anonymous simple types with the derivation method set to union. Deriving a simple datatype by union merges the lexical spaces of several simple datatypes (called member types) to create a new simple datatype. The member types can be defined either by reference (through the memberTypes attribute) or embedded as simple datatype local definitions in the xs:union element. Both styles can be mixed.
<b>Final</b>	Blocks any further derivations of this datatype (by list, union, derivation or all).	#all, list, restriction, union, list restriction, list union, restriction union. In addition, [Empty] proposal is present for set empty string as value.	Only for global simple types.
<b>ID</b>	The component id.	Any id.	For all simple types
<b>Component</b>	The name of the edited component.	Not editable property.	Only for global and local simple types
<b>Namespace</b>	The component namespace.	Not editable property.	For global simple types.

Name	Description	Possible Values	Scope
<b>System ID</b>	The component system id.	Not editable property.	Not present for built-in simple types..

### xs:alternative

The *type alternatives* mechanism allows you to specify type substitutions on an element declaration.

 **Note:** `xs:alternative` is available for XML Schema 1.1.



xs:alternative properties

Name	Description	Possible Values
<b>Type</b>	Specifies type substitutions for an element, depending on the value of the attributes.	All declared or built-in types. In addition, the following anonymous types are available: [ST-restriction], [ST-union], [ST-list], [CT-anonymous], [CT-extension SC], [CT-restriction SC], [CT-restriction CC], [CT-extension CC].
<b>Test</b>	Specifies an XPath expression. If the XPath condition is valid, the specified type is selected as the element type. The expressions allowed are limited to a subset of XPath 2.0. Only the attributes of the current element and inheritable attributes from ancestor elements are accessible in the XPath expression. When you edit this property, the content completion list of proposals offers XPath expressions.	An XPath expression.
<b>XPath Default Namespace</b>	The default namespace used when the XPath expression is evaluated.	##defaultNamespace, ##targetNamespace, ##local.
<b>ID</b>	Specifies the component ID.	Any ID.
<b>Component</b>	Specifies the type of XML schema component.	Not editable property.
<b>System ID</b>	Points to the document location of the schema.	Not editable property.

### xs:group



Defines a group of elements to be used in complex type definitions. See more info at <http://www.w3.org/TR/xmlschema11-1/#element-group>.

When referenced, the graphical representation also contains the value for the *minOccurs* and *maxOccurs* properties (for 0..1 and 1..1 occurs the values are implied by the connector style) and the connectors to the group are drawn using dotted lines if the group is optional.

xs:group properties

Property Name	Description	Possible Values	Mentions
<b>Name</b>	The group name. Always required.	Any NCName for global groups, all declared groups for reference.	If missing, will be displayed as '[group]' in diagram.
<b>Min Occurs</b>	Minimum number of occurrences of the group.	A numeric positive value. Default value is 1.	Appears only for reference groups.
<b>Max Occurs</b>	Maximum number of occurrences of the group.	A numeric positive value. Default value is 1.	Appears only for reference groups.
<b>ID</b>	The component id.	Any id	For all groups.
<b>Component</b>	The edited component name.	Not editable property.	For all groups.
<b>Namespace</b>	The component namespace.	Not editable property	For all groups.
<b>System ID</b>	The component system id.	Not editable property.	For all groups.

**xs:include**

Adds multiple schemas with the same target namespace to a document. See more info at <http://www.w3.org/TR/xmlschema11-1/#element-include>.

xs:include properties

Property Name	Description	Possible Values
<b>Schema Location</b>	Included schema location.	Any URI
<b>ID</b>	Include ID.	Any ID
<b>Component</b>	The component name.	Not editable property.

**xs:import**

Adds multiple schemas with different target namespace to a document. See more info at <http://www.w3.org/TR/xmlschema11-1/#element-import>.

xs:import properties

Property Name	Description	Possible Values
<b>Schema Location</b>	Imported schema location	Any URI
<b>Namespace</b>	Imported schema namespace	Any URI
<b>ID</b>	Import ID	Any ID
<b>Component</b>	The component name	Not editable property.

**xs:redefine**

Redefines simple and complex types, groups, and attribute groups from an external schema. See more info at <http://www.w3.org/TR/xmlschema11-1/#element-redefine>.

xs:redefine properties

Property Name	Description	Possible Values
<b>Schema Location</b>	Redefine schema location.	Any URI
<b>ID</b>	Redefine ID	Any ID
<b>Component</b>	The component name.	Not editable property.

**xs:override**

The override construct allows replacements of old components with new ones without any constraint. See more info at <http://www.w3.org/TR/xmlschema11-1/#element-override>.

xs:override properties

Property Name	Description	Possible Values
<b>Schema Location</b>	Redefine schema location.	Any URI
<b>ID</b>	Redefine ID	Any ID

**xs:notation**

Describes the format of non-XML data within an XML document. See more info at <http://www.w3.org/TR/xmlschema11-1/#element-notation>.

xs:notation properties

Property Name	Description	Possible values	Mentions
<b>Name</b>	The notation name. Always required.	Any NCName.	If missing, will be displayed as '[notation]' in diagram.
<b>System Identifier</b>	The notation system identifier.	Any URI	Required if public identifier is absent, otherwise optional.
<b>Public Identifier</b>	The notation public identifier.	A Public ID value	Required if system identifier is absent, otherwise optional.
<b>ID</b>	The component id.	Any ID	For all notations.
<b>Component</b>	The edited component name.	Not editable property.	For all notations.
<b>Namespace</b>	The component namespace.	Not editable property.	For all notations.
<b>System ID</b>	The component system id.	Not editable property.	For all notations.

**xs:sequence, xs:choice, xs:all**

**Figure 53: An `xs:sequence` in diagram**

`xs:sequence` specifies that the child elements must appear in a sequence. Each child element can occur from 0 to any number of times. See more info at <http://www.w3.org/TR/xmlschema11-1/#element-sequence>.



**Figure 54: An `xs:choice` in diagram**

`xs:choice` allows only one of the elements contained in the declaration to be present within the containing element. See more info at <http://www.w3.org/TR/xmlschema11-1/#element-choice>.



**Figure 55: An `xs:a11` in diagram**

`xs:a11` specifies that the child elements can appear in any order. See more info at <http://www.w3.org/TR/xmlschema11-1/#element-all>.

The compositor graphical representation also contains the value for the `minOccurs` and `maxOccurs` properties (for 0..1 and 1..1 occurs the values are implied by the connector style) and the connectors to the compositor are drawn using dotted lines if the compositor is optional.

`xs:sequence`, `xs:choice`, `xs:a11` properties

Property Name	Description	Possible Values	Mentions
<b>Compositor</b>	Compositor type.	sequence, choice, all.	'all' is only available as a child of a group or complex type.
<b>Min Occurs</b>	Minimum occurrences of compositor.	A numeric positive value. Default is 1.	The property is not present if compositor is 'all' and is child of a group.
<b>Max Occurs</b>	Maximum occurrences of compositor.	A numeric positive value. Default is 1.	The property is not present if compositor is 'all' and is child of a group.
<b>ID</b>	The component id.	Any ID	For all compositors.
<b>Component</b>	The edited component name.	Not editable property.	For all compositors.
<b>System ID</b>	The component system id.	Not editable property.	For all compositors.

### `xs:any`



Enables the author to extend the XML document with elements not specified by the schema. See more info at <http://www.w3.org/TR/xmlschema11-1/#element-any>.

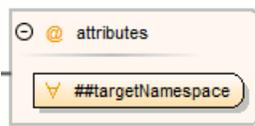
The graphical representation also contains the value for the `minOccurs` and `maxOccurs` properties (for 0..1 and 1..1 occurs the values are implied by the connector style) and the connectors to the wildcard are drawn using dotted lines if the wildcard is optional.

`xs:any` properties

Property Name	Description	Possible Values
<b>Namespace</b>	The list of allowed namespaces. The namespace attribute expects a list of namespace URIs. In this list, two values have a specific meaning: '##targetNamespace' stands for the target namespace, and '##local' stands for local attributes (without namespaces).	##any, ##other, ##targetNamespace, ##local or anyURI
<b>notNamespace</b>	Specifies the namespace that extension elements or attributes cannot come from.	##local, ##targetNamespace

Property Name	Description	Possible Values
<b>notQName</b>	Specifies an element or attribute that is not allowed.	##defined
<b>Process Contents</b>	Type of validation required on the elements allowed for this wildcard.	skip, lax, strict
<b>Min Occurs</b>	Minimum occurrences of any	A numeric positive value. Default is 1.
<b>Max Occurs</b>	Maximum occurrences of any	A numeric positive value. Default is 1.
<b>ID</b>	The component id.	Any ID.
<b>Component</b>	The name of the edited component.	Not editable property.
<b>System ID</b>	The component system id.	Not editable property.

### xs:anyAttribute



Enables the author to extend the XML document with attributes not specified by the schema. See more info at <http://www.w3.org/TR/xmlschema11-1/#element-anyAttribute>.

xs:anyAttribute properties

Property Name	Description	Possible Value
<b>Namespace</b>	The list of allowed namespaces. The namespace attribute expects a list of namespace URIs. In this list, two values have a specific meaning: '##targetNamespace' stands for the target namespace, and '##local' stands for local attributes (without namespaces).	##any, ##other, ##targetNamespace, ##local or anyURI
<b>Process Contents</b>	Type of validation required on the elements allowed for this wildcard.	skip, lax, strict
<b>ID</b>	The component id.	Any ID.
<b>Component</b>	The name of the edited component.	Not editable property.
<b>System ID</b>	The component system id.	Not editable property.

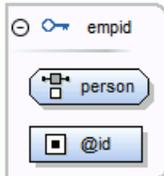
### xs:unique



Defines that an element or an attribute value must be unique within the scope. See more info at <http://www.w3.org/TR/xmlschema11-1/#element-unique>.

xs:unique properties

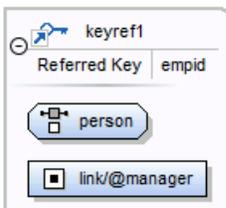
Property Name	Description	Possible Values
<b>Name</b>	The unique name. Always required.	Any NCName.
<b>ID</b>	The component id.	Any ID.
<b>Component</b>	The edited component name.	Not editable property.
<b>Namespace</b>	The component namespace.	Not editable property.
<b>System ID</b>	The component system id.	Not editable property.

**xs:key**

Specifies an attribute or element value as a key (unique, non-nullable and always present) within the containing element in an instance document. See more info at <http://www.w3.org/TR/xmlschema11-1/#element-key>.

xs:key properties

Property Name	Description	Possible Value
<b>Name</b>	The key name. Always required.	Any NCName.
<b>ID</b>	The component id.	Any ID.
<b>Component</b>	The edited component name.	Not editable property.
<b>Namespace</b>	The component namespace.	Not editable property.
<b>System ID</b>	The component system id.	Not editable property.

**xs:keyRef**

Specifies that an attribute or element value corresponds to that of the specified key or unique element. See more info at <http://www.w3.org/TR/xmlschema11-1/#element-keyref>.

A keyref by default displays the *Referenced Key* property when rendered.

xs:keyRef properties

Property Name	Description	Possible Values
<b>Name</b>	The keyref name. Always required.	Any NCName.
<b>Referenced Key</b>	The name of referred key.	any declared element constraints.
<b>ID</b>	The component id.	Any ID.
<b>Component</b>	The edited component name.	Not editable property.
<b>Namespace</b>	The component namespace.	Not editable property.
<b>System ID</b>	The component system id.	Not editable property.

**xs:selector**

Specifies an XPath expression that selects a set of elements for an identity constraint. See more info at <http://www.w3.org/TR/xmlschema11-1/#element-selector>.

xs:selector properties

Property Name	Description	Possible Values
<b>XPath</b>	Relative XPath expression identifying the element on which the constraint applies.	An XPath expression.
<b>ID</b>	The component id.	Any ID.
<b>Component</b>	The edited component name.	Not editable property.
<b>System ID</b>	The component system id.	Not editable property.

**xs:field**

Specifies an XPath expression that specifies the value used to define an identity constraint. See more info at <http://www.w3.org/TR/xmlschema11-1/#element-field>.

xs:field properties

Property Name	Description	Possible Values
<b>XPath</b>	Relative XPath expression identifying the field(s) composing the key, key reference, or unique constraint.	An XPath expression.
<b>ID</b>	The component id.	Any ID.
<b>Component</b>	The edited component name.	Not editable property.
<b>System ID</b>	The component system id.	Not editable property.

**xs:assert**

Assertions provide a flexible way to control the occurrence and values of elements and attributes available in an XML Schema.

 **Note:** `xs:assert` is available for XML Schema 1.1.



xs:assert properties

Property Name	Description	Possible Values
<b>Test</b>	Specifies an XPath expression. If the XPath condition is valid, the specified type is selected as the element type. The expressions allowed are limited to a subset of XPath 2.0. Only the attributes of the current element and inheritable attributes from ancestor elements are accessible in the XPath expression. When you edit this	An XPath expression.

Property Name	Description	Possible Values
	property, the content completion list of proposals offers XPath expressions.	
<b>XPath Default Namespace</b>	The default namespace used when the XPath expression is evaluated.	##defaultNamespace, ##targetNamespace, ##local.
<b>ID</b>	Specifies the component ID.	Any ID.
<b>Component</b>	The edited component name.	Not editable property.
<b>System ID</b>	The component system id.	Not editable property.

### xs:openContent



The `openContent` element enables instance documents to contain extension elements interleaved among the elements declared by the schema. You can declare open content for your elements at one place - within the `complexType` definition, or at the schema level.

For further details about the `openContent` component, go to <http://www.w3.org/TR/xmlschema11-1/#element-openContent>.

xs:openContent properties

Property Name	Description	Possible Value
<b>Mode</b>	Specifies where the extension elements can be inserted.	The value can be: "interleave", "suffix" or "none". The default value is "interleave".
<b>ID</b>	The component id.	Any ID.
<b>Component</b>	The edited component name.	Not editable property.
<b>System ID</b>	The component system id.	Not editable property.

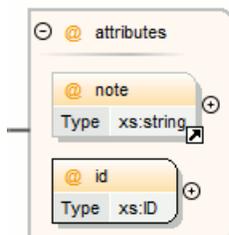
 **Note:** This component is available for XML Schema 1.1 only. To change the version of the XML Schema, go to **Options > Preferences > XML > XML Parser > XML Schema**.

### Constructs Used to Group Schema Components

This section explains the components that can be used for grouping other schema components:

- [Attributes](#)
- [Constraints](#)
- [Substitutions](#)

*Attributes*

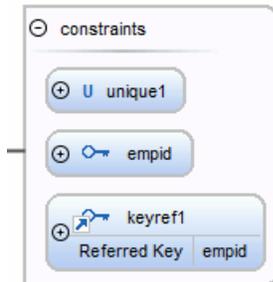


Groups all attributes and attribute groups belonging to a complex type.

Attributes properties

Property Name	Description	Possible Values
<b>Component</b>	The element for which the attributes are displayed.	Not editable property.
<b>System ID</b>	The component system id.	Not editable property.

### Constraints

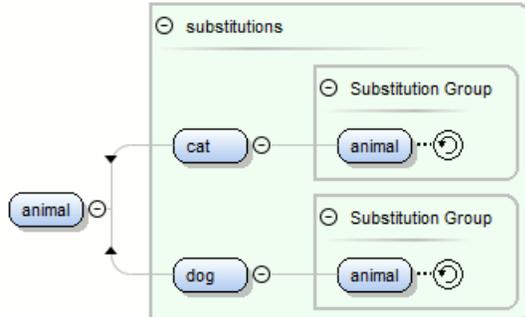


Groups all constraints (*xs:key*, *xs:keyRef* or *xs:unique*) belonging to an element.

Attributes properties

Property Name	Description	Possible Values
<b>Component</b>	The element for which the constraints are displayed.	Not editable property.
<b>System ID</b>	The component system id.	Not editable property.

### Substitutions



Groups all elements which can substitute the current element.

Attributes properties

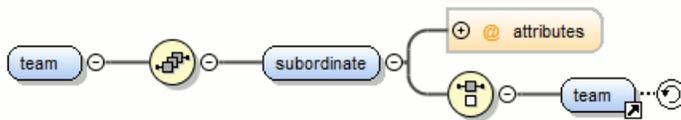
Property Name	Description	Possible Values
<b>Component</b>	The element for which the substitutions are displayed.	Not editable property.
<b>System ID</b>	The component system id.	Not editable property.

### Navigation in the Schema Diagram

The following editing and navigation features work for all types of schema components:

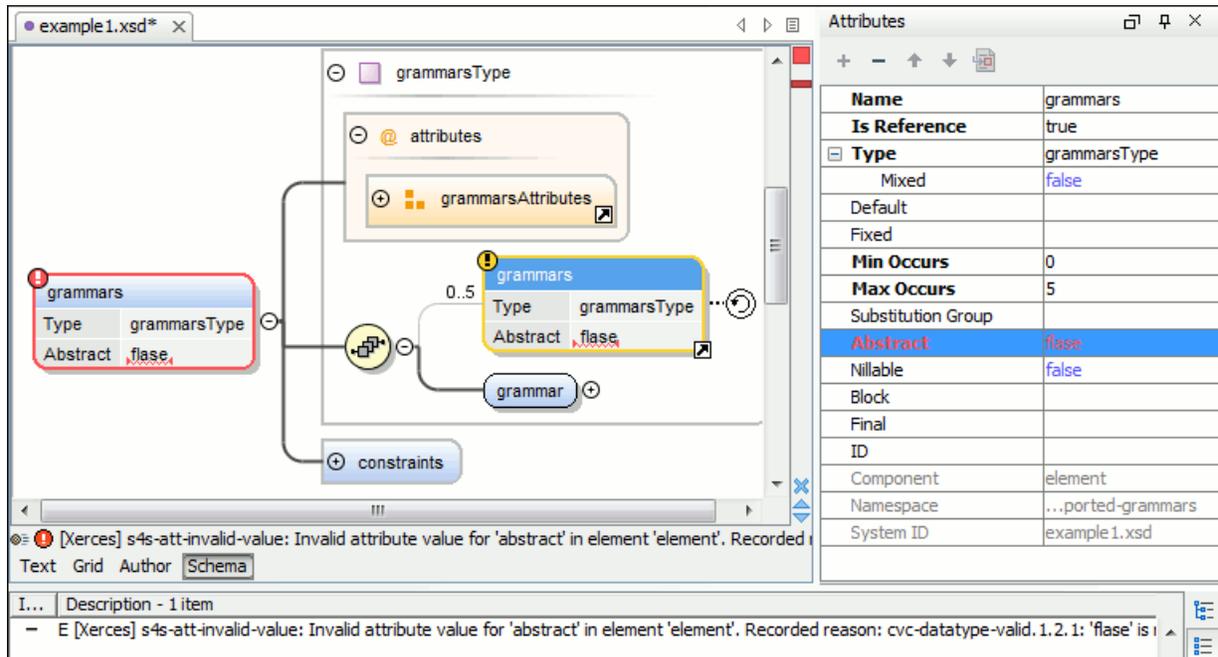
- Move/refer components in the diagram using drag-and-drop actions.
- Select consecutive components on the diagram (components from the same level) using the *Shift* key. You can also make discontinuous selections in the schema diagram using the *Ctrl* key. To deselect one of the components, use **Ctrl + Click**.

- Use the arrow keys to navigate the diagram vertically and horizontally.
  - Use *Home/End* keys to navigate to the first/last component from the same level. Use **(Ctrl - Home)** key combination to go to the diagram root and **(Ctrl - End)** to go to the last child of the selected component.
  - You can easily go back to a previously visited component while moving from left to right. The path will be preserved only if you use the left arrow key or right arrow key. For example, if the current selection is on the second attribute from an attribute group and you press the left arrow key to navigate to the attribute group, when you press the right arrow key, then the selection will be moved to the second attribute.
  - Go back and forward between components viewed or edited in the diagram by selecting them in the **Outline** view:
    -  **Back** (go to previous schema component)
    -  **Forward** (go to next schema component)
    -  **Go to Last Modification** (go to last modified schema component)
  - Copy, refer or move global components, attributes, and identity constraints to a different position and from one schema to another using the **Cut/Copy** and **Paste/Paste as Reference** actions.
  - Go to the definition of an element or attribute with the **Show Definition** action.
  - Search in the diagram using the *Find/Replace dialog* or the *Quick find toolbar*. You can find/replace components only in the current file scope.
  - You can expand and see the contents of the imports/includes/redefines in the diagram. In order to edit components from other schemas the schema for each component will be opened as a separate file in Oxygen XML Editor.
-  **Tip:** If an XML Schema referenced by the current opened schema was modified on disk, the change will be detected and you will be asked to refresh the current schema contents.
- Recursive references are marked with a recurse symbol: . Click this symbol to navigate between the element declaration and its reference.



## Schema Validation

Validation for the **Design** mode is seamlessly integrated in the Oxygen XML Editor [XML documents validation](#) capability.



**Figure 56: XML Schema Validation**

A schema validation error is presented by highlighting the invalid component in the following places:

- in the *Attributes View*
- in the diagram by surrounding the component that has the error with a red border
- a marker on the errors stripe at the right of the diagram view
- a status label with a red icon (❗) below the diagram view

Invalid facets for a component are highlighted in the *Facets View*.

Components with invalid properties are rendered with a red border. This is a default color, but you can customize it in the *Document checking user preferences*. When hovering an invalid component, the tooltip will present the validation errors associated with that component.

When editing a value which is supposed to be a qualified or unqualified XML name, the application provides automatic validation of the entered value. This proves to be very useful in avoiding setting invalid XML names for the given property.

If you validate the entire schema using **Document > Validate Document (Ctrl+Shift+V)** or the action available on the **Validate** toolbar, all validation errors will be presented in the **Errors** tab. To resolve an error, just click on it (or double click for errors located in other schemas) and the corresponding schema component will be displayed as the diagram root so that you can easily correct the error.

**Important:** If the schema imports only the namespace of other schema without specifying the schema location and a *catalog is set-up* that maps the namespace to a certain location both the validation and the diagram will correctly identify the imported schema.

**Tip:** If the validation action finds that the schema contains unresolved references, the application will suggest the use of validation scenarios, but only if the current edited schema is a XML Schema module.

## Schema Editing Actions

The schema can be edited using drag and drop operations or contextual menu actions.

Drag and drop action provides the easiest way to move the existing components to other locations in the schema. For example, an element reference can be quickly inserted in the diagram with a drag and drop from the **Outline** view to a compositor in the diagram. Also the components order in an `xs:sequence` can be easily changed using drag and drop.

If this property has not been set, you can easily set the attribute/element type by dragging over it a simple type or complex type from the diagram. If the type property for a simple type or complex type is not already set, you can set it by dragging over it a simple or complex type.

Depending on the drop area, different actions are available:

- **move** - Context dependent, the selected component is moved to the destination;
- **refer** - Context dependent, the selected component is referred from the parent;
- **copy** - If (**Ctrl**) key is pressed, a copy of the selected component is inserted to the destination.

Visual clues about the operation type are indicated by the mouse pointer shape:

-  - When moving a component;
-  - When referring a component;
-  - When copying a component.

You can edit some schema components directly in the diagram. For these components, you can edit the name and the additional properties presented in the diagram by double clicking the value you want to edit. If you want to edit the name of a selected component, you can also press (**Enter**). The list of properties which can be displayed for each component can be customized *in the Preferences*.

When editing references, you can choose from a list of available components. Components from an imported schema for which the target namespace does not have an associated prefix is displayed in the list as `componentName#targetNamespace`. If the reference is from a target namespace which was not yet mapped, you are prompted to add prefix mappings for the inserted component namespace in the current edited schema.

You can also change the compositor by double-clicking it and choose the compositor you want from the proposals list.

There are some components that cannot be edited directly in the diagram: imports, includes, redefines. The editing action can be performed if you double-click or press (**Enter**) on an import/include/define component. An edit dialog is displayed, allowing you to customize the directives.

The contextual menu of the **Design** mode offers the following edit actions:

-  **Show Definition** ( (**Ctrl - Shift - Enter**) ) - Shows the definition for the current selected component. For references, this action is available by clicking the arrow displayed in its bottom right corner.
-  **Open Schema** ( (**Ctrl - Shift - Enter**) ) - Opens the selected schema. This action is available for `xsd:import`, `xsd:include` and `xsd:redefine` elements. If the file you try to open does not exist, a warning message is displayed and you have the possibility to create the file.
- **Edit Attributes...** ( ) - Allows you to edit the attributes of the selected component in a dialog that presents the same attributes as in the *Attributes View* and the *Facets View*. The actions that can be performed on attributes in this dialog are the same actions presented in the two views.
- **Append child** - Offers a list of valid components to append depending on the context. For example to a complex type you can append a compositor, a group, attributes or identity constraints (`unique`, `key`, `keyref`). You can set a name for a named component after it was added in the diagram.
- **Insert before** - Inserts before the selected component in the schema. The list of components that can be inserted depends on the context. For example, before an `xsd:import` you can insert an `xsd:import`, `xsd:include` or `xsd:redefine`. You can set a name for a named component after it was added in the diagram.
- **Insert after** - Inserts a component after the selected component on the schema. The list of components that can be inserted depends on the context. You can set a name for a named component after it was added in the diagram.
- **New global** - Inserts a global component in the schema diagram. This action does not depend on the current context. If you choose to insert an import you have to specify the URL of the imported file, the target namespace and the import ID. The same information, excluding the target namespace, is requested for an `xsd:include` or `xsd:redefine` element. See the **Edit Import** dialog for more details.

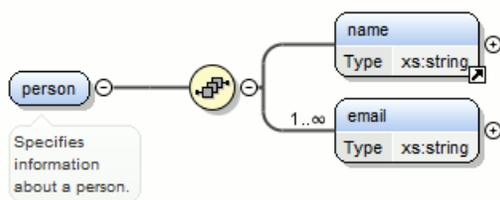
 **Note:** If the imported file has declared a target namespace, the field **Namespace** is completed automatically.

- **Edit Schema Namespaces...** - When performed on the schema root, it allows you to edit the schema target namespace and namespace mappings. You can also invoke the action by double-clicking the target namespace property from **Attributes** view for the schema or by double-clicking the schema component.
- **Edit Annotations...** - Allows you to edit the annotation for the selected schema component in the **Edit Annotations** dialog. You can perform the following operations in the dialog:
  - **Edit all appinfo/documentation items for a specific annotation** - All `appinfo/documentation` items for a specific annotation are presented in a table and can be easily edited. Information about an annotation item includes: type (`documentation/appinfo`), content, source (optional, specify the source of the `documentation/appinfo` element) and `xml:lang`. The content of a `documentation/appinfo` item can be edited in the **Content** area below the table.
  - **Insert/Insert before/Remove documentation/appinfo.**  - Allows you to insert a new annotation item (`documentation/appinfo`). You can add a new item before the item selected in table by pressing the  button. Also you can delete the selected item using the  button.
  - **Move items up/down** - To do this use the  and  buttons.
  - **Insert/Insert before/Remove annotation** - Available for components that allow multiple annotations like schemas or redefines.
  - **Specify an ID for the component annotation.** The ID is optional.

 **Note:** For imported/included components which do not belong to the current edited schema the dialog presents the annotation as read-only and you will have to open the schema where the component is defined in order to edit its annotation.

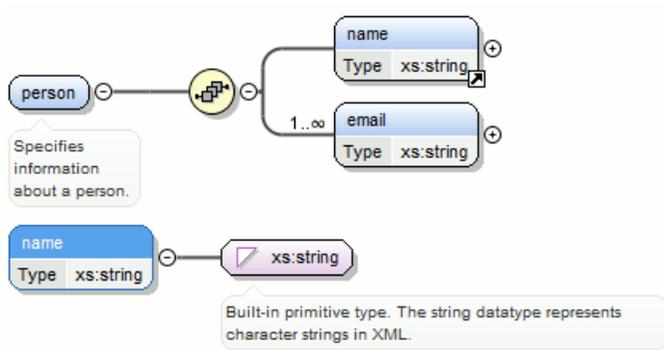
 **Note:** Annotations are rendered by default under the graphical representation of the component. When you have a reference to a component with annotations, these annotations are presented in the diagram also below the reference component. The **Edit Annotations** action invoked from the contextual menu edit the annotations for the reference. If the reference component does not have annotations, you can edit the annotations of the referred component by double-clicking the annotations area. Otherwise you can edit the referred component annotations only if you go to the definition of the component.

- **Extract Global Element** - Action available for local elements. A local element is made global and is replaced with a reference to the global element. The local element properties that are also valid for the global element declaration are kept.

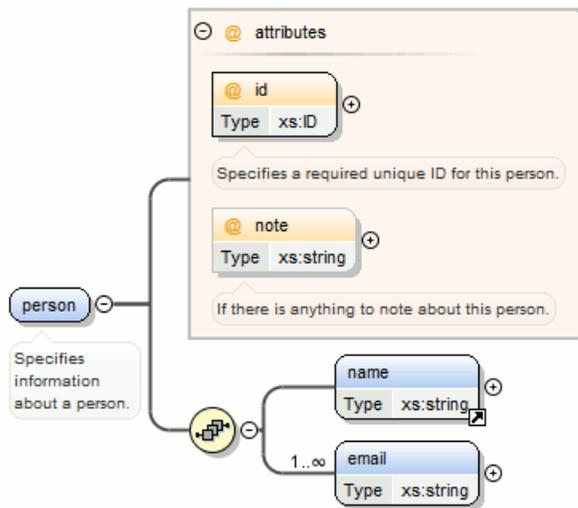


**Figure 57: Extracting a Global Element**

If you execute **Extract Global Element** on element `name`, the result is:

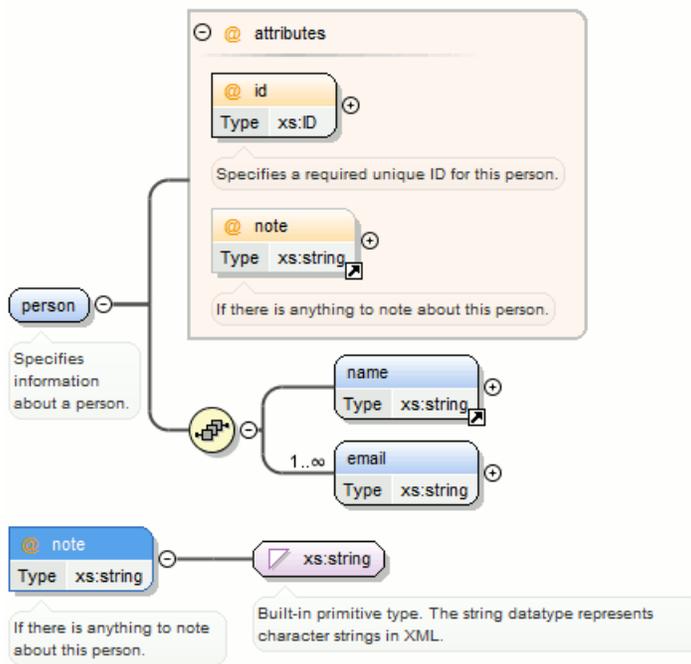


- **Extract Global Attribute** - Action available for local attributes. A local attribute is made global and replaced with a reference to the global attribute. The properties of local attribute that are also valid in the global attribute declaration are kept.

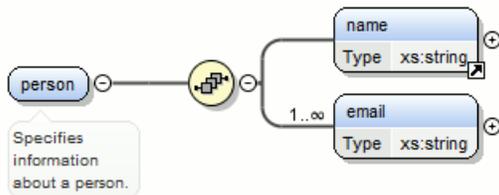


**Figure 58: Extracting a Global Attribute**

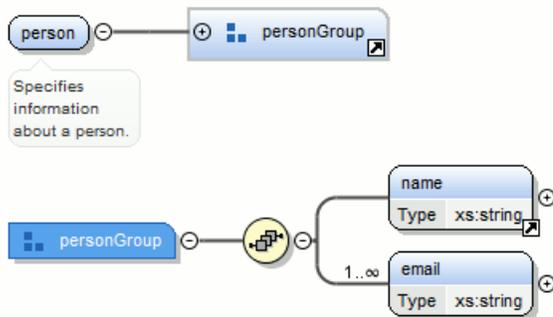
If you execute **Extract Global Attribute** on attribute `note` the result is:



- **Extract Global Group** - Action available for compositors (sequence, choice, all). This action extracts a global group and makes a reference to it. The action is enabled only if the parent of the compositor is not a group.



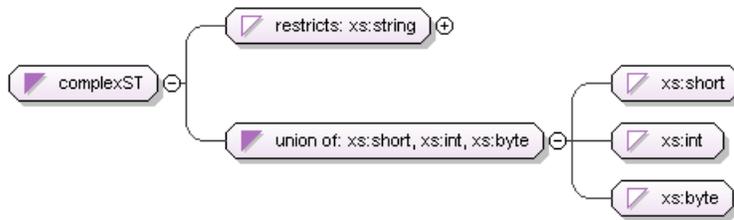
If you execute **Extract Global Group** on the sequence element, the **Extract Global Component** dialog is shown and you can choose a name for the group. If you type `personGroup`, the result



is:

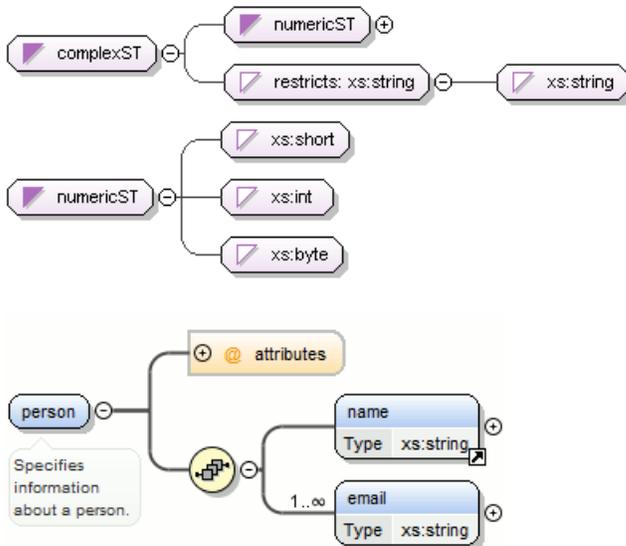
**Figure 59: Extracting a Global Group**

- **Extract Global Type** - Action used to extract an anonymous simple type or an anonymous complex type as global. For anonymous complex types, the action is available on the parent element.



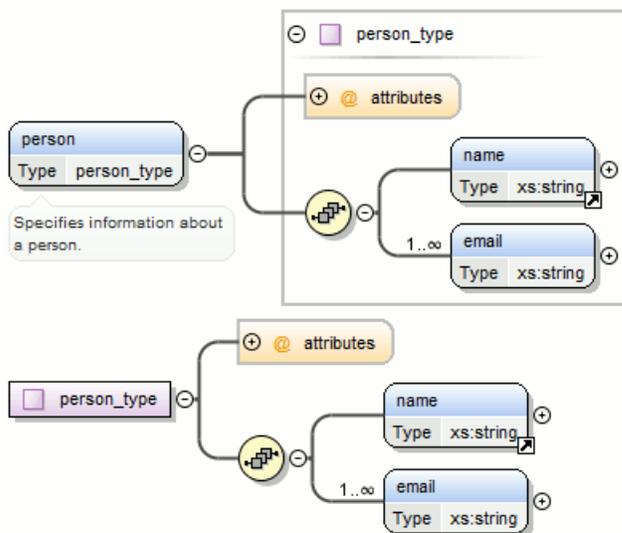
**Figure 60: Extracting a Global Simple Type**

If you use the action on the union component and choose `numericST` for the new global simple type name, the result is:



**Figure 61: Extracting a Global Complex Type**

If you execute the action on element `person` and choose `person_type` for the new complex type name, the result is:

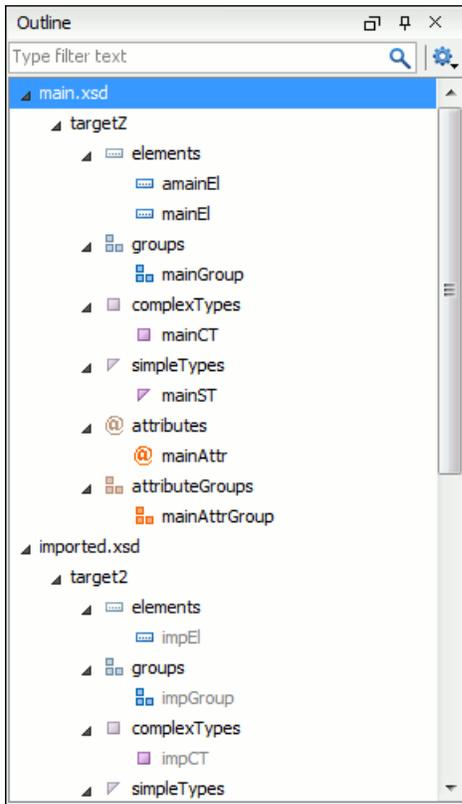


- **Rename Component** - Rename the selected component.
-  **Cut (Ctrl - X)** - Cut the selected component(s).

-  **Copy (Ctrl - C)** - Copy the selected component(s).
-  **Paste (Ctrl - V)** - Paste the component(s) from the clipboard as children of the selected component.
- **Paste as Reference** - Create references to the copied component(s). If not possible a warning message is displayed.
- **Remove (Delete)** - Remove the selected component(s).
- **Override component** - Copies the overridden component in the current XML Schema. This option is available for *xs:override* components.
- **Redefine component** - The referred component is added in the current XML Schema. This option is available for *xs:redefine* components.
- **Optional** - Can be performed on element/attribute/group references, local attributes, elements, compositors, and element wildcards. The `minOccurs` property is set to 0 and the `use` property for attributes is set to `optional`.
- **Unbounded** - Can be performed on element/attribute/group references, local attributes, elements, compositors, and element wildcards. The `maxOccurs` property is set to `unbounded` and the `use` property for attributes is set to `required`.
- **Search** - Can be performed on local elements or attributes. This action makes a reference to a global element or attribute.
-  **Search References** - Searches all references of the item found at current cursor position in the defined scope if any.
- **Search References in...** - Searches all references of the item found at current cursor position in the specified scope.
- **Search Occurrences in File** - Searches all occurrences of the item found at current cursor position in the current file.
-  **Component Dependencies** - Allows you to see the dependencies for the current selected component.
- **Resource Hierarchy** - Allows you to see the hierarchy for the current selected resource.
- **Resource Dependencies** - Allows you to see the dependencies for the current selected resource.
-  **Expand all** - Expands recursively all sub-components of the selected component.
-  **Collapse all** - Collapses recursively all sub-components of the selected component.
- **Save as Image...** - Save the diagram as image, in JPEG, BMP, SVG or PNG format.
-  **Generate Sample XML Files** - Generate XML files using the current opened schema. The selected component is the XML document root. See more in the [Generate Sample XML Files](#) section.
-  **Options...** - Show the [Schema preferences panel](#).

### Schema Outline View

The **Outline** view presents all the global components grouped by their location, namespace, or type. If hidden, you can open it from **Window > Show View > Outline** .



**Figure 62: The Outline View for XML Schema**

The **Outline** view provides the following options:

-  **Selection update on caret move** - Allows a synchronization between **Outline** view and schema diagram. The selected view from the diagram is also selected in the **Outline** view.
-  **Sort** - Allows you to sort alphabetically the schema components.
- **Show all components** - Displays all components that were collected starting from the main files. Components that are not referable from the current file are marked with an orange underline. To refer them, add an import directive with the *componentNS* namespace.
- **Show referable components** - Displays all components (collected starting from the main files) that can be referred from the current file. This option is set by default.
- **Show local components** - Displays components defined in the current file only.
- **Group by location/namespace/type** - These three operations allow you to group the components by location, namespace, or type. When grouping by namespace, the main schema target namespace is the first presented in the **Outline** view.

The following contextual menu actions are available:

- **Remove (Delete)** - Removes the selected item from the diagram.
-  **Search References (Ctrl-Shift-R)** - Searches all references of the item found at current cursor position in the defined scope, if any.
- **Search References in...** - Searches all references of the item found at current cursor position in the specified scope.
-  **Component Dependencies (Ctrl + Shift + F4)** - Allows you to see the dependencies for the current selected component.
- **Resource Hierarchy (F4)** - Allows you to see the hierarchy for the current selected resource.
- **Resource Dependencies (Shift + F4)** - Allows you to see the dependencies for the current selected resource.
-  **Rename Component** - Renames the selected component.

-  **Generate Sample XML Files...** - Generate XML files using the current opened schema. The selected component is the XML document root.

The upper part of the view contains a filter box which allows you to focus on the relevant components. Type a text fragment in the filter box and only the components that match it are presented. For advanced usage you can use wildcard characters (\*, ?) and separate multiple patterns with commas.

 **Tip:** The search filter is case insensitive. The following wildcards are accepted:

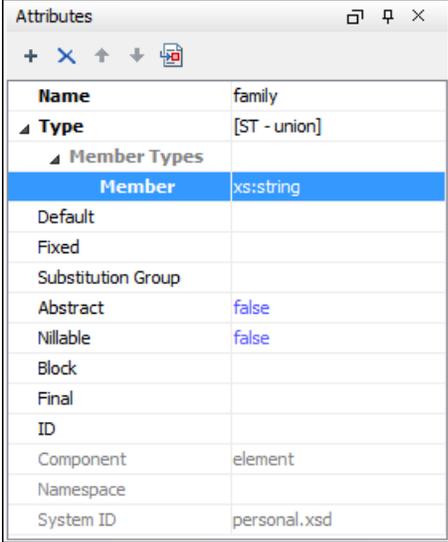
- \* - any string
- ? - any character
- , - patterns separator

If no wildcards are specified, the string to search will be searched as a partial match (like **\*textToFind\***).

The **Outline** content and the editing area are synchronized. When you select a component in the **Outline** view, its definition is highlighted in the editing area.

### The Attributes View

The **Attributes** view presents the properties for the selected component in the schema diagram. If hidden, you can open it from **Window > Show View > Attributes**.



Name	Value
Name	family
<b>Type</b>	[ST - union]
<b>Member Types</b>	
<b>Member</b>	xs:string
Default	
Fixed	
Substitution Group	
Abstract	false
Nillable	false
Block	
Final	
ID	
Component	element
Namespace	
System ID	personal.xsd

**Figure 63: The Attributes View**

The default value of a property is presented in the **Attributes** view with blue foreground. The properties that can't be edited are rendered with gray foreground. A non-editable category which contains at least one child is rendered with bold. Bold properties are properties with values set explicitly to them.

Properties for components which do not belong to the current edited schema are read-only but if you double-click them you can choose to open the corresponding schema and edit them.

You can edit a property by double-clicking on by pressing Enter. For most properties you can choose valid values from a list or you can specify another value. If a property has an invalid value or a warning, it will be highlighted in the table with the corresponding foreground color. By default properties with errors are highlighted with red and the properties with warnings are highlighted with yellow. You can customize these colors from the [Document checking user preferences](#).

For imports, includes and redefines, the properties are not edited directly in the **Attributes** view. A dialog will be shown allowing you to specify properties for them.

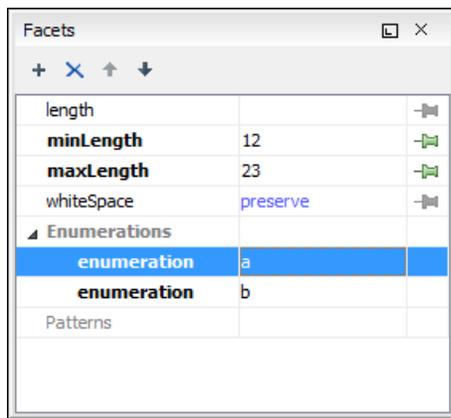
The schema namespace mappings are not presented in **Attributes** view. You can view/edit these by choosing **Edit Schema Namespaces** from the contextual menu on the schema root. See more in the [Edit Schema Namespaces](#) section.

The **Attributes** view has five actions available on the toolbar and also on the contextual menu:

- **+** **Add** - Allows you to add a new member type to an union's member types category.
- **-** **Remove** - Allows you to remove the value of a property.
- **↑** **Move Up** - Allows you to move up the current member to an union's member types category.
- **↓** **Move Down** - Allows you to move down the current member to an union's member types category.
-  **Copy** - Copy the attribute value.
-  **Show Definition****Ctrl (Meta on MAC OS) + Click** - Shows the definition for the selected type.
- **Show Facets** - Allows you to edit the facets for a simple type.

## The Facets View

The **Facets** view presents the facets for the selected component, if available. If hidden, you can open it from **Window > Show View > Facets** .



**Figure 64: The Facets View**

The default value of a facet is rendered in the **Facets** view with a blue color. The facets that can't be edited are rendered with a gray color. The grouping categories (eg: **Enumerations** and **Patterns**) are not editable. If these categories contain at least one child they are rendered with bold. Bold facets are facets with values set explicitly to them.

-  **Important:** Usually inherited facets are presented as default in the **Facets** view but if patterns are inherited from a base type and also specified in the current simple type only the current specified patterns will be presented. You can see the effective pattern value obtained by combining the inherited and the specified patterns as a tooltip on the **Patterns** category.

Facets for components which do not belong to the current edited schema are read-only but if you double-click them you can choose to open the corresponding schema and edit them.

You can edit a facet by double-clicking on it or by pressing Enter, when that facet is selected. For some facets you can choose valid values from a list or you can specify another value. If a facet has an invalid value or a warning, it will be highlighted in the table with the corresponding foreground color. By default facets with errors are presented with red and the facets with warnings with yellow. You can customize the error colors from the [Document Checking user preferences](#).

The **Facets** view has four toolbar actions available also on the contextual menu:

- **+** **Add** - Allows you to add a new enumeration or a new pattern.
- **-** **Remove** - Allows you to remove the value of a facet.
- **↑** **Move Up** - Allows you to move up the current enumeration/pattern in **Enumerations/Patterns** category.
- **↓** **Move Down** - Allows you to move down the current enumeration/pattern in **Enumerations/Patterns** category.
-  **Copy** - Copy the attribute value.
- **Open in Regular Expressions Builder** - Allows you to open the pattern in the [XML Schema Regular Expressions Builder](#)

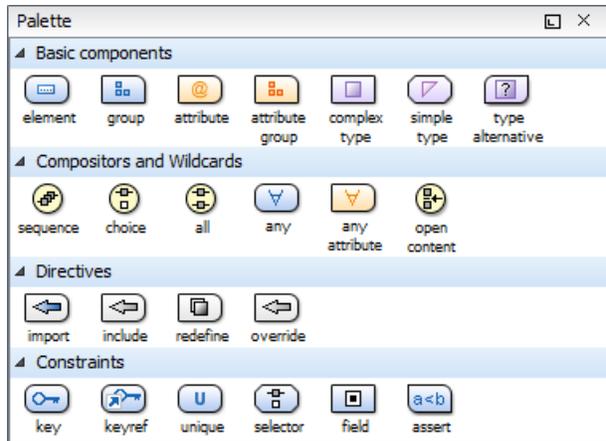
Facets can be fixed to prevent a derivation from modifying its value. To fix a facet value just press the  pin button.

## Editing Patterns

You are able to edit regular expressions either by hand, or using the **Open in Regular Expression Builder** action from the contextual menu. This action offers a full-fledged *XML Schema Regular Expression builder* that guides through testing and constructing the pattern.

## The Palette View

The **Palette** view is designed to offer quick access to XML Schema components and to improve the usability of the XML Schema diagram builder. You can use the **Palette** to drag and drop components in the **Design** mode. The components offered in the **Palette** view depend on the XML schema version set in the *XML Schema preferences page*.



**Figure 65: Palette View**

Components are organized functionally into 4 collapsible categories:

- Basic components: *elements, group, attribute, attribute group, complex type, simple type, type alternative*.
- Compositors and Wildcards: *sequence, choice, all, any, any attribute, open content*.
- Directives: *import, include, redefine, override*.
- Identity constraints: *key, keyref, unique, selector, field, assert*.

 **Note:** The *type alternative, open content, override, and assert* components are available for XML Schema 1.1.

To add a component to the edited schema:

- click and hold a graphic symbol from the **Palette** view, then drag the component into the **Design** view;
- a line dynamically connects the component with the XML schema structure;
- release the component into a valid position.

 **Note:** You cannot drop a component into an invalid position. When you hover the component into an invalid position, the mouse cursor changes its shape into . Also, the connector line changes its color from the usual dark grey to the color defined in the *Validation error highlight color* option (default color is red).

## Edit Schema Namespaces

You can use the dialog **XML Schema Namespaces** to easily set a target namespace and define namespace mappings for a newly created XML Schema. In the **Design** mode these namespaces can be modified anytime by choosing **Edit Schema Namespaces** from the contextual menu. Also you can do that by double-clicking on the schema root in the diagram.

The **XML Schema Namespaces** dialog allows you to edit the following information:

- **Target namespace** - The target namespace of the schema.
- **Prefixes** - The dialog shows a table with namespaces and the mapped prefixes. You can add a new prefix mapping or remove an already existing one.

## Contextual Editing

Smaller interrelated modules that define a complex XML Schema cannot be correctly edited or validated individually, due to their interdependency with other modules. For example, a function defined in a main schema document is not visible when you edit an included or imported module. Oxygen XML Editor provides the support for defining the main module (or modules), thus allowing you to edit any of the imported/included schema files in the context of the larger schema structure.

To set a main schema files, you need to define a validation scenario and add validation units that point to the main schemas. Oxygen XML Editor warns you if the current module is not part of the dependencies graph computed for the main schema. In this case, it considers the current module as the main schema.

The advantages of editing in the context of main file include:

- correct validation of a module in the context of a larger schema structure;
- content completion assistant displays all the referable components valid in the current context. This include components defined in modules other than the currently edited one;
- the **Outline** displays the components collected from the entire schema structure;

## Create an XML Schema From a Relational Database Table

To create an XML Schema from the structure of a relational database table use *the special wizard available in the Tools menu*.

## Generate Sample XML Files

Oxygen XML Editor offers support to generate sample XML files both from XML schema 1.0 and XML schema 1.1, depending on the XML schema version set in Preferences.

To generate sample XML files from an XML Schema, use the **Tools > Generate Sample XML Files...** action. This action is also available in the contextual menu of the schema *Design mode*.

## The Schema Tab

W3C XML Schema

URL:

Namespace:

Root Element:

Output folder:

Filename prefix:  Extension:

Number of instances:

Open first instance in editor

Namespaces

Default Namespace:

Prefix	Namespace
vt	http://schemas.openxmlformats.org/officeDocument/2006/docPro...
r	http://schemas.openxmlformats.org/officeDocument/2006/relation...
dc	http://purl.org/dc/elements/1.1/
dcterms	http://purl.org/dc/terms/
p	http://schemas.openxmlformats.org/presentationml/2006/main
a	http://schemas.openxmlformats.org/drawingml/2006/main
dcmitype	http://purl.org/dc/dcmitype/
m	http://schemas.openxmlformats.org/officeDocument/2006/math
w	http://schemas.openxmlformats.org/wordprocessingml/2006/main

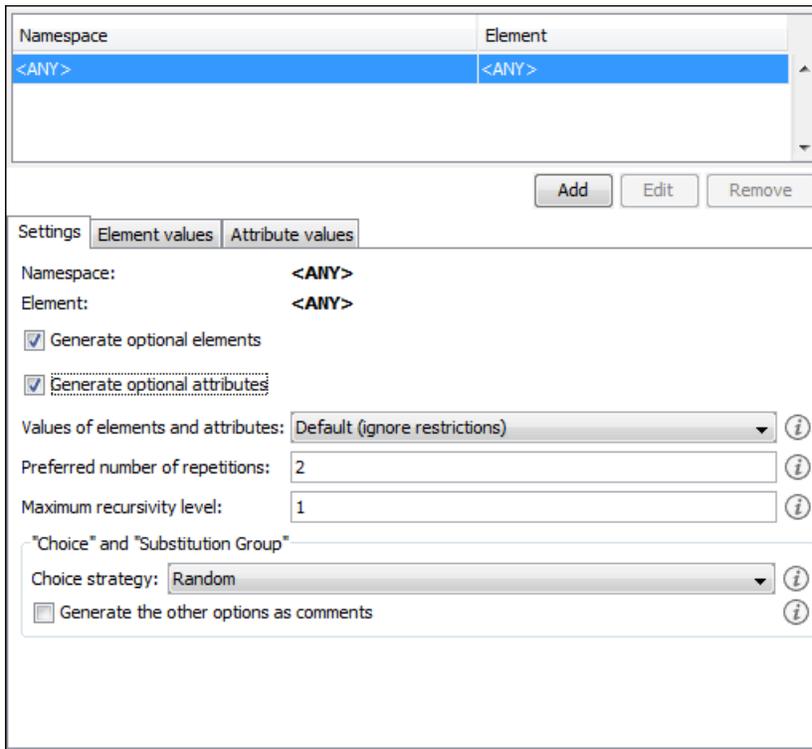
**Figure 66: The Generate Sample XML Files Dialog**

Complete the dialog as follows:

- **URL** - Schema location as an URL. A history of the last used URLs is available in the drop-down box.
- **Namespace** - Displays the namespace of the selected schema.
- **Document root** - After the schema is selected, this drop-down box is populated with all root candidates gathered from the schema. Choose the root of the output XML documents.
- **Output folder** - Path to the folder where the generated XML instances will be saved.
- **Filename prefix and Extension** - Generated file names have the following format: `prefixN.extension`, where N represents an incremental number from 0 up to *Number of instances* - 1.
- **Number of instances** - The number of XML files to be generated.
- **Open first instance in editor** - When checked, the first generated XML file is opened in editor.
- **Namespaces** - Here you can specify the default namespace as well as the proxies (prefixes) for namespaces.
- **Load settings / Export settings** - The current settings can be saved for further usage with the **Export settings** button, and reloaded when necessary with the **Load settings** button.

## The Options Tab

The **Options** tab allows you to set specific options for different namespaces and elements.



**Figure 67: The Generate Sample XML Files Dialog**

- **Namespace / Element table** - Allows you to set a namespace for each element name that appears in an XML document instance. The following prefix-to-namespace associations are available:
  - All elements from all namespaces (<ANY> - <ANY>). This is the default setting and can be customized from the *XML Instances Generator* preferences page.
  - All elements from a specific namespace.
  - A specific element from a specific namespace.
- **Settings**
  - **Generate optional elements** - When checked, all elements are generated, including the optional ones (having the `minOccurs` attribute set to 0 in the schema).
  - **Generate optional attributes** - When checked, all attributes are generated, including the optional ones (having the `use` attribute set to `optional` in the schema.)
  - **Values of elements and attributes** - Controls the content of generated attribute and element values. Several choices are available:
    - **None** - No content is inserted;
    - **Default** - Inserts a default value depending of data type descriptor of the particular element or attribute. The default value can be either the data type name or an incremental name of the attribute or element (according to the global option from the **XML Instances Generator** preferences page). Note that type restrictions are ignored when this option is enabled. For example, if an element is of a type that restricts an **xs:string** with the **xs:maxLength** facet in order to allow strings with a maximum length of 3, the XML instance generator tool may generate string element values longer than 3 characters.
    - **Random** - Inserts a random value depending of data type descriptor of the particular element or attribute.

 **Important:**

If all of the following are true, the **XML Instances Generator** outputs invalid values:

- at least one of the restrictions is a regexp;

- the value generated after applying the regexp does not match the restrictions imposed by one of the facets.

This limitation leads to attributes or elements with values set to *Invalid*.

- **Preferred number of repetitions** - Allows the user to set the preferred number of repeating elements related with `minOccurs` and `maxOccurs` facets defined in XML Schema.
  - If the value set here is between `minOccurs` and `maxOccurs`, then that value is used;
  - If the value set here is less than `minOccurs`, then the `minOccurs` value is used;
  - If the value set here is greater than `maxOccurs`, then that value is used.
- **Maximum recursion level** - If a recursion is found, this option controls the maximum allowed depth of the same element.
- **Choice strategy** - Option used in case of `xs:choice` or `substitutionGroup` elements. The possible strategies are:
  - **First** - the first branch of `xs:choice` or the head element of `substitutionGroup` is always used;
  - **Random** - a random branch of `xs:choice` or a substitute element or the head element of a `substitutionGroup` is used.
- **Generate the other options as comments** - Option to generate the other possible choices or substitutions (for `xs:choice` and `substitutionGroup`). These alternatives are generated inside comments groups so you can uncomment and use them later. Use this option with care (for example on a restricted namespace and element) as it may generate large result files.
- **Load settings / Export settings** - The current settings can be saved for further usage with the **Export settings** button, and reloaded when necessary with the **Load settings** button.
- **Element values** - The **Element values** tab allows you to add values that are used to generate the elements content. If there are more than one value, then the values are used in a random order.
- **Attribute values** - The **Attribute values** tab allows you to add values that are used to generate the attributes content. If there are more than one value, then the values are used in a random order.

### The Advanced Tab

<b>Strings and values</b>	
<input checked="" type="checkbox"/>	Use incremental attribute/element names as default
Maximum length	<input type="text" value="30"/>
<b>Performance</b>	
Discard optional elements after nested level	<input type="text" value="6"/>

**Figure 68: Advanced Tab**

This tab allows you to set advanced options that controls the output values of elements and attributes.

- **Use incremental attribute / element names as default** - If checked, the value of an element or attribute starts with the name of that element or attribute. For example, for an `a` element the generated values are: `a1`, `a2`, `a3`, etc. If not checked, the value is the name of the type of that element / attribute, for example: `string`, `decimal`, etc.
- **Maximum length** - The maximum length of string values generated for elements and attributes.
- **Discard optional elements after nested level** - The optional elements that exceed the specified nested level are discarded. This option is useful for limiting deeply nested element definitions that can quickly result in very large XML documents.

### Running the Generate Sample XML Files Action from Command Line

The **Generate Sample XML Files** tool can be also used from command line by running the script called `xmlGenerator.bat` (on Windows) / `xmlGenerator.sh` (on Mac OS X / Unix / Linux) located in the Oxygen XML Editor installation folder. The parameters can be set once in the dialog, exported to an XML file on disk with the

button **Export settings** and reused from command line. With the exported settings file you can generate the same XML instances from the command line as from the dialog:

```
xmlGenerator.bat path_of_CFG_file
```

The script can be integrated in an external batch process launched from the command line. The command line parameter of the script is the relative path to the exported XML settings file. The files specified with relative paths in the exported XML settings will be made absolute relative to the folder where the script is run.

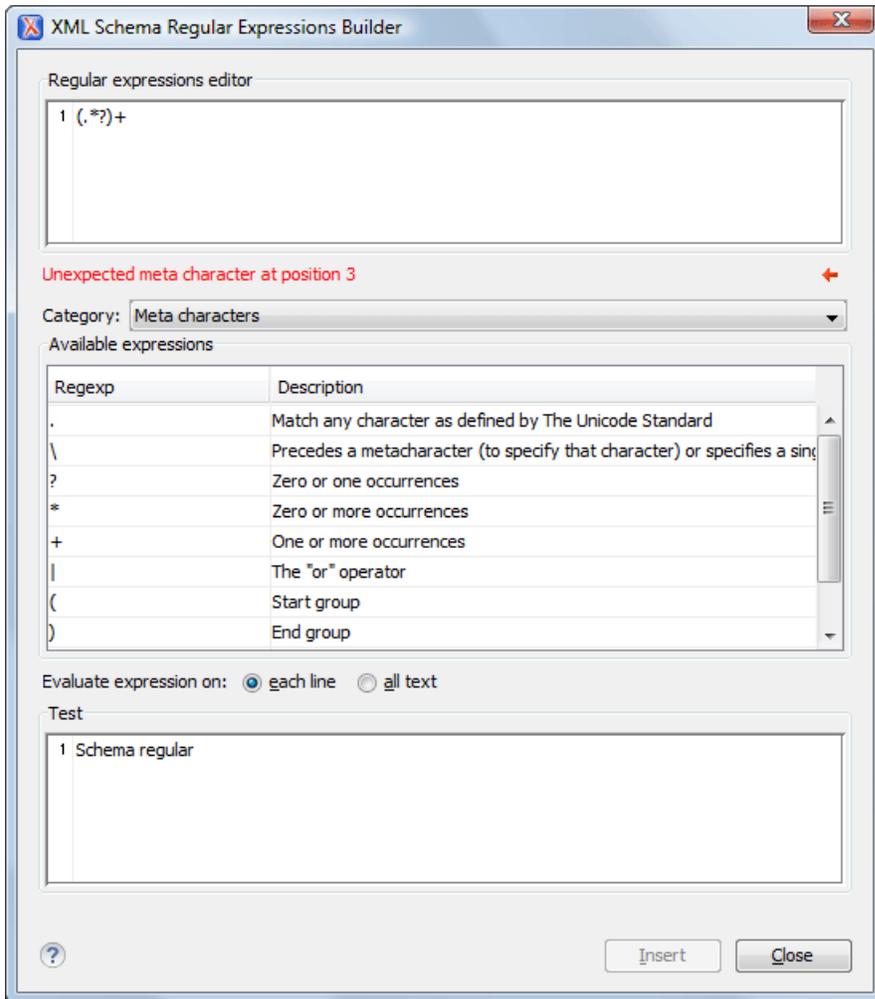
The following example shows such an XML configuration file:

### XML Configuration File

```
<settings>
  <schemaSystemId>http://www.w3.org/2001/XMLSchema.xsd</schemaSystemId>
  <documentRoot>schema</documentRoot>
  <outputFolder>D:\projects\output</outputFolder>
  <filenamePrefix>instance</filenamePrefix>
  <filenameExtension>xml</filenameExtension>
  <noOfInstances>1</noOfInstances>
  <openFirstInstance>true</openFirstInstance>
  <defaultNamespace>&lt;NO_NAMESPACE</defaultNamespace>
  <element namespace="&lt;ANY" name="&lt;ANY">
    <generateOptionalElements>>false</generateOptionalElements>
    <generateOptionalAttributes>>false</generateOptionalAttributes>
    <valuesForContentType>DEFAULT</valuesForContentType>
    <preferredNumberOfRepetitions>2</preferredNumberOfRepetitions>
    <maximumRecursivityLevel>1</maximumRecursivityLevel>
    <choicesAndSubstitutions strategy="RANDOM"
      generateOthersAsComments="false" />
    <attribute namespace="&lt;ANY"
      name="&lt;ANY">
      <attributeValue>attrValue1</attributeValue>
      <attributeValue>attrValue2</attributeValue>
    </attribute>
  </element>
  <element namespace="&lt;NO_NAMESPACE"
    name="&lt;ANY">
    <generateOptionalElements>true</generateOptionalElements>
    <generateOptionalAttributes>true</generateOptionalAttributes>
    <valuesForContentType>DEFAULT</valuesForContentType>
    <preferredNumberOfRepetitions>2</preferredNumberOfRepetitions>
    <maximumRecursivityLevel>1</maximumRecursivityLevel>
    <choicesAndSubstitutions strategy="RANDOM"
      generateOthersAsComments="true" />
    <elementValue>value1</elementValue>
    <elementValue>value2</elementValue>
    <attribute namespace="&lt;ANY"
      name="&lt;ANY">
      <attributeValue>attrValue1</attributeValue>
      <attributeValue>attrValue2</attributeValue>
    </attribute>
  </element>
</settings>
```

## XML Schema Regular Expressions Builder

The XML Schema regular expressions builder allows testing regular expressions on a fragment of text as they are applied to an XML instance document. Start the tool from menu **Tools > XML Schema Regular Expressions Builder**.



**Figure 69: XML Schema Regular Expressions Builder Dialog**

The dialog contains the following sections:

- **Regular expressions editor** - allows you to edit the regular expression to be tested and used. Content completion is available and presents a list with all the predefined expressions. It is triggered by pressing **(Ctrl - Space)**.
- **Error display area** - if the edited regular expression is incorrect, an error message will be displayed here. The message contains the description and the exact location of the error. Also, a click on the quick navigation button (←) highlights the error inside the regular expression.
- **Category** combo box - here you can choose from several categories of predefined expressions. The selected category influences the displayed expressions in the **Available expressions** table.
- **Available expressions** table - holds the available regular expressions and a short description for each of them. The set of expressions depends on the category selected in the previous combo box. You can add an expression in the **Regular expressions editor** by double-clicking on the expression row in the table. You will notice that in the case of **Character categories** and **Block names** the expressions are also listed in complementary format. For example:  $\backslash p\{Lu\}$  - Uppercase letters;  $\backslash P\{Lu\}$  - Complement of: Uppercase letters.
- **Evaluate expression on** radio buttons - there are available two options:
  - **Evaluate expression on each line** - the edited expression will be applied on each line in the **Test** area;
  - **Evaluate expression on all text** - the edited expression will be applied on the whole text.
- **Test** area - a text editor which allows you to enter a text sample on which the regular expression will be applied. All matches of the edited regular expression will be highlighted.

After editing and testing your regular expression you can insert it in the current editor. The **Insert** button will become active when an editor is opened in the background and there is an expression in the **Regular expressions editor**.

The regular expression builder cannot be used to insert regular expressions in *the grid version* or *the schema version* of a document editor. Accordingly, the **Insert** button of the dialog will be disabled if the current document is edited in grid mode.

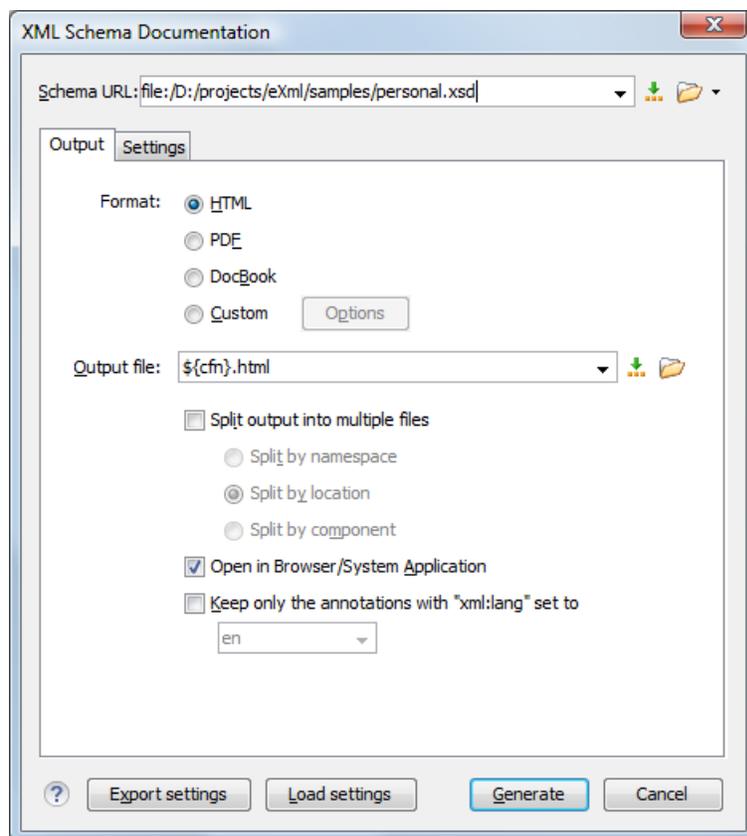
 **Note:** Some regular expressions may block indefinitely the Java Regular Expressions engine. If the execution of the regular expression does not end in about five seconds, the application displays a dialog that allows you to interrupt the operation.

## Generating Documentation for an XML Schema

Oxygen XML Editor can generate detailed documentation for the components of an XML Schema in HTML, PDF and DocBook XML formats. You can select the components and the level of detail. The components are hyperlinked in both HTML and DocBook documents.

 **Note:** You can generate documentation both for XML Schema version 1.0 and 1.1.

To generate documentation for an XML Schema document, use the **Schema Documentation** dialog. Either go to **Tools > Generate Documentation > XML Schema Documentation...** or select **Generate Documentation > XML Schema Documentation...** from the contextual menu of the **Project** view. This dialog enables the user to configure a large set of parameters for the process of generating the documentation.



**Figure 70: The Output panel of the XML Schema Documentation Dialog**

The **Schema URL** field of the dialog panel must contain the full path to the XML Schema (XSD) file you want to generate documentation for. The schema may be a local or a remote one. You can specify the path to the schema using the editor variables.

The following options are available in the **Settings** tab:

- **Format** - Allows you to choose between three predefined formats (**HTML**, **PDF**, **DocBook**) and a custom one (**Custom**). This allows you to control the output format by providing a custom stylesheet.
- **Output file** - Name of the output file.
- **Split output into multiple files** - Instructs the application to split the output into multiple files. You can choose to split them by namespace, location or component name.
- **Open in Browser/System Application** - Opens the result in the system application associated with the output file type.

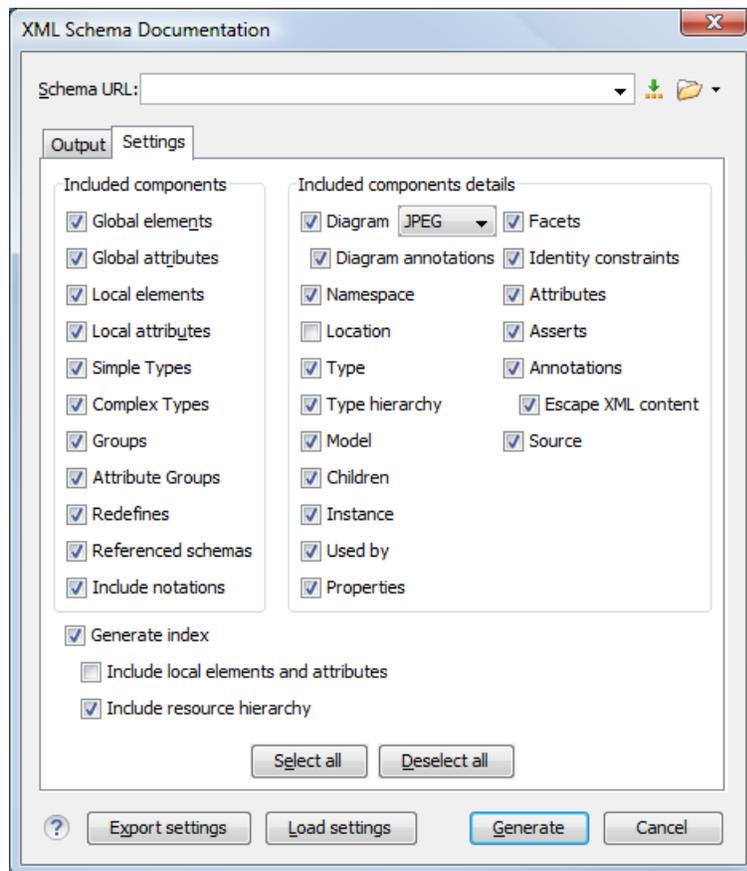


**Note:** If you already set the **Default Internet browser** option in the **Global** preferences page, it takes precedence over the default system application settings.

- **Keep only the annotations with xml:lang set to** - The generated output will contain only the annotations with the `xml:lang` attribute set to the selected language. If you choose a primary language code (like **en**, for example), this includes all its possible variations (for example **en-us** and **en-uk** just to name a few).

You can choose to split the output into multiple files by namespace, location or component.

You can export the settings of the XML Schema Documentation dialog to an XML file by pressing the **Export settings** button. With the exported settings file you can generate the same *documentation from the command line interface*.



**Figure 71: The Settings Panel of the XML Schema Documentation Dialog**

When you generate documentation for an XML schema you can choose what components to include in the output (global elements, global attributes, local elements, local attributes, simple types, complex types, group, attribute groups, referenced schemas, redefines) and the details to be included in the documentation:

- **Diagram** - Displays the diagram for each component. You can choose the image format (JPEG, PNG, GIF, SVG) to use for the diagram section.
- **Diagram annotations** - This option controls whether the annotations of the components presented in the diagram sections are included.

- **Namespace** - Displays the namespace for each component.
- **Location** - Displays the schema location for each component.
- **Type** - Displays the component type if it is not an anonymous one.
- **Type hierarchy** - Displays the types hierarchy.
- **Model** - Displays the model (sequence, choice, all) presented in BNF form. Different separator characters are used depending on the information item used:
  - `xs:all` - its children will be separated by space characters;
  - `xs:sequence` - its children will be separated by comma characters;
  - `xs:choice` - its children will be separated by / characters.
- **Children** - Displays the list of component's children.
- **Instance** - Displays an XML instance generated based on each schema element.
- **Used by** - Displays the list of all the components that refer the current one. The list is sorted by component type and name.
- **Properties** - Displays some of the component's properties.
- **Facets** - Displays the facets for each simple type
- **Identity constraints** - Displays the identity constraints for each element. For each constraint there are presented the name, type (unique, key, keyref), refer attribute, selector and field(s).
- **Attributes** - Displays the attributes for the component. For each attribute there are presented the name, type, fixed or default value, usage and annotation.
- **Asserts** - Displays the **assert** elements defined in a complex type. The test, XPath default namespace, and annotation are presented for each assert.
- **Annotations** - Displays the annotations for the component. If you choose **Escape XML Content**, the XML tags are present in the annotations.
- **Source** - Displays the text schema source for each component.
- **Generate index** - Displays an index with the components included in the documentation.
- **Include local elements and attributes** - If checked, local elements and attributes are included in the documentation index.
- **Include resource hierarchy** - specifies whether the resource hierarchy for an XML Schema documentation is generated.
- **Export settings / Load settings** - The current settings can be saved for further usage (for example for generating documentation from command-line interface) with the **Export settings** button, and reloaded when necessary with the **Load settings** button.

These options are persistent between sessions.

### Generate Documentation in HTML Format

The HTML documentation contains images corresponding to the schema definitions as the ones displayed by *the schema diagram editor*. These images are divided in clickable areas which are linked to the definitions of the clicked names of types or elements. The documentation of a definition includes a **Used By** section with links to the other definitions which refer to it. If the **Escape XML Content** option is unchecked, the HTML or XHTML tags used inside the `xs:documentation` elements of the input XML Schema for formatting the documentation text (for example `<b>`, `<i>`, `<u>`, `<ul>`, `<li>`, etc.) are rendered in the generated HTML documentation.

The generated images format is **PNG**. The image of an XML Schema component contains the graphical representation of that component as it is rendered in *the Schema Diagram panel of the Oxygen XML Editor's XSD editor panel*.

**Table of Contents**

Group by: Location

personal.xsd

**Elements**

- email
- family
- given
- link
- name
- person
- personnel
- uri

**Notations**

- gif

XML Schema documentation generated by **oXygen** XML Editor.

**Element name**

Namespace: No namespace

Annotations: Name, Annotation

Diagram: (Visual diagram showing a 'name' element containing a 'family' and 'given' element, with a 'Family Annotation' pointing to the 'family' element.)

Properties: Content: complex

Used by: Element: person

Model: ALL(family given)

Children: family, given

Instance: 

```
<name>
<family>{1,1}</family>
<given>{1,1}</given>
</name>
```

Source: 

```
<xs:element name="name">
<xs:annotation>
<xs:documentation>Name</xs:documentation>
<xs:documentation>Annotation</xs:documentation>
</xs:annotation>
<xs:complexType>
<xs:all>
<xs:element ref="family"/>
<xs:element ref="given"/>
</xs:all>
</xs:complexType>
</xs:element>
```

**Showing:**

- Annotations
- Attributes
- Diagrams
- Facets
- Identity Constraints
- Instances
- Model
- Properties
- Source
- Used by

Close

**Figure 72: XML Schema Documentation Example**

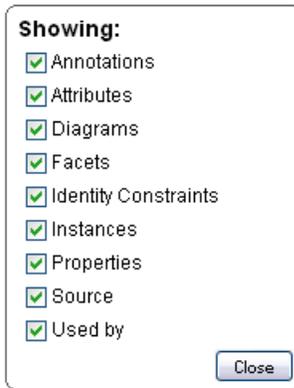
The generated documentation includes a table of contents. You can group the contents by namespace, location, or component type. After the table of contents there is presented some information about the main schema, the imported, included, and redefined schemas. This information contains the schema target namespace, schema properties (attribute form default, element form default, version) and schema location.

Namespace	No namespace	
Properties	Attribute Form Default:	<b>unqualified</b>
	Element Form Default:	<b>unqualified</b>
Schema location	file:/D:/personal.xsd	

**Figure 73: Information About a Schema**

If you choose to split the output into multiple files, the table of contents is displayed in the left frame. The contents are grouped in the same mode. If you split the output by location, each file contains a schema description and the components that you have chosen to include. If you split the output by namespace, each file contains information about schemas from that namespace and the list with all included components. If you choose to split the output by component, each file contains information about a schema component.

After the documentation is generated you can collapse details for some schema components. This can be done using the **Showing** view:



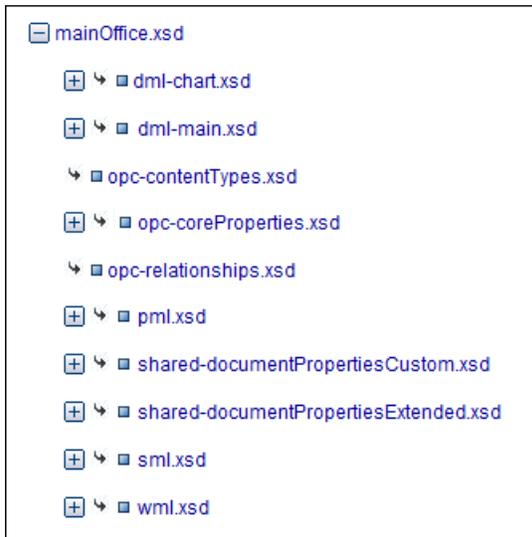
**Figure 74: The Showing View**

For each component included in the documentation, the section presents the component type followed by the component name. For local elements and attributes, the name of the component is specified as *parent name/component name*. You can easily go to the parent documentation by clicking the parent name.

Namespace	No namespace
Annotations	Specifies the person family and given name.
Diagram	
Properties	Content <b>complex</b>
Used by	Element <b>person</b>
Model	ALL( <b>family given</b> )
Children	<b>family, given</b>
Instance	<pre>&lt;name&gt;   &lt;family&gt;{1,1}&lt;/family&gt;   &lt;given&gt;{1,1}&lt;/given&gt; &lt;/name&gt;</pre>
Source	<pre>&lt;xs:element name="name"&gt;   &lt;xs:annotation&gt;     &lt;xs:documentation&gt;Specifies the person family and given name.&lt;/xs:documentation&gt;   &lt;/xs:annotation&gt;   &lt;xs:complexType&gt;     &lt;xs:all&gt;       &lt;xs:element ref="family"/&gt;       &lt;xs:element ref="given"/&gt;     &lt;/xs:all&gt;   &lt;/xs:complexType&gt; &lt;/xs:element&gt;</pre>

**Figure 75: Documentation for a Schema Component**

If the schema contains imported or included modules, their dependencies tree is generated in the documentation.



## Generate Documentation in PDF, DocBook or a Custom Format

XML Schema documentation can be also generated in PDF, DocBook, or a custom format. You can choose the format from the *Schema Documentation* Dialog. For the PDF and DocBook formats, the option to split the output in multiple files is disabled.

When choosing PDF, the documentation is generated in DocBook format and after that a transformation using the FOP processor is applied to obtain the PDF file. To configure the FOP processor, see the *FO Processors* preferences page.

If you generate the documentation in DocBook format you can apply a transformation scenario on the output file, for example one of the scenarios proposed by Oxygen XML Editor (*DocBook PDF* or *DocBook HTML*) or configure your own scenario for it.

For the custom format, you can specify your stylesheet to transform the intermediary XML generated in the documentation process. You have to write your stylesheet based on the schema `xsdDocSchema.xsd` from `{INSTALLATION_DIRECTORY}/frameworks/schema_documentation`. You can create a custom format starting from one of the stylesheets used in the predefined HTML, PDF, and DocBook formats. These stylesheets are available in `{INSTALLATION_DIRECTORY}/frameworks/schema_documentation/xsl`.

When using a custom format you can also copy additional resources into the output folder or choose to keep the intermediate XML files created during the documentation process.

## Customizing the Generated PDF

You are able to customize the PDF output of the documentation for an XML schema by running two transformations and customizing the intermediate file. To do this, follow the next procedure:

- Customize the `[Oxygen-install-directory]/frameworks/schema_documentation/xsl/xsdDocDocbook.xsl` stylesheet to include the content that you want to add in the PDF output. Add the content in the XSLT template with the `match="schemaDoc"` attribute between these two elements:

```
<info>
  <pubdate><xsl:value-of select="format-date(current-date(), '[Mn] [D], [Y]', 'en', (), ())"/></pubdate>
</info>
```

```
<xsl:apply-templates select="schemaHierarchy"/>
```

 **Note:** The content that you insert here has to be wrapped in DocBook markup. For details about working with DocBook take a look at the video demonstration from this address [http://www.oxygenxml.com/demo/DocBook\\_Editing\\_in\\_Author.html](http://www.oxygenxml.com/demo/DocBook_Editing_in_Author.html).

- Create an intermediary file that holds the content of your XML Schema documentation;

- Go to **Tools > Generate Documentation > XML Schema Documentation**;
- Click **Custom** in the **XML Schema Documentation** dialog;
- Go to **Options**;
- In the **Custom format options** dialog enable **Copy additional resources to the output folder**, enter: `[Oxygen-install-directory]/frameworks/schema_documentation/xsl/xsdDocDocbook.xsl` in the **Custom XSL** field and click **OK**;
- When you return to the **Custom format options** dialog box just press the **Generate** button which will generate a DocBook XML file with an intermediary form of the Schema documentation;
- Create the final PDF document;
  - Go to **Document > Transformation > Configure Transformation Scenario** and click **New**;
  - In the **New Scenario** dialog go to the **XSL URL** field and choose the `[Oxygen-install-dir]/frameworks/docbook/oxygen/xsdDocDocbookCustomizationFO.xsl` file;
  - Go to the **FO Processor** tab and enable **Perform FO Processing** and **XSLT result as input**;
  - Go to the **Output** tab and select the directory where you want to store the XML Schema documentation output and click **OK**;
  - Click **Apply Associated**.

## Generating Documentation From the Command-Line Interface

You can export the settings of the **XML Schema Documentation** dialog to an XML file by pressing the **Export settings** button. With the exported settings file, you can generate the same documentation from the command-line interface by running the following scripts:

- `schemaDocumentation.bat` on Windows;
- `schemaDocumentation.sh` (on Mac OS X / Unix / Linux).

The scripts are located in the Oxygen XML Editor installation folder. The scripts can be integrated in an external batch process launched from the command-line interface.

The script command-line parameter is the relative path to the exported XML settings file. The files which are specified with relative paths in the exported XML settings are made absolute, relative to the folder where the script is ran from.

### XML Configuration File

```
<serialized>
  <map>
    <entry>
      <String xml:space="preserve">xsd.documentation.options</String>
      <xsdDocumentationOptions>
        <field name="outputFile">
          <String xml:space="preserve">${cfn}.html</String>
        </field>
        <field name="splitMethod">
          <Integer xml:space="preserve">1</Integer>
        </field>
        <field name="openOutputInBrowser">
          <Boolean xml:space="preserve">>true</Boolean>
        </field>
        <field name="format">
          <Integer xml:space="preserve">1</Integer>
        </field>
        <field name="customXSL">
          <null/>
        </field>
        <field name="deleteXMLFiles">
          <Boolean xml:space="preserve">>true</Boolean>
        </field>
        <field name="includeIndex">
          <Boolean xml:space="preserve">>true</Boolean>
        </field>
        <field name="includeGlobalElements">
          <Boolean xml:space="preserve">>true</Boolean>
        </field>
        <field name="includeGlobalAttributes">
          <Boolean xml:space="preserve">>true</Boolean>
        </field>
      </xsdDocumentationOptions>
    </entry>
  </map>
</serialized>
```

```

<field name="includeLocalElements">
  <Boolean xml:space="preserve">true</Boolean>
</field>
<field name="includeLocalAttributes">
  <Boolean xml:space="preserve">true</Boolean>
</field>
<field name="includeSimpleTypes">
  <Boolean xml:space="preserve">true</Boolean>
</field>
<field name="includeComplexTypes">
  <Boolean xml:space="preserve">true</Boolean>
</field>
<field name="includeGroups">
  <Boolean xml:space="preserve">true</Boolean>
</field>
<field name="includeAttributesGroups">
  <Boolean xml:space="preserve">true</Boolean>
</field>
<field name="includeRedefines">
  <Boolean xml:space="preserve">true</Boolean>
</field>
<field name="includeReferencedSchemas">
  <Boolean xml:space="preserve">true</Boolean>
</field>
<field name="detailsDiagram">
  <Boolean xml:space="preserve">true</Boolean>
</field>
<field name="detailsNamespace">
  <Boolean xml:space="preserve">true</Boolean>
</field>
<field name="detailsLocation">
  <Boolean xml:space="preserve">true</Boolean>
</field>
<field name="detailsType">
  <Boolean xml:space="preserve">true</Boolean>
</field>
<field name="detailsTypeHierarchy">
  <Boolean xml:space="preserve">true</Boolean>
</field>
<field name="detailsModel">
  <Boolean xml:space="preserve">true</Boolean>
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<field name="detailsChildren">
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</field>
<field name="detailsInstance">
  <Boolean xml:space="preserve">true</Boolean>
</field>
<field name="detailsUsedby">
  <Boolean xml:space="preserve">true</Boolean>
</field>
<field name="detailsProperties">
  <Boolean xml:space="preserve">true</Boolean>
</field>
<field name="detailsFacets">
  <Boolean xml:space="preserve">true</Boolean>
</field>
<field name="detailsAttributes">
  <Boolean xml:space="preserve">true</Boolean>
</field>
<field name="detailsIdentityConstr">
  <Boolean xml:space="preserve">true</Boolean>
</field>
<field name="detailsEscapeAnn">
  <Boolean xml:space="preserve">true</Boolean>
</field>
<field name="detailsSource">
  <Boolean xml:space="preserve">true</Boolean>
</field>
<field name="detailsAnnotations">
  <Boolean xml:space="preserve">true</Boolean>
</field>
</xsdDocumentationOptions>
</entry>
</map>
</serialized>

```

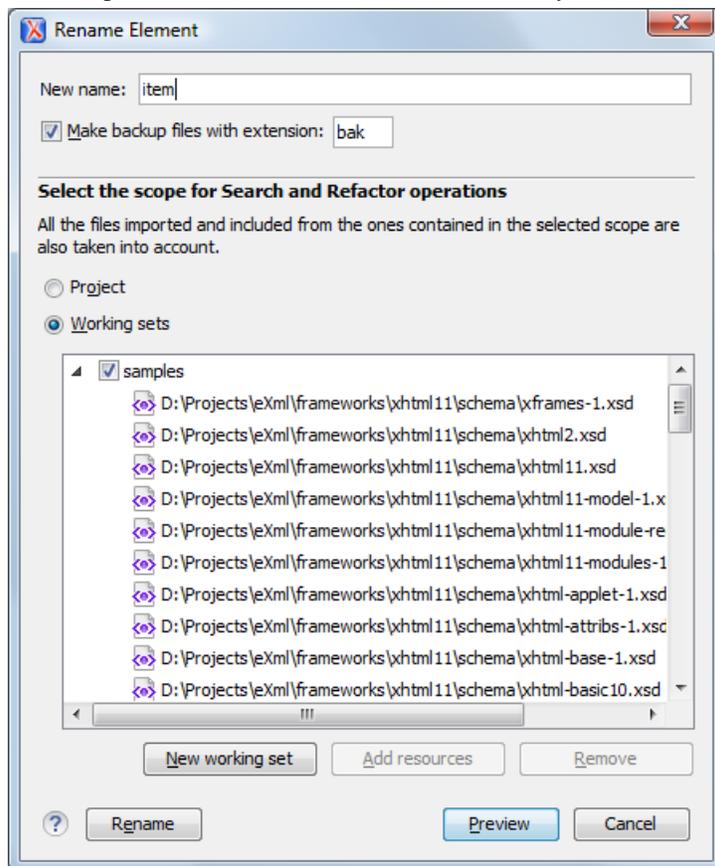
## Searching and Refactoring Actions

All the following actions can be applied on attribute, attributeGroup, element, group, key, unique, keyref, notation, simple, or complex types:

- **Document > References >  > References (Ctrl+Shift+R)** - Searches all references of the item found at current cursor position in the defined scope, if any. If a scope is defined, but the current edited resource is not part of the range of resources determined by this, a warning dialog is shown and you have the possibility to define another search scope.
- **Document > References > References in...** - Searches all references of the item found at current cursor position in the file or files that you specify when define a scope in the **Search References** dialog.
- **Document > References >  > Declarations (Ctrl+Shift+D)** - Searches all declarations of the item found at current cursor position in the defined scope if any. If a scope is defined, but the current edited resource is not part of the range of resources determined by this, a warning dialog will be shown and you have the possibility to define another search scope.

This action is not available in **Design** mode.

- **Document > References > Declarations in...** - Searches all declarations of the item found at current cursor position in the file or files that you specify when define a scope in the dialog above. Action is not available in **Design** mode.
- **Document > References > Occurrences in File (Ctrl+Shift+U)** - Searches all occurrences of the item at the caret position in the currently edited file.
- **contextual menu of current editor > Rename Component** - Allows in-place editing of the current component. When you use in-place editing, the component and all its references in the document are decorated with a thin border. All the changes you make to the component at caret position are updated in real time to all component's occurrences. To exit in-place editing, press either the **Esc** or **Enter** key on your keyboard.
- **contextual menu of current editor > Rename Component in...** - Renames the selected component. Specify the new component name and the file or files affected by the modification in the following dialog:



**Figure 76: Rename Component in... Dialog**

if you click the **Preview** button, you have the possibility to view the files affected by the **Rename Component** action. The changes are shown in the following dialog:

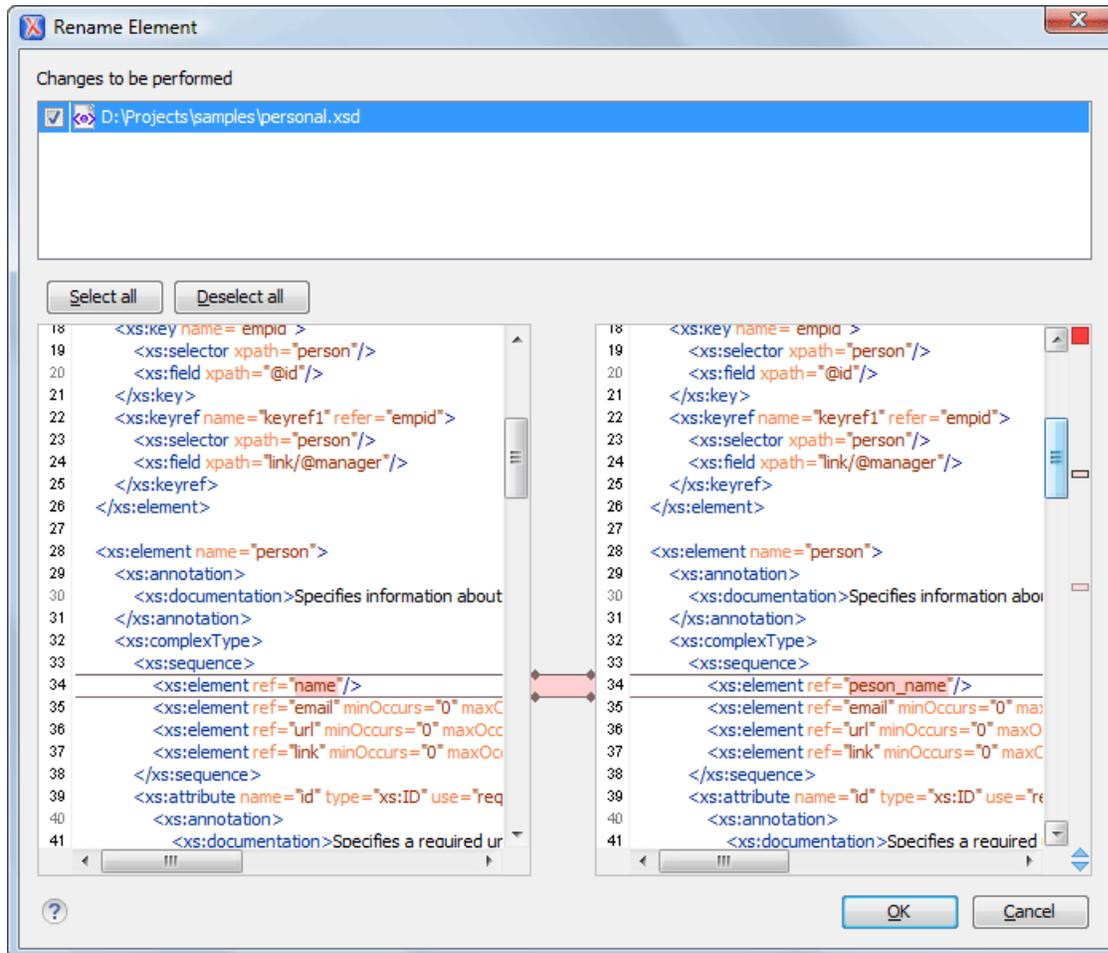
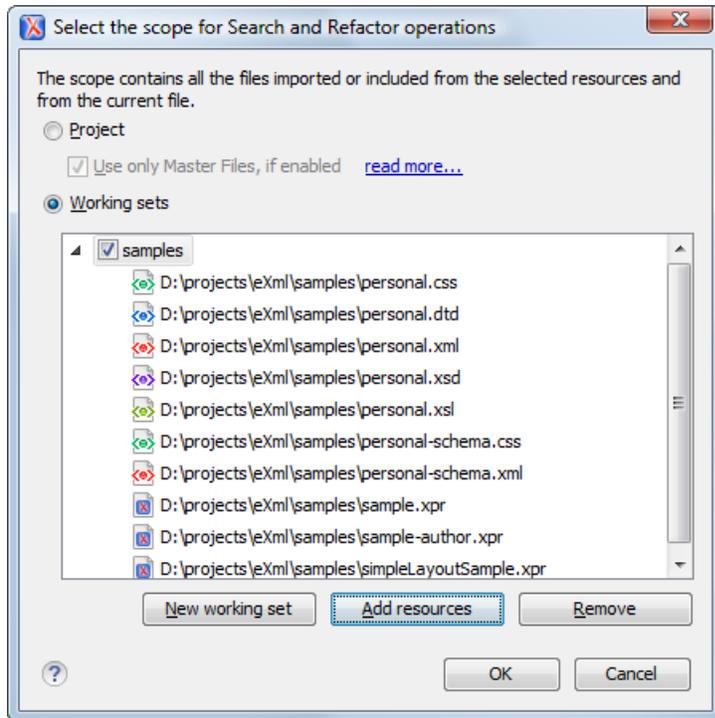


Figure 77: Preview Dialog

## Search and Refactor Operations Scope

The *scope* is a collection of documents that define the context of a search and refactor operation. To control it you can use the  **Change scope** operation, available in the Quick Assist action set or on the **Resource Hierarchy/Dependency View** toolbar. You can restrict the scope to the current project or to one or multiple working sets. The **Use only Master Files, if enabled** check-box allows you to restrict the scope of the search and refactor operations to the resources from the **Master Files** directory. Click **read more** for details about the [Master Files support](#).



**Figure 78: Change Scope Dialog**

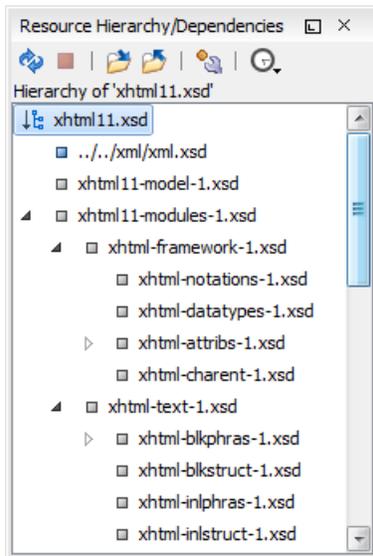
The scope you define is applied to all future search and refactor operations until you modify it. Contextual menu actions allow you to add or delete files, folders, and other resources to the working set structure.

## Resource Hierarchy / Dependencies View

The **Resource Hierarchy / Dependencies** view allows you to easily see the hierarchy / dependencies for an XML Schema, a *Relax NG schema* or an *XSLT stylesheet*. You can open the view from **Window > Show View > Resource Hierarchy / Dependencies**.

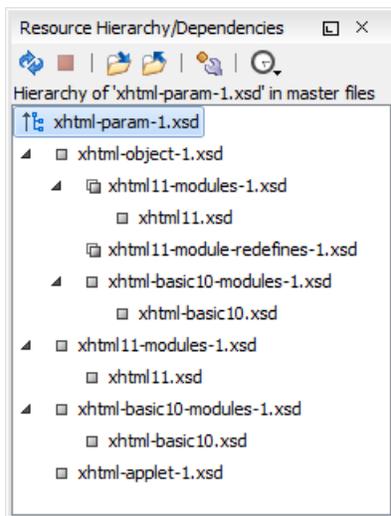
This view is useful for example when you want to start from an XML Schema (XSD) file and build and review the hierarchy of all the other XSD files that are imported, included or redefined in the given XSD file. Also the same view is able to build the tree structure, that is the structure of all other XSD files that import, include or redefine the given XSD file. The scope of the search is configurable: the current Oxygen project, a set of local folders, etc.

The build process for the hierarchy view is started with the **Resource Hierarchy** action available on the contextual menu of the editor panel.



**Figure 79: Resource Hierarchy/Dependencies View - Hierarchy for xhtml11.xsd**

The build process for the dependencies view is started with the **Resource Dependencies** action available on the contextual menu.



**Figure 80: Resource Hierarchy/Dependencies View - Dependencies for xhtml-param-1.xsd**

In the **Resource Hierarchy/Dependencies** view you have several actions in the toolbar:

-  - Refreshes the Hierarchy/Dependencies structure.
-  - Stop the hierarchy/dependencies computing.
-  - Allows you to choose a schema to compute the hierarchy structure.
-  - Allows you to choose a schema to compute the dependencies structure.
-  - Allows you to configure a scope to compute the dependencies structure. There is also an option for automatically using the defined scope for future operations.
-  - Repeats a previous dependencies computation.

The contextual menu contains the following actions:

- **Open** - Opens the schema. Also you can open the schema by a double-click on the Hierarchy/Dependencies structure.
- **Copy location** - Copies the location of the schema.

- **Show Resource Hierarchy** - Shows the hierarchy for the selected schema.
- **Show Resource Dependencies** - Shows the dependencies for the selected schema.
- **Expand All** - Expands all the children of the selected schema from the Hierarchy/Dependencies structure.
- **Collapse All** - Collapses all children of the selected schema from the Hierarchy/Dependencies structure.

 **Tip:** When a recursive reference is encountered in the Hierarchy view, the reference is marked with a special icon .

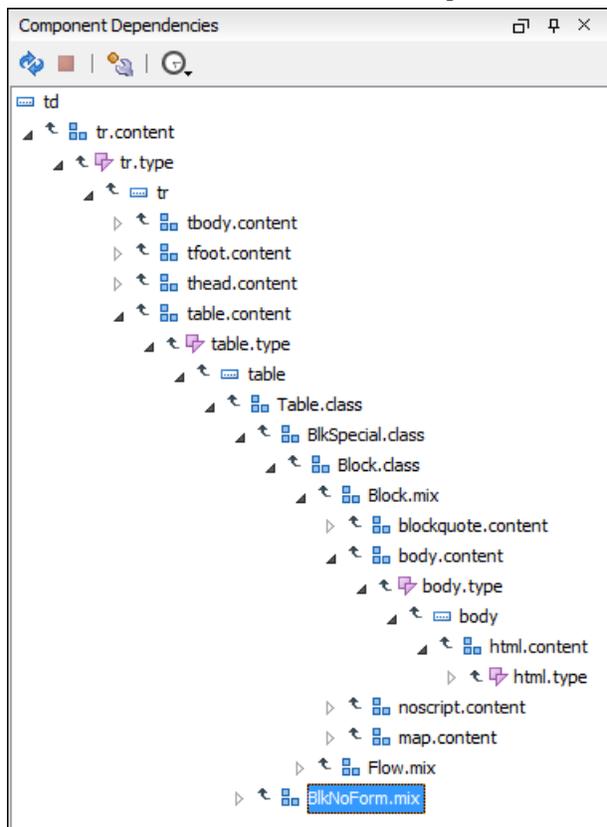
## Component Dependencies View

The **Component Dependencies** view allows you to spot the dependencies for the selected component of an XML Schema, a *Relax NG schema*, a *NVDL schema* or an *XSLT stylesheet*. You can open the view from **Window > Show View > Component Dependencies**.

If you want to see the dependencies of a schema component:

- select the desired schema component in the editor;
- choose the **Component Dependencies** action from the contextual menu.

The action is available for all named components (for example elements or attributes).



**Figure 81: Component Dependencies View - Hierarchy for xhtml111.xsd**

In the **Component Dependencies** view the following actions are available in the toolbar:

-  - Refreshes the dependencies structure.
-  - Stop the dependencies computing.
-  - Allows you to configure a search scope to compute the dependencies structure.
-  - Contains a list of previously executed dependencies computations.

The contextual menu contains the following actions:

- **Go to First Reference** - Selects the first reference of the referred component from the current selected component in the dependencies tree.
  - **Go to Component** - Shows the definition of the currently selected component in the dependencies tree.
-  **Tip:** If a component contains multiple references to another components, a small table is shown containing all these references. When a recursive reference is encountered, it is marked with a special icon .

## Highlight Component Occurrences

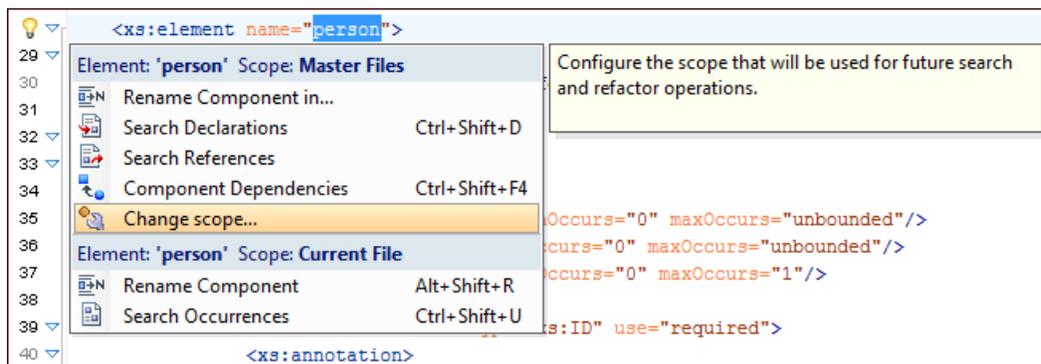
When a component (for example types, elements, attributes) is found at current cursor position, Oxygen XML Editor performs a search over the entire document to find the component declaration and all its references. When found, they are highlighted both in the document and in the stripe bar, at the right side of the document. Customizable colors are used: one for the component definition and another one for component references. Occurrences are displayed until another component is selected and a new search is performed. All occurrences are removed when you start to edit the document.

This feature is set on automatic search by default and can be configured in the **Options > Preferences > Editor > Mark Occurrences** page. A search can also be triggered with the **Search > Search Occurrences in File (Ctrl+Shift+U)** contextual menu action. All matches are displayed in a separate tab of the **Results** view.

## XML Schema Quick Assist Support

The Quick Assist action set was designed to help you improve the development work flow by offering quicker access to the most commonly used actions.

It is activated automatically when the cursor is positioned inside a component name. It is accessible via a yellow bulb help marker placed on the cursor line, in the editor line number stripe. Also, you can invoke the quick assist menu if you press **Alt + 1** keys (**Meta + Alt + 1** on Mac OS X) on your keyboard.



**Figure 82: Quick Assist Support**

The quick assist support offers direct access to the following actions:

- **Rename Component** - Allows in-place editing of the current component. When you use in-place editing, the component and all its references in the document are decorated with a thin border. All the changes you make to the component at caret position are updated in real time to all component's occurrences. To exit in-place editing, press either the **Esc** or **Enter** key on your keyboard.
- **Search Occurrences** - Searches all occurrences of the file within the current scope.
- **Rename Component in...** - Renames the component and all its dependencies;
- **Search Declarations** - Searches the declaration of the component in a predefined scope. It is available only when the context represents a component name reference;
- **Search References** - Searches all references of the component in a predefined scope;
- **Component Dependencies** - Searches the component dependencies in a predefined scope;
- **Change Scope...** - Configures the scope that will be used for future search or refactor operations;

## Linking Between Development and Authoring

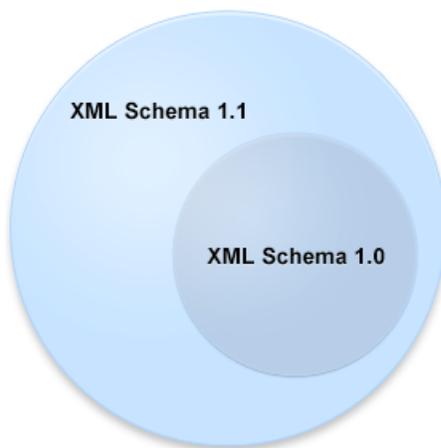
The Author mode is available on the XML Schema editor allowing you to edit visually the schema annotations. It presents a polished and compact view of the XML Schema, with support for links on imported/included schemas. Embedded Schematron is supported only in Relax NG schemas with XML syntax.

### XML Schema 1.1

Oxygen XML Editor offers full support for XML Schema 1.1, including:

- XML Documents Validation and Content Completion Based on XML Schema 1.1;
- XML Schema 1.1 Validation and Content Completion;
- Editing XML Schema 1.1 files in the Schema Design mode;
- The Flatten Schema action;
- Resource Hierarchy/Dependencies and Refactoring Actions;
- Master Files;
- Generating Documentation for XML Schema 1.1;
- Support for generating XML instances based on XML Schema.

XML Schema 1.1 is a superset of XML Schema 1.0, that offers lots of new powerful capabilities.



**Figure 83: XML Schema 1.1**

The significant new features in XSD 1.1 are:

- **Assertions** - support to define assertions against the document content using XPath 2.0 expressions (an idea borrowed from Schematron);
- **Conditional type assignment** - the ability to select the type against which an element is validated based on the values of the attribute of the element;
- **Open content** - content models are able to use the `openContent` element to specify content models with *open content*. These content models allow elements not explicitly mentioned in the content model to appear in the document instance. It is as if wildcards were automatically inserted at appropriate points within the content model. A schema document wide default may be set, which causes all content models to be open unless specified otherwise.

To see the complete list with changes since version 1.0, go to [http://www.w3.org/TR/xmlschema11-1/#ch\\_specs](http://www.w3.org/TR/xmlschema11-1/#ch_specs).

XML Schema 1.1 is intended to be mostly compatible with XML Schema 1.0 and to have approximately the same scope. It also addresses bug fixes and brings improvements that are consistent with the constraints on scope and compatibility.

 **Note:** An XML document conforming to a 1.0 schema can be validated using a 1.1 validator, but an XML document conforming to a 1.1 schema may not validate using a 1.0 validator.

In case you are constrained to use XML Schema 1.0 (for example if you develop schemas for a server that uses an XML Schema 1.0 validator which cannot be updated), change the default XML Schema version to 1.0. If you keep the default

XML Schema version set to 1.1, the content completion window presents XML Schema 1.1 elements that you can insert accidentally in an 1.0 XML Schema. So even if you make a document invalid conforming with XML Schema 1.0, the validation process does not signal any issues.

To change the default XML Schema version, go to **Options > Preferences > XML > XML Parser > XML Schema**.

## Editing Relax NG Schemas

---

Oxygen XML Editor provides a special type of editor for Relax NG schemas. This editor presents the usual text view of an XML document synchronized in real time with an outline view. The outline view has two display modes: the *standard outline* mode and the *components* mode.

### Relax NG Schema Diagram

This section explains how to use the graphical diagram of a Relax NG schema.

#### Introduction

Oxygen XML Editor provides a simple, expressive, and easy to read **Schema Diagram** view for Relax NG schemas.

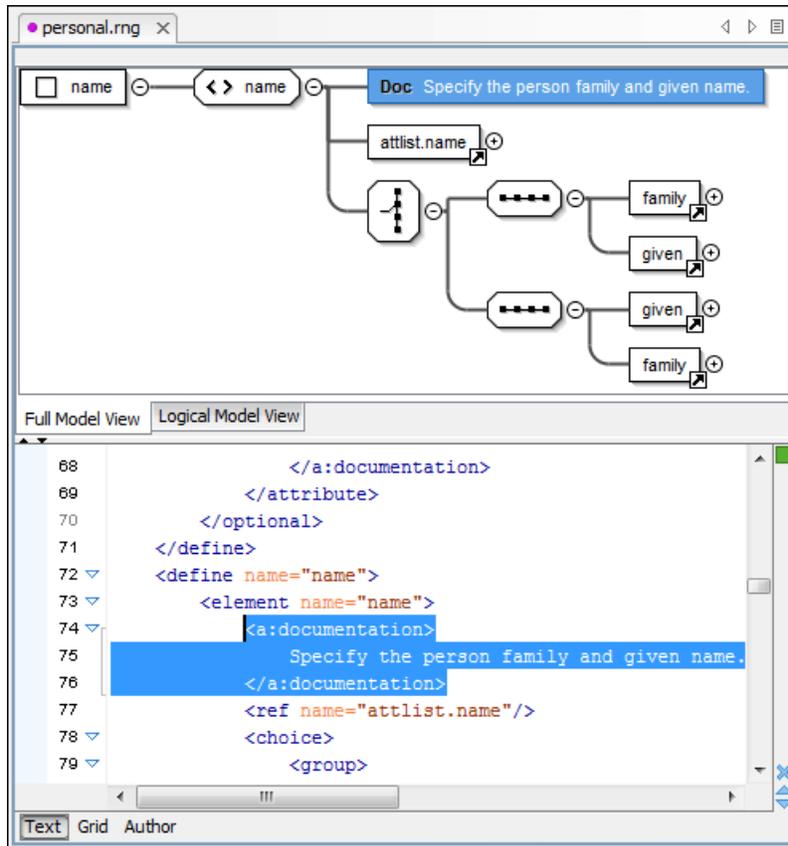
With this new feature you can easily develop complex schemas, print them on multiple pages or save them as JPEG, PNG, or BMP images. It helps both schema authors in developing the schema and content authors who are using the schema to understand it.

Oxygen XML Editor is the only XML editor to provide a side by side source and diagram presentation and have them real-time synchronized:

- the changes you make in the Editor are immediately visible in the Diagram (no background parsing).
- changing the selected element in the diagram selects the underlying code in the source editor.

#### Full Model View

When you create a new schema document or open an existing one, the editor panel is divided in two sections: one containing the schema diagram and the second the source code. The **Diagram** view has two tabbed panes offering a **Full Model View** and a **Logical Model View**.



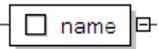
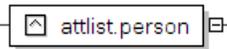
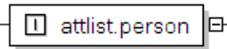
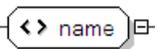
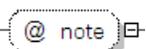
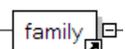
**Figure 84: Relax NG Schema Editor - Full Model View**

The following references can be expanded in place: patterns, includes, and external references. This expansion mechanism, coupled with the synchronization support, makes the schema navigation easy.

All the element and attribute names are editable: double-click any name to start editing it.

### Symbols Used in the Schema Diagram

The **Full Model View** renders all the Relax NG Schema patterns with intuitive symbols:

-  - define pattern with the name attribute set to the value shown inside the rectangle (in this example name).
-  - define pattern with the combine attribute set to `interleave` and the name attribute set to the value shown inside the rectangle (in this example `attlist.person`).
-  - define pattern with the combine attribute set to `choice` and the name attribute set to the value shown inside the rectangle (in this example `attlist.person`).
-  - element pattern with the name attribute set to the value shown inside the rectangle (in this example name).
-  - attribute pattern with the name attribute set to the value shown inside the rectangle (in this case note).
-  - ref pattern with the name attribute set to the value shown inside the rectangle (in this case `family`).

-  - oneOrMore pattern.
-  - zeroOrMore pattern.
-  - optional pattern.
-  - choice pattern.
-  - value pattern, used for example inside a choice pattern.
-  - group pattern.
-  - pattern from the Relax NG Annotations namespace (<http://relaxng.org/ns/compatibility/annotations/1.0>) which is treated as a documentation element in a Relax NG schema.
-  - text pattern.
-  - empty pattern.

### Logical Model View

The **Logical Model View** presents the compiled schema which is a single pattern. The patterns that form the element content are defined as top level patterns with generated names. These names are generated depending of the elements name class.

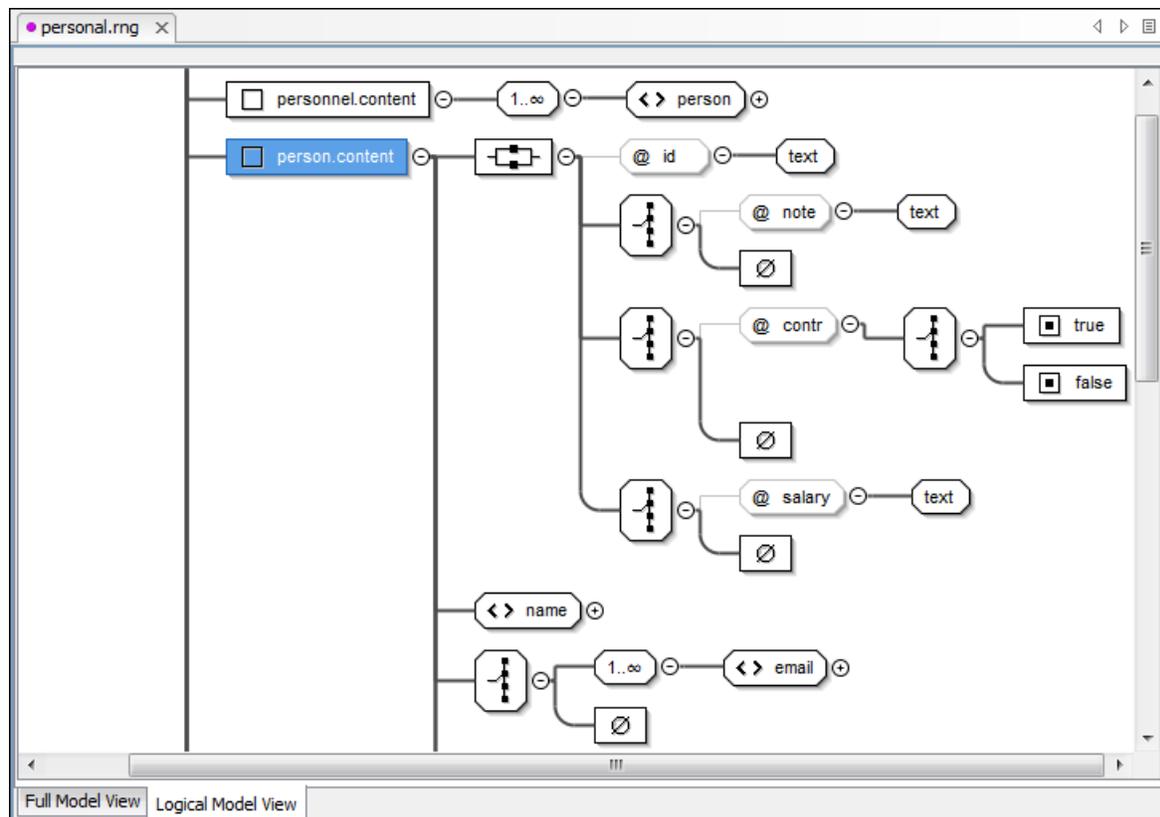


Figure 85: Logical Model View for a Relax NG Schema

## Actions Available in the Diagram View

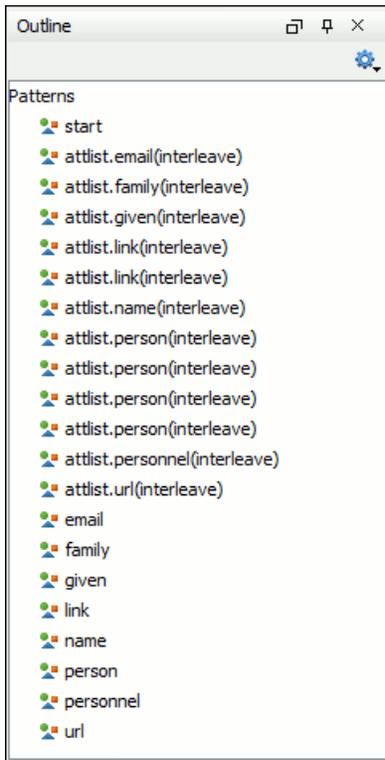
The contextual menu offers the following actions:

- **Append child** - Appends a child to the selected component.
- **Insert Before** - Inserts a component before the selected component.
- **Insert After** - Inserts a component after the selected component.
- **Edit attributes** - Edits the attributes of the selected component.
- **Remove** - Removes the selected component.
- **Show only the selected component** - Depending on its state (selected/not selected), either the selected component or all the diagram components are shown.
- **Show Annotations** - Depending on its state (selected/not selected), the documentation nodes are shown or hidden.
- **Auto expand to references** - This option controls how the schema diagram is automatically expanded. If you select it and then edit a top-level element or you make a refresh, the diagram is expanded until it reaches referred components. If this option is left unchecked, only the first level of the diagram is expanded, showing the top-level elements. For large schemas, the editor disables this option automatically.
- **Collapse Children** - Collapses the children of the selected view.
- **Expand Children** - Expands the children of the selected view.
- **Print Selection...** - Prints the selected view.
- **Save as Image...** - Saves the current selection as JPEG, BMP, SVG or PNG image.
- **Refresh** - Refreshes the schema diagram according to the changes in your code. They represent changes in your imported documents or changes that are not reflected automatically in the compiled schema).

If the schema is not valid, you see only an error message in the **Logical Model View** instead of the diagram.

## Relax NG Outline View

The Relax NG **Outline** view presents a list with the patterns that appear in the diagram in both the **Full Model View** and **Logical Model View** cases. It allows a quick access to a component by name. By default it is displayed on screen. If you closed the **Outline** view you can reopen it from menu **Window > Show View > Outline** . You can switch between the Relax NG patterns version and the *standard XML version* of the view by pressing the  button.



**Figure 86: Relax NG Outline View**

The tree shows the XML structure or the define patterns collected from the current document. By default, the **Outline** view presents the define patterns. The following action is available in the **Settings** menu on the Outline view's toolbar:

-  **Show XML structure** - Shows the XML structure of the current document.

When the XML elements are displayed, the following actions are available in the **Settings** menu on the Outline view's toolbar:

-  **Selection update on caret move** - Allows a synchronization between **Outline** view and schema diagram. The selected view from the diagram will be also selected in the **Outline** view.
-  **Show components** - Shows the define patterns collected from the current document.
-  **Flat presentation mode of the filtered results** - when active, the application flattens the filtered result elements to a single level.
-  **Show comments and processing instructions** - show/hide comments and processing instructions in the **Outline** view.
-  **Show element name** - show/hide element name.
-  **Show text** - show/hide additional text content for the displayed elements.
-  **Show attributes** - show/hide attribute values for the displayed elements. The displayed attribute values can be changed from [the Outline preferences panel](#).
-  **Configure displayed attributes** - displays the [XML Structured Outline preferences page](#).

The upper part of the view contains a filter box which allows you to focus on the relevant components. Type a text fragment in the filter box and only the components that match it are presented. For advanced usage you can use wildcard characters (\*, ?) and separate multiple patterns with commas.

## Relax NG Editor Specific Actions

The list of actions specific for the Relax NG (full syntax) editor is:

- **Document > Schema > Show Definition** (also available on the contextual menu of the editor panel) - Moves the cursor to the definition of the current element in this Relax NG (full syntax) schema. You can use the **Ctrl (Meta on MAC OS) + Click** shortcut on a reference to display its definition.

## Searching and Refactoring Actions

All the following actions can be applied on `ref` and `parentRef` parameters only.

- **Document > References >  Search References** - Searches all references of the item found at current cursor position in the defined scope, if any. If a scope is defined, but the current edited resource is not part of the range of resources determined by this scope, a warning dialog is shown and you can define another search scope. A search scope includes the project or a collection of files and folders.

 **Note:** This action and the following ones can also be accessed from RNG editor's **contextual menu > Search**.

You can decide to use automatically the defined scope for future operations by checking the corresponding checkbox.

- **Document > References > Search References in...** - Searches all references of the item found at current cursor position in the file or files specified in the defined scope.

All the following actions can be applied on named `define` parameters only.

- **Document > References >  Search Declarations** - Searches all declarations of the item found at current cursor position in the defined scope if any. If a scope is defined, but the current edited resource is not part of the range of resources determined by this scope a warning dialog is shown and you can define another search scope. A search scope includes the project or a collection of files and folders.

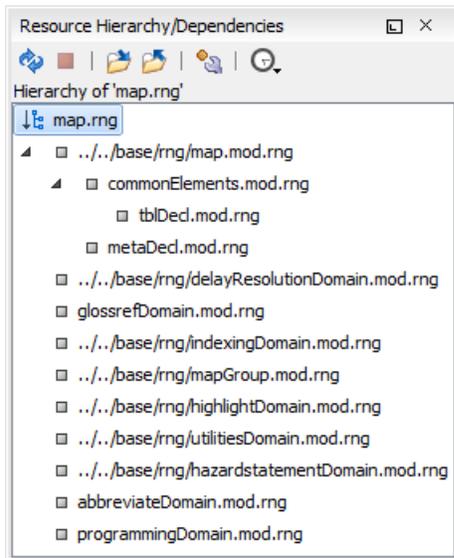
 **Note:** This action and the following ones can also be accessed from RNG editor's **contextual menu > Search**.

- **Document > References > Search Declarations in...** - Searches all declarations of the item found at current cursor position in the files specified in the search scope.
- **Document > References > Search Occurrences in File** - Searches all occurrences of the item at the caret position in the currently edited file.
- **contextual menu of current editor > Refactoring > Rename Component...** - Renames the selected component.

## Resource Hierarchy/Dependencies View

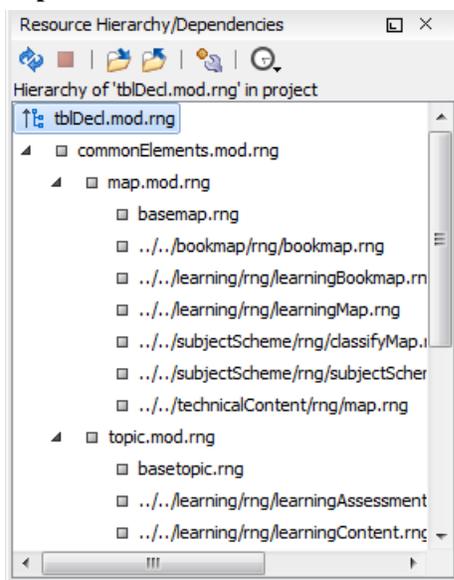
The **Resource Hierarchy/Dependencies** view allows you to see the hierarchy/dependencies for a schema. To open this view, go to **Window > Show View > Resource Hierarchy/Dependencies**.

If you want to see the hierarchy of a schema, select the desired schema in the project view and choose **Resource Hierarchy** from the contextual menu.



**Figure 87: Resource Hierarchy/Dependencies View - hierarchy for map.rng**

If you want to see the dependencies of a schema, select the desired schema in the project view and choose **Resource Dependencies** from the contextual menu.



**Figure 88: Resource Hierarchy/Dependencies View - Dependencies for tblDecl.mod.rng**

In the **Resource Hierarchy/Dependencies** view you have several actions in the toolbar:

-  - Refreshes the Hierarchy/Dependencies structure.
-  - Stops the hierarchy/dependencies computing.
-  - Allows you to choose a schema to compute the hierarchy structure.
-  - Allows you to choose a schema to compute the dependencies structure.
-  - Allows you to configure a scope to compute the dependencies structure.
-  - Repeats a previous dependencies computation.

The following actions are available in the contextual menu:

- **Open** - Opens the schema. Also you can open the schema by a double-click on the Hierarchy/Dependencies structure.

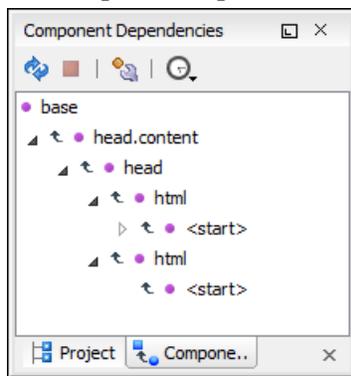
- **Copy location** - Copies the location of the schema.
-  **Add to Master Files** - Adds the currently selected resource in *the Master Files directory*;
- **Resource Hierarchy** - Shows the hierarchy for the selected schema.
- **Resource Dependencies** - Shows the dependencies for the selected schema.
- **Expand All** - Expands all the children of the selected schema from the hierarchy/dependencies structure.
- **Collapse All** - Collapses all the children of the selected schema from the hierarchy/dependencies structure.

 **Tip:** When a recursive reference is encountered in the **Hierarchy** view, the reference is marked with a special icon .

## Component Dependencies View

The **Component Dependencies** view allows you to see the dependencies for a selected Relax NG component. You can open the view from **Window > Show View > Component Dependencies**.

If you want to see the dependencies of a RelaxNG component, select the desired component in the editor and choose the **Component Dependencies** action from the contextual menu. The action is available for all named defines.



**Figure 89: Component Dependencies View - Hierarchy for base.rng**

In the **Component Dependencies** view you have several actions in the toolbar:

-  - Refreshes the dependencies structure.
-  - Allows you to stop the dependencies computing.
-  - Allows you to configure a search scope to compute the dependencies structure.
-  - Allows you to repeat a previous dependencies computation.

The following actions are available on the contextual menu:

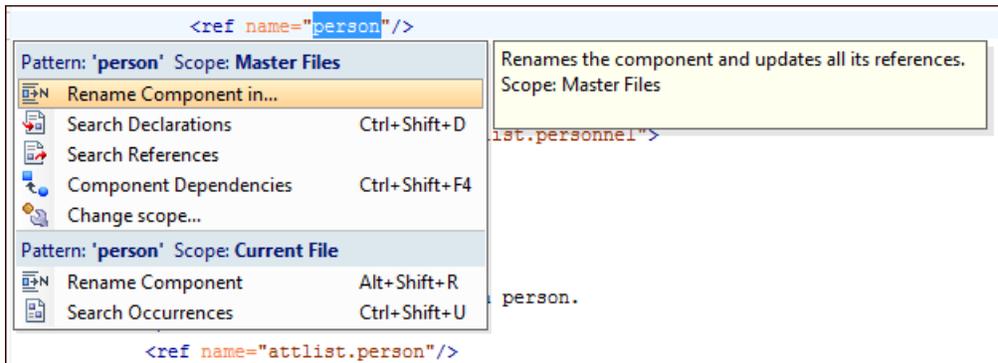
- **Go to First Reference** - Selects the first reference of the referred component from the current selected component in the dependencies tree.
- **Go to Component** - Shows the definition of the current selected component in the dependencies tree.

 **Tip:** If a component contains multiple references to another components, a small table is shown containing all references. When a recursive reference is encountered, it is marked with a special icon .

## RNG Quick Assist Support

The Quick Assist action set was designed to help you improve the development work flow by offering quicker access to the most commonly used actions.

It is activated automatically when the cursor is positioned inside a component name. It is accessible via a yellow bulb help marker placed on the cursor line, in the editor line number stripe. Also, you can invoke the quick assist menu if you press **Alt + 1** keys (**Meta + Alt + 1** on Mac OS X) on your keyboard.



**Figure 90: RNG Quick Assist Support**

The quick assist support offers direct access to the following actions:

- **Rename Component** - Allows in-place editing of the current component. When you use in-place editing, the component and all its references in the document are decorated with a thin border. All the changes you make to the component at caret position are updated in real time to all component's occurrences. To exit in-place editing, press either the **Esc** or **Enter** key on your keyboard.
- **Search Occurrences** - Searches all occurrences of the file within the current scope.
- **Rename Component in...** - Renames the component and all its dependencies;
- **Search Declarations** - Searches the declaration of the component in a predefined scope. It is available only when the context represents a component name reference;
- **Search References** - Searches all references of the component in a predefined scope;
- **Component Dependencies** - Searches the component dependencies in a predefined scope;
- **Change Scope...** - Configures the scope that will be used for future search or refactor operations;

## Configuring a Custom Datatype Library for a RELAX NG Schema

A RELAX NG schema can declare a custom datatype library for the values of elements found in XML document instances. The datatype library must be developed in Java and it must implement the interface [specified on the www.thaiopensource.com website](http://www.thaiopensource.com).

The jar file containing the custom library and any other dependent jar file must be added to the classpath of the application, that is the jar files must be added to the folder `[Oxygen-install-folder]/lib`.

To load the custom library, restart Oxygen XML Editor.

## Linking Between Development and Authoring

The Author mode is available on the Relax NG schema presenting the schema similar with the Relax NG compact syntax. It links to imported schemas and external references. Embedded Schematron is supported only in Relax NG schemas with XML syntax.

## Editing NVDL Schemas

Some complex XML documents are composed by combining elements and attributes from different namespaces. More, the schemas which define these namespaces are not even developed in the same schema language. In such cases, it is difficult to specify in the document all the schemas which must be taken into account for validation of the XML document or for content completion. An NVDL (Namespace Validation Definition Language) schema can be used. This schema allows the application to combine and interleave multiple schemas of different types (W3C XML Schema, RELAX NG schema, Schematron schema) in the same XML document.

Oxygen XML Editor provides a special type of editor for NVDL schemas. This editor presents the usual text view of an XML document synchronized in real time with an outline view. The outline view has two display modes: the *standard outline* mode and the *components* mode.

## NVDL Schema Diagram

This section explains how to use the graphical diagram of a NVDL schema.

### Introduction

Oxygen XML Editor provides a simple, expressive, and easy to read Schema Diagram View for NVDL schemas.

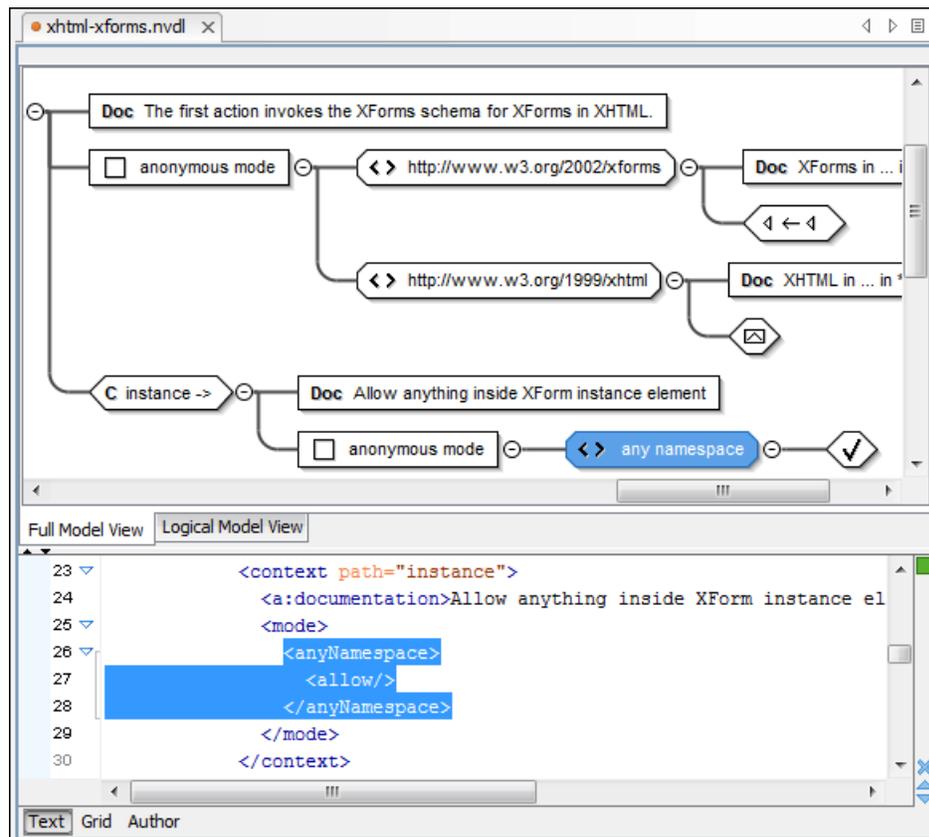
With this new feature you can easily develop complex schemas, print them on multiple pages or save them as JPEG, PNG, and BMP images. It helps both schema authors in developing the schema and content authors that are using the schema to understand it.

Oxygen XML Editor is the only XML Editor to provide a side by side source and diagram presentation and have them real-time synchronized:

- the changes you make in the Editor are immediately visible in the Diagram (no background parsing).
- changing the selected element in the diagram, selects the underlying code in the source editor.

### Full Model View

When you create a schema document or open an existing one, the editor panel is divided in two sections: one containing the schema diagram and the second the source code. The diagram view has two tabbed panes offering a **Full Model View** and a **Logical Model View**.



**Figure 91: NVDL Schema Editor - Full Model View**

The **Full Model View** renders all the NVDL elements with intuitive icons. This representation coupled with the synchronization support makes the schema navigation easy.

Double click on any diagram component in order to edit its properties.

### Actions Available in the Diagram View

The contextual menu offers the following actions:

- **Show only the selected component** - Depending on its state (selected/not selected), either the selected component or all the diagram components are shown.
- **Show Annotations** - Depending on its state (selected/not selected), the documentation nodes are shown or hidden.
- **Auto expand to references** - This option controls how the schema diagram is automatically expanded. For instance, if you select it and then edit a top-level element or you trigger a diagram refresh, the diagram will be expanded until it reaches the referred components. If this option is left unchecked, only the first level of the diagram is expanded, showing the top-level elements. For large schemas, the editor disables this option automatically.
- **Collapse Children** - Collapses the children of the selected view.
- **Expand Children** - Expands the children of the selected view.
- **Print Selection...** - Prints the selected view.
- **Save as Image...** - Saves the current selection as image, in JPEG, BMP, SVG or PNG format.
- **Refresh** - Refreshes the schema diagram according to the changes in your code (changes in your imported documents or those that are not reflected automatically in the compiled schema).

If the schema is not valid, you see only an error message in the **Logical Model View** instead of the diagram.

### NVDL Outline View

The NVDL **Outline** view presents a list with the named or anonymous rules that appear in the diagram. It allows a quick access to a rule by name. It can be opened from the **Window > Show View > Outline** menu.

## NVDL Editor Specific Actions

The list of actions specific for the Oxygen XML Editor NVDL editor of is:

- **Document > Schema > Show Definition** (also available on the contextual menu of the editor panel) - Moves the cursor to its definition in the schema used by NVDL in order to validate it. You can use the **Ctrl (Meta on MAC OS) + Click** shortcut on a reference to display its definition.

## Searching and Refactoring Actions

All the following actions can be applied on mode `name`, `useMode`, and `startMode` attributes only.

- **Document > References >  Search References** - Searches all references of the item found at current cursor position in the defined scope, if any. If a scope is defined, but the current edited resource is not part of the range of resources determined by this scope, a warning dialog is shown. A search scope includes the project or a collection of files and directories.

 **Note:** This action and the following ones can also be accessed from NVDL editor's **contextual menu > Search**.

You can decide to use automatically the defined scope for future operations by checking the corresponding checkbox.

- **Document > References > Search References in...** - Searches all references of the item found at current cursor position in the file or files that you specify when define a scope in the dialog above.

All the following actions can be applied on named `define` parameters only.

- **Document > References >  Search Declarations** - Searches all declarations of the item found at current cursor position in the defined scope, if any. If a scope is defined, but the current edited resource is not part of the range of resources determined by this scope, a warning dialog is shown. You have the possibility to define another search scope. A search scope includes the project or a collection of files and folders.

 **Note:** This action and the following ones can also be accessed from NVDL editor's **contextual menu > Search** menu.

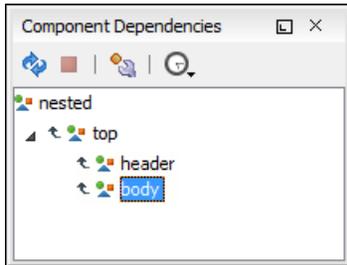
- **Document > References > Search Declarations in...** - Searches all declarations of the item found at current cursor position in the file or files specified in the search scope.
- **Document > References > Search Occurrences in File** - Searches all occurrences of the item at the caret position in the currently edited file.

- **contextual menu of current editor** > **Rename Component...** - Allows you to rename the current component.

## Component Dependencies View

The **Component Dependencies** view allows you to see the dependencies for a selected NVDL named mode. You can open the view from **Window** > **Show View** > **Component Dependencies**.

If you want to see the dependencies of an NVDL mode, select the desired component in the editor and choose the **Component Dependencies** action from the contextual menu. The action is available for all named modes.



**Figure 92: Component Dependencies View - Hierarchy for test.nvd1**

In the **Component Dependencies** the following actions are available on the toolbar:

- - Refreshes the dependencies structure.
- - Allows you to stop the dependencies computing.
- - Allows you to configure a search scope to compute the dependencies structure. If you decide to set the application to use automatically the defined scope for future operations, select the corresponding checkbox.
- - Repeats a previous dependencies computation.

The following actions are available in the contextual menu:

- **Go to First Reference** - Selects the first reference of the referred component from the current selected component in the dependencies tree.
- **Go to Component** - Shows the definition of the current selected component in the dependencies tree.

**Tip:** If a component contains multiple references to another component, a small table containing all references is shown. When a recursive reference is encountered it is marked with a special icon .

## Linking Between Development and Authoring

The Author mode is available on the NVDL scripts editor presenting them in a compact and easy to understand representation.

## Editing XSLT Stylesheets

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This section explains the features of the XSLT editor.

### Validating XSLT Stylesheets

Validation of XSLT stylesheets documents is performed with the help of an XSLT processor *configurable from user preferences* according to the XSLT version: 1.0 or 2.0. For XSLT 1.0, the options are: Xalan, Saxon 6.5.5, Saxon 9.4.0.4, MSXML 4.0, MSXML.NET, *a JAXP transformer specified by the main Java class*. For XSLT 2.0, the options are: Saxon 9.4.0.4, *a JAXP transformer specified by the main Java class*.

The **Validate** toolbar provides a button **Validation options** for quick access to the *XSLT options* page in the Oxygen XML Editor user preferences.

## Custom Validation of XSLT Stylesheets

If you must validate an XSLT stylesheet with other validation engine than the Oxygen XML Editor's built-in ones, you have the possibility to configure external engines as custom XSLT validation engines. After such a custom validator is *properly configured in Preferences* page, it can be applied on the current document with just one click on the **Custom Validation Engines** toolbar.

There are two validators configured by default:

- **MSXML 4.0** - included in Oxygen XML Editor (Windows edition). It is associated to the XSL Editor type in *Preferences page*.
- **MSXML.NET** - included in Oxygen XML Editor (Windows edition). It is associated to the XSL Editor type in *Preferences page*.

## Associate a Validation Scenario

Validation of XSLT stylesheets documents can be also performed through a validation scenario. To define a validation scenario, open the **Configure Validation Scenario** dialog. You do this with the **Configure Validation Scenario** action available on the menu **Document > Validate** and on the **Validate** toolbar. .

You can validate an XSLT document using the engine from transformation scenario or a custom validation scenario. If you choose to validate using the engine from transformation scenario, and a transformation scenario is not associated with the current document or the engine has no validation support, the default engine set in **Options > Preferences > XML > XSLT/FO/XQuery > XSLT** is used. The list of reusable scenarios for documents of the same type as the current document is displayed in case you choose to use a custom validation scenario. For more details see *Validation Scenario*.

## Contextual Editing

Smaller interrelated modules that define a complex stylesheet cannot be correctly edited or validated individually, due to their interdependency with other modules. For example, a function defined in a main stylesheet is not visible when you edit an included or imported module. Oxygen XML Editor provides the support for defining the main module (or modules), thus allowing you to edit any of the imported/included files in the context of the larger stylesheet structure.

To set a main files, you need to define a validation scenario and add validation units that point to the main modules. Oxygen XML Editor warns you if the current module is not part of the dependencies graph computed for the main stylesheet. In this case, it considers the current module as the main stylesheet.

The advantages of editing in the context of main file include:

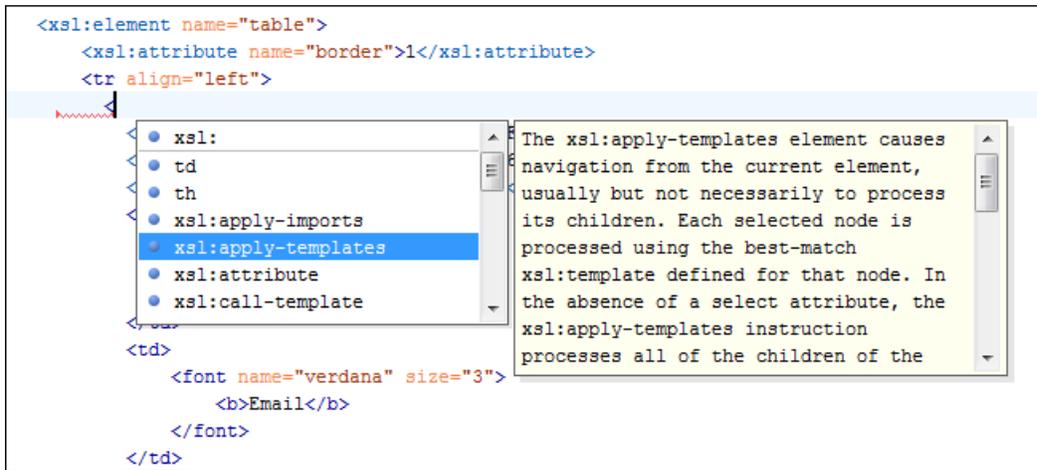
- correct validation of a module in the context of a larger stylesheet structure;
- content completion assistant displays all components valid in the current context;
- the **Outline** displays the components collected from the entire stylesheet structure.

## Syntax Highlight

The XSL editor renders with dedicated coloring schemes the CSS and JS scripts, and XPath expressions. You can customize the coloring schemes in the **Options > Preferences > Editor > Colors** preferences page.

## Content Completion in XSLT Stylesheets

The items in the list of proposals offered by the Content Completion Assistant is context-sensitive. The proposed items are valid at the current caret position. You can enhance the list of proposals by specifying an additional schema. This schema is *defined by the user in the Content Completion / XSL preferences* page and can be: XML Schema, DTD, RELAX NG schema, or NVDL schema.



**Figure 93: XSLT Content Completion Window**

The content completion assistant proposes the following item types, defined in the current stylesheet and in the imported and included XSLT stylesheets:

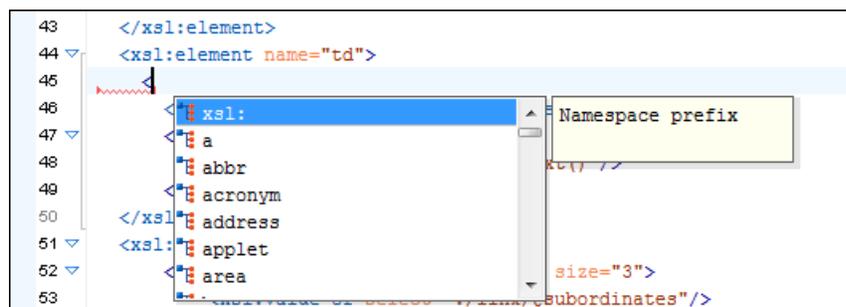
- template modes
- template name
- variable names
- parameter names

**Note:** For XSL and XSD resources, the **Content Completion Assistant** collects its components starting from the master files. The master files can be defined in the project or in the associated validation scenario. For further details about the **Master Files** support go to [Defining Master Files at Project Level](#).

The extension functions built in the Saxon transformation engine are presented in the content completion list only if the Saxon namespace (<http://saxon.sf.net> for XSLT version 2.0 or <http://icl.com/saxon> for XSLT version 1.0) is declared and one of the following conditions is true:

- the edited file has a transformation scenario that uses as transformation engine Saxon 6.5.5 (for XSLT version 1.0), Saxon 9.4.0.4 PE or Saxon 9.4.0.4 EE (for XSLT version 2.0);
- the edited file has a validation scenario that uses as validation engine Saxon 6.5.5 (for version 1.0), Saxon 9.4.0.4 PE or Saxon 9.4.0.4 EE (for version 2.0);
- the validation engine specified in [Options](#) page is Saxon 6.5.5 (for version 1.0), Saxon 9.4.0.4 PE or Saxon 9.4.0.4 EE (for version 2.0).

Namespace prefixes in the scope of the current context are presented at the top of the content completion window to speed up the insertion into the document of prefixed elements.



**Figure 94: Namespace Prefixes in the Content Completion Window**

For the common namespaces like XSL namespace (<http://www.w3.org/1999/XSL/Transform>), XML Schema namespace (<http://www.w3.org/2001/XMLSchema>) or Saxon namespace (<http://icl.com/saxon> for version 1.0, <http://saxon.sf.net/> for version 2.0), Oxygen XML Editor provides an easy mode to declare them by proposing a prefix for these namespaces.

## Content Completion in XPath Expressions

In XSLT stylesheets, the content completion assistant provides *all the features available in the XML editor* and also adds some enhancements. In XPath expressions used in attributes of XSLT stylesheets elements like `match`, `select` and `test`, the content completion assistant offers the names of XPath and XSLT functions, the XSLT axes, and user-defined functions (the name of the function and its parameters). If a transformation scenario was defined and associated to the edited stylesheet, the content completion assistant computes and presents elements and attributes based on:

- the input XML document selected in the scenario;
- the current context in the stylesheet.

The associated document is displayed in *the XSLT/XQuery Input view*.

Content completion for XPath expressions is started:

- on XPath operators detected in one of the `match`, `select` and `test` attributes of XSLT elements: `"`, `'`, `/`, `//`, `(`, `[`, `|`, `:`, `::`, `$`
- for attribute value templates of non-XSLT elements, that is the `{` character when detected as the first character of the attribute value
- on request, if the combination CTRL + Space is pressed inside an edited XPath expression.

The items presented in the content completion window are dependent on:

- the context of the current XSLT element;
- the XML document associated with the edited stylesheet in the stylesheet transformation scenario;
- the XSLT version of the stylesheet (1.0, 2.0, or 3.0).



**Note:** The XSLT 3.0 content completion list of proposals includes specific elements and attributes for the 3.0 version.

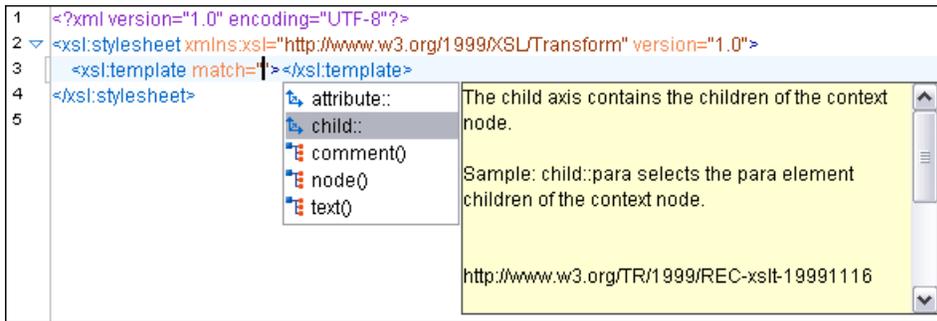
For example, if the document associated with the edited stylesheet is:

```
<personnel>
  <person id="Big.Boss">
    <name>
      <family>Boss</family>
      <given>Big</given>
    </name>
    <email>chief@oxygenxml.com</email>
    <link subordinates="one.worker"/>
  </person>
  <person id="one.worker">
    <name>
      <family>Worker</family>
      <given>One</given>
    </name>
    <email>one@oxygenxml.com</email>
    <link manager="Big.Boss"/>
  </person>
</personnel>
```

and you enter an `xsl:template` element using the content completion assistant, the following actions are triggered:

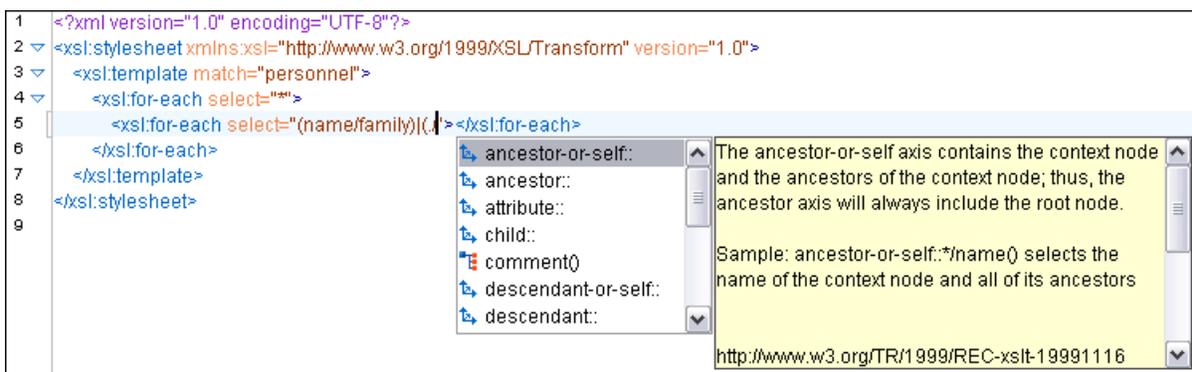
- the `match` attribute is inserted automatically;
- the cursor is placed between the quotes;
- the XPath content completion assistant automatically displays a popup window with all the XSLT axes, XPath functions and elements and attributes from the XML input document that can be inserted in the current context.

The set of XPath functions depends on the XSLT version declared in the root element `xsl:stylesheet`: 1.0, 2.0 or 3.0.



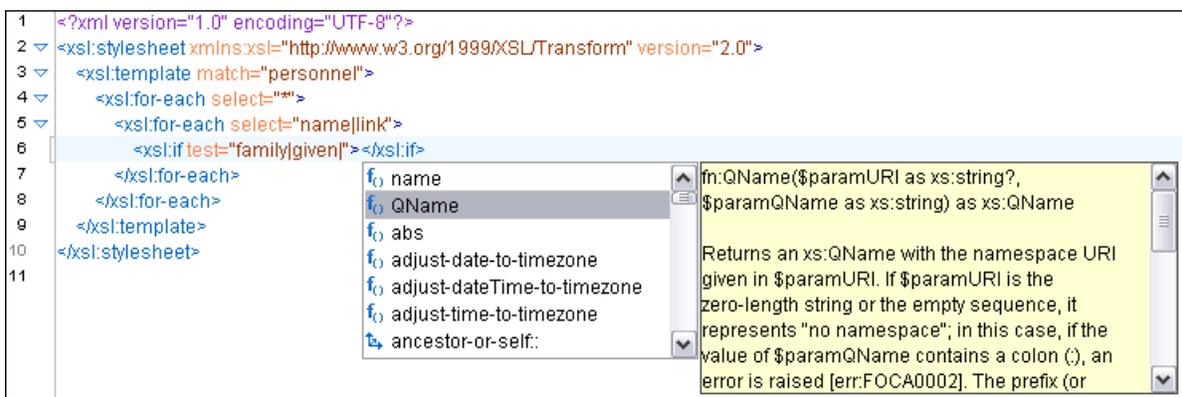
**Figure 95: Content Completion in the `match` Attribute**

If the cursor is inside the `select` attribute of an `xsl:for-each`, `xsl:apply-templates`, `xsl:value-of` or `xsl:copy-of` element the content completion proposals depend on the path obtained by concatenating the XPath expressions of the parent XSLT elements `xsl:template` and `xsl:for-each` as shown in the following figure:



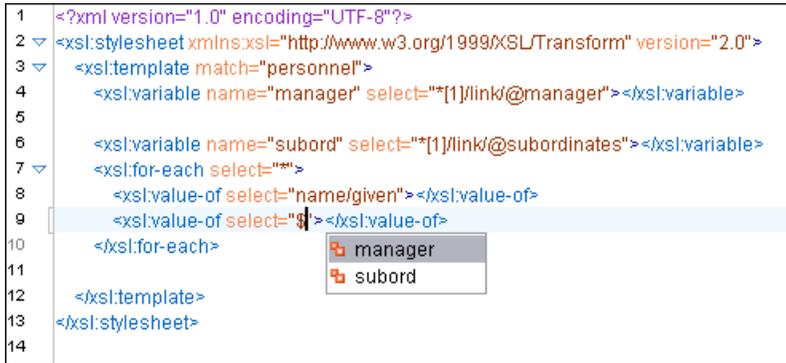
**Figure 96: Content Completion in the `select` Attribute**

Also XPath expressions typed in the `test` attribute of an `xsl:if` or `xsl:when` element benefit of the assistance of the content completion.



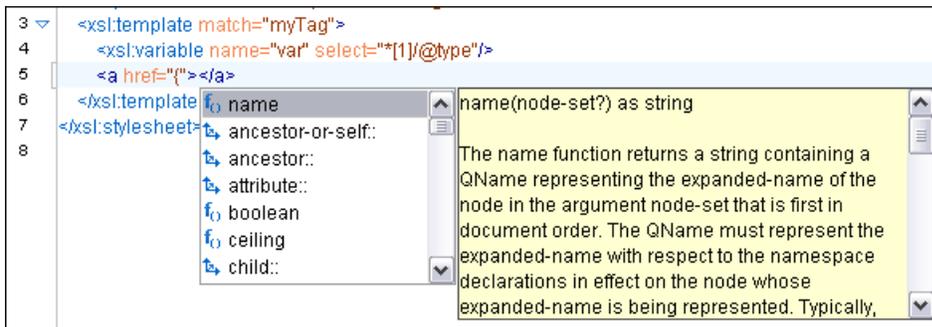
**Figure 97: Content Completion in the `test` Attribute**

XSLT variable references are easier to insert in XPath expressions with the help of the content completion popup triggered by the `$` character which signals the start of such a reference in an XPath expression.



**Figure 98: Content Completion in the test Attribute**

If the { character is the first one in the value of the attribute, the same content completion assistant is available also in attribute value templates of non-XSLT elements.



**Figure 99: Content Completion in Attribute Value Templates**

The time delay *configured in Preferences* page for all content completion windows is applied also for the XPath expressions content completion window.

### Tooltip Helper for the XPath Functions Arguments

When editing the arguments of an XPath/XSLT function, Oxygen XML Editor tracks the current entered argument by displaying a tooltip containing the function signature. The currently edited argument is highlighted with a bolder font.

When moving the caret through the expression, the tooltip is updated to reflect the argument found at the caret position.

We want to concatenate the absolute values of two variables, named *v1* and *v2*.

```
<xsl:template match="/">
  <xsl:value-of select="concat(abs($v1), abs($v2))"></xsl:value-of>
</xsl:template>
```

When moving the caret before the first `abs` function, Oxygen XML Editor identifies it as the first argument of the `concat` function. The tooltip shows in bold font the following information about the first argument:

- its name is `$arg1`;
- its type is `xdt:anyAtomicType`;
- it is optional (note the ? sign after the argument type).

The function takes also other arguments, having the same type, and returns a `xs:string`.

```

name="v2" select="concat($arg1 as xdt:anyAtomicType?, $arg2 as xdt:anyAtomicType?, ...) as xs:string"
match="*"
select="concat(abs($v1), abs($v2))" </xsl:value-of>
</xsl:template>
</xsl:stylesheet>

```

**Figure 100: XPath Tooltip Helper - Identify the concat Function's First Argument**

Moving the caret on the first variable `$v1`, the editor identifies the `abs` as context function and shows its signature:

```

name="v2" select="concat($arg1 as xdt:anyAtomicType?, $arg2 as xdt:anyAtomicType?, ...) as xs:string"
match="*"
select="concat(abs($v1), abs($v2))" </xsl:value-of>
</xsl:template>
</xsl:stylesheet>

```

**Figure 101: XPath Tooltip Helper - Identify the abs Function's Argument**

Further, clicking the second `abs` function name, the editor detects that it represents the second argument of the `concat` function. The tooltip is repainted to display the second argument in bold font.

```

name="v2" select="concat($arg1 as xdt:anyAtomicType?, $arg2 as xdt:anyAtomicType?, ...) as xs:string"
match="*"
select="concat(abs($v1), abs($v2))" </xsl:value-of>
</xsl:template>
</xsl:stylesheet>

```

**Figure 102: XPath Tooltip Helper - Identify the concat Function's Second Argument**

The tooltip helper is available also in the XPath toolbar and the **XPath Builder** view.

## Code Templates

When the content completion is invoked by pressing **(CTRL+Space)**, it also presents a list of code templates specific to the type of the active editor. Such a code template provides a shortcut for inserting a small document fragment at the current caret position. Oxygen XML Editor comes with a large set of ready-to use templates for XSL and XML Schema documents.

### The XSL code template called Template-Match-Mode

Typing `t` in an XSL document and selecting `tmm` in the content assistant pop-up window inserts the following template at the caret position in the document:

```

<xsl:template match="" mode="">
</xsl:template>

```

The user *can easily define other templates*. Also, the code templates *can be shared with other users*.

## The XSLT/XQuery Input View

The structure of the XML document associated to the edited XSLT stylesheet, or the structure of the source documents of the edited XQuery is displayed in a tree form in a view called **XSLT/XQuery Input**. The tree nodes represent the elements of the documents.

### The XSLT Input View

If you click a node, the corresponding template from the stylesheet is highlighted. A node can be dragged from this view and dropped in the editor area for quickly inserting `xsl:template`, `xsl:for-each`, or other XSLT elements that have the `match/select/test` attribute already completed. The value of the attribute is the correct XPath expression referring to the dragged tree node. This value is based on the current editing context of the drop spot.

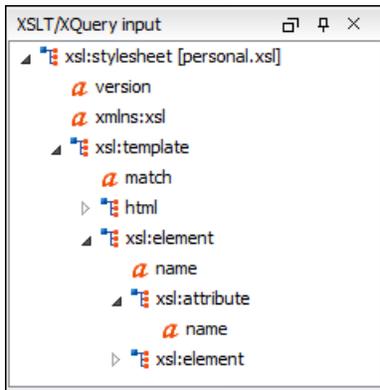


Figure 103: XSLT Input View

For example, for the following XML document:

```
<personnel>
  <person id="Big.Boss">
    <name>
      <family>Boss</family>
      <given>Big</given>
    </name>
    <email>chief@oxygenxml.com</email>
    <link subordinatates="one.worker"/>
  </person>
  <person id="one.worker">
    <name>
      <family>Worker</family>
      <given>One</given>
    </name>
    <email>one@oxygenxml.com</email>
    <link manager="Big.Boss"/>
  </person>
</personnel>
```

and the following XSLT stylesheet:

```
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
  version="2.0">
  <xsl:template match="personnel">
    <xsl:for-each select="*">

      </xsl:for-each>
    </xsl:template>
  </xsl:stylesheet>
```

if you drag the `given` element and drop it inside the `xsl:for-each` element, the following popup menu is displayed:

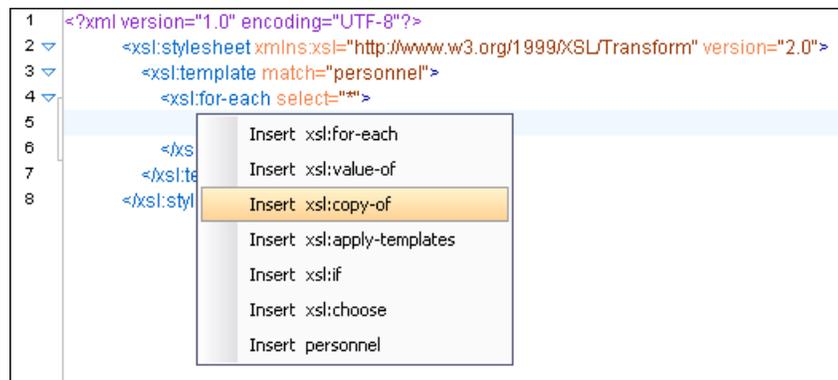


Figure 104: XSLT Input Drag and Drop Popup Menu

Select for example **Insert xsl:value-of** and the result document is:

```

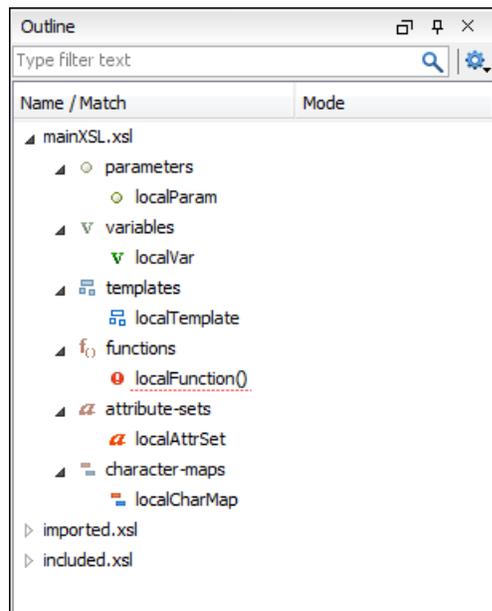
1  <?xml version="1.0" encoding="UTF-8"?>
2  <xsl:stylesheet xmlns:xsl="http://www.w3.org/1999/XSL/Transform" version="2.0">
3  <xsl:template match="personnel">
4  <xsl:for-each select="*">
5  <xsl:value-of select="name/given"/>
6  </xsl:for-each>
7  </xsl:template>
8  </xsl:stylesheet>

```

**Figure 105: XSLT Input Drag and Drop Result**

## The XSLT Outline View

The XSLT **Outline** view displays the list of all the components (templates, attribute-sets, character-maps, variables, functions) from both the edited stylesheet and its imports or includes. For XSL and XSD resources, the **Outline** view collects its components starting from the master files. The master files can be defined in the project or in the associated validation scenario. For further details about the **Master Files** support go to [Defining Master Files at Project Level](#). To enable the **Outline** view, go to **Window > Show View > Outline**.



The following actions are available in the **Settings** menu on the Outline view toolbar:

- **Selection update on caret move** - Controls the synchronization between **Outline** view and source document. The selection in the **Outline** view can be synchronized with the caret moves or the changes in the XSLT editor. Selecting one of the components from the outline view also selects the corresponding item in the source document.
- **Show XML structure** - Displays the XML document structure in a tree-like structure.
- **Show all components** - Displays all components that were collected starting from the main file. This option is set by default.
- **Show local components** - Displays components defined in the current file only.
- **Group by location/type** - The stylesheet components can be grouped by location and type.
- **Show components** - Shows the define patterns collected from the current document.
- **Flat presentation mode of the filtered results** - when active, the application flattens the filtered result elements to a single level.

-  **Show comments and processing instructions** - show/hide comments and processing instructions in the **Outline** view.
-  **Show element name** - show/hide element name.
-  **Show text** - show/hide additional text content for the displayed elements.
-  **Show attributes** - show/hide attribute values for the displayed elements. The displayed attribute values can be changed from [the Outline preferences panel](#).
-  **Configure displayed attributes** - displays the [XML Structured Outline preferences page](#).

The following contextual menu actions are available:

- **Append Child** - Displays a list of elements that can be inserted as children of the current element.
- **Insert Before** - Displays a list of elements that can be inserted as siblings of the current element, before the current element.
- **Insert After** - Displays a list of elements that can be inserted as siblings of the current element, after the current element.
-  **Toggle Comment** - Comments/uncomments the currently selected element.
- **Remove (Delete)** - Removes the selected item from the stylesheet.
-  **Search References (Ctrl+Shift+R)** - Searches all references of the item found at current cursor position in the defined scope, if any. See [Finding XSLT References and Declarations](#) for more details.
- **Search References in...** - Searches all references of the item found at current cursor position in the specified scope. See [Finding XSLT References and Declarations](#) for more details.
-  **Component Dependencies** - Allows you to see the dependencies for the current selected component. See [Component Dependencies View](#) for more details.
-  **Rename Component** - Renames the selected component. See [XSLT Refactoring Actions](#) for more details.

The stylesheet components information is presented on two columns: the first column presents the name and match attributes, the second column the mode attribute. If you know the component name, match or mode, you can search it in the **Outline** view by typing one of these pieces of information in the filter text field from the top of the view or directly on the tree structure. When you type the component name, match or mode in the text field, you can switch to the tree structure using:

- keyboard arrow keys;
- **Enter** key;
- **Tab** key;
- **Shift-Tab** key combination.

To switch from tree structure to the filter text field, you can use **Tab** and **Shift-Tab**.

 **Tip:** The search filter is case insensitive. The following wildcards are accepted:

- \* - any string;
- ? - any character;
- , - patterns separator.

If no wildcards are specified, the string to search is used as a partial match (like **\*textToFind\***).

On the XSLT **Outline** view, you have some contextual actions like: **Edit Attributes**, **Cut**, **Copy**, **Delete**.

The **Outline** content and the editing area are synchronized. When you select a component in the **Outline** view, its definition is highlighted in the editing area.

You are able to sort the content of the **Outline** view. Oxygen XML Editor allows you to sort the components of the tree in the **Outline** view.

 **Note:** Sorting groups in the **Outline** view is not supported.

Oxygen XML Editor has a predefined order of the groups in the **Outline** view:

- for location, the names of the files are sorted alphabetically. The main file is the one you are editing and it is located at the top of the list;
  - for type, the order is: parameters, variables, templates, functions, set attributes, character-map.
-  **Note:** When no grouping is available and the table is not sorted, Oxygen XML Editor sorts the components depending on their order in the document. Oxygen XML Editor also takes into account the name of the file that the components are part of.

## XSLT Stylesheet Documentation Support

Oxygen XML Editor offers built-in support for documenting XSLT stylesheets. If the expanded *QName* of the element has a non-null namespace URI, the `xsl:stylesheet` element may contain any element not from the XSLT namespace. Such elements are referred to as user-defined data elements. Such elements can contain the documentation for the stylesheet and its elements (top-level elements whose names are in the XSLT namespace). Oxygen XML Editor offers its own XML schema that defines such documentation elements. The schema is named `stylesheet_documentation.xsd` and can be found in `[oxygen-install-folder]/frameworks/stylesheet_documentation`. The user can also specify a custom schema in *XSL Content Completion options*.

When content completion is invoked inside an XSLT editor by pressing **(CTRL+Space)**, it offers elements from the XSLT documentation schema (either the built-in one or one specified by user).

In **Text** mode, to add documentation blocks while editing use the **Add component documentation** action available in the contextual menu, **Source** submenu.

In **Author** mode, the following stylesheet documentation actions are available in the contextual menu, **Component Documentation** submenu:

- **Add component documentation** - Adds documentation blocks for the component at caret position.
- **Paragraph** - Inserts a new documentation paragraph.
- **Bold** - Makes the selected documentation text bold.
- **Italic** - Makes the selected documentation text italic.
- **List** - Inserts a new list.
- **List Item** - Inserts a list item.
- **Reference** - Inserts a documentation reference.

If the caret is positioned inside the `xsl:stylesheet` element context, documentation blocks are generated for all XSLT elements. If the caret is positioned inside a specific XSLT element (like a template or a function), a documentation block is generated for that element only.

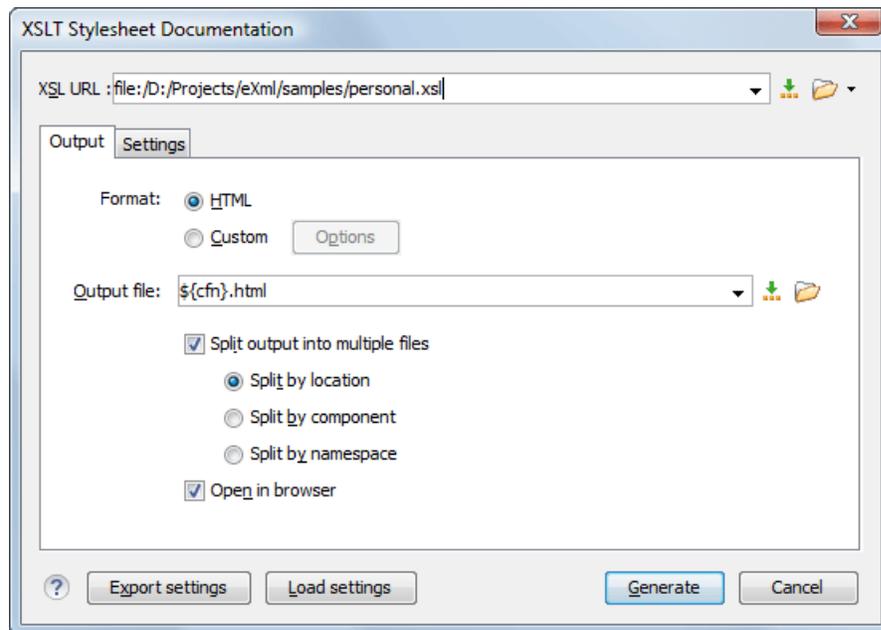
### Example of a documentation block using Oxygen XML Editor built-in schema

```
<xd:doc>
  <xd:desc>
    <xd:p>Search inside parameter <xd:i>string</xd:i> for the last occurrence of parameter
    <xd:i>searched</xd:i>. The substring starting from the 0 position to the identified last
    occurrence will be returned. <xd:ref name="f:substring-after-last" type="function"
    xmlns:f="http://www.oxygenxml.com/doc/xsl/functions">See also</xd:ref></xd:p>
  </xd:desc>
  <xd:param name="string">
    <xd:p>String to be analyzed</xd:p>
  </xd:param>
  <xd:param name="searched">
    <xd:p>Marker string. Its last occurrence will be identified</xd:p>
  </xd:param>
  <xd:return>
    <xd:p>A substring starting from the beginning of <xd:i>string</xd:i> to the last
    occurrence of <xd:i>searched</xd:i>. If no occurrence is found an empty string will be
    returned.</xd:p>
  </xd:return>
</xd:doc>
```

## Generating Documentation for an XSLT Stylesheet

Oxygen XML Editor can generate detailed documentation for the elements (top-level elements whose names are in the XSLT namespace) of an XSLT stylesheet in HTML format. You can select the XSLT elements to include and the level of detail to present for each of them. Also the elements are hyperlinked. The user can also use custom stylesheets to obtain a custom format.

To generate documentation for an XSLT stylesheet document, use the **XSLT Stylesheet Documentation** dialog. It is opened with the **Tools > Generate Documentation > XSLT Stylesheet Documentation... (Ctrl+Alt+X)** action. It can be also opened from the **Project** view contextual menu: **Generate Documentation > XSLT Stylesheet Documentation...** This dialog enables the user to configure a large set of parameters used by the application to generate the documentation.



**Figure 107: The Output Panel of the XSLT Stylesheet Documentation Dialog**

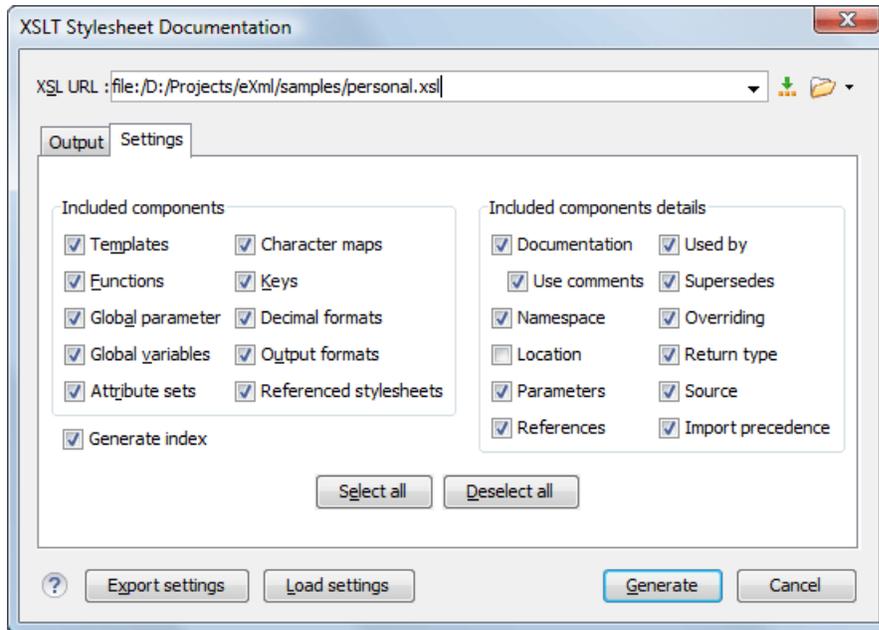
The **XSL URL** field of the dialog panel must contain the full path to the XSL Stylesheet file you want to generate documentation for. The stylesheet can be either a local or a remote one. You can also specify the path of the stylesheet using editor variables.

You can choose to split the output into multiple files using different split criteria. For large XSLT stylesheets being documented, choosing a different split criterion may generate smaller output files providing a faster documentation browsing.

The available split criteria are:

- by location - each output file contains the XSLT elements from the same stylesheet;
- by namespace - each output file contains information about elements with the same namespace;
- by component - each output file contains information about one stylesheet XSLT element.

You can export the settings of the **XSLT Stylesheet Documentation** dialog to an XML file by pressing the **Export settings** button. With the exported settings file, you can generate the same [documentation from the command-line interface](#).



**Figure 108: The Settings Panel of the XSLT Stylesheet Documentation Dialog**

When you generate documentation for an XSLT stylesheet you can choose what XSLT elements to include in the output (templates, functions, global parameters, global variables, attribute sets, character maps, keys, decimal formats, output formats, XSLT elements from referenced stylesheets) and the details to include in the documentation:

- **Documentation** - Shows the documentation for each XSLT element. For HTML format, the user-defined data elements that are recognized and transformed in documentation blocks of the XSLT elements they precede, are the ones from the following schemas:
  - Oxygen XML Editor built-in XSLT documentation schema.
  - A subset of Docbook 5 elements. The recognized elements are: section, sect1 to sect5, emphasis, title, ulink, programlisting, para, orderedlist, itemizedlist;
  - A subset of DITA elements. The recognized elements are: concept, topic, task, codeblock, p, b, i, ul, ol, pre, sl, sli, step, steps, li, title, xref;
  - Full XHTML 1.0 support;
  - XSLStyle documentation environment. XSLStyle uses Docbook or DITA languages inside its own user-defined data elements. The supported Docbook and DITA elements are the ones mentioned above;
  - Doxsl documentation framework. Supported elements are : codefrag, description, para, docContent, documentation, parameter, function, docSchema, link, list, listitem, module, parameter, template, attribute-set;

Other XSLT documentation blocks that are not recognized will just be serialized inside an HTML pre element. You can change this behavior by using a *custom format* instead of the built-in *HTML format* and providing your own XSLT stylesheets.
- **Use comments** - Controls whether the comments that precede an XSLT element is treated as documentation for the element they precede. Comments that precede or succeed the `xsl:stylesheet` element, are treated as documentation for the whole stylesheet. Please note that comments that precede an import or include directive are not collected as documentation for the imported/included module. Also comments from within the body of the XSLT elements are not collected at all.
- **Namespace** - Shows the namespace for named XSLT elements.
- **Location** - Shows the stylesheet location for each XSLT element.
- **Parameters** - Shows parameters of templates and functions.
- **References** - Shows the named XSLT elements that are referred from within an element.
- **Used by** - Shows the list of all the XSLT elements that refer the current named element.

- **Supersedes** - Shows the list of all the XSLT elements that are superseded the current element.
- **Overriding** - Shows the list of all the XSLT elements that override the current element.
- **Return type** - Shows the return type of the function.
- **Source** - Shows the text stylesheet source for each XSLT element.
- **Import precedence** - Shows the computed import precedence as declared in XSL transformation specifications.
- **Generate index** - Creates an index with all the XSLT elements included in the documentation.
- **Load settings / Export settings** - The current settings can be saved for further usage (for example for generating documentation from command-line interface) with the **Export settings** button, and reloaded when necessary with the **Load settings** button.

## Generate Documentation in HTML Format

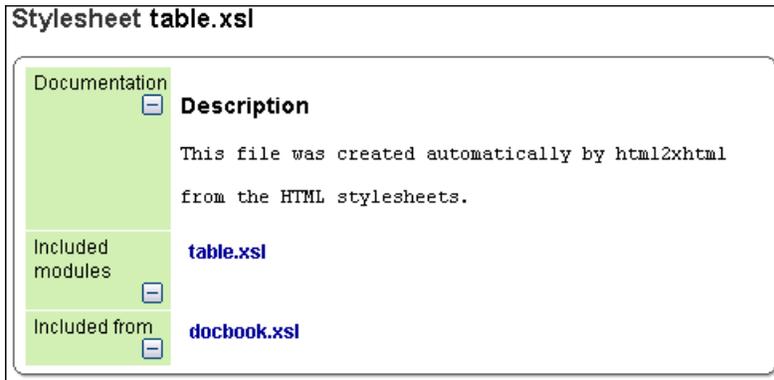
The generated documentation looks like:

The screenshot shows the 'Stylesheet documentation for: xslDo...' window. On the left is a 'Table of Contents' with a 'Group by:' dropdown set to 'Location'. Below it are sections for 'Templates' and 'docbookDocToHtml.xsl'. The main area is titled 'Main stylesheet xslDocHtml.xsl' and contains three sections: 'Documentation', 'Imported modules', and 'Template createJsIdsArray'. The 'Documentation' section for 'createJsIdsArray' includes a description, parameters (arrayName, nodes), namespace, used by (Variables), and references (Function). A 'Showing:' panel on the right lists checked items: Documentation, Parameters, Used by, References, Imported modules, and Source.

**Figure 109: XSLT Stylesheet Documentation Example**

The generated documentation includes the following:

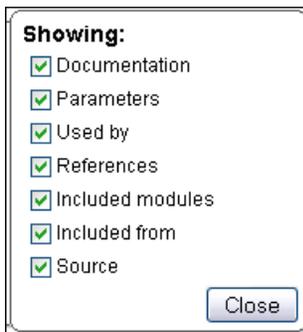
- **Table of Contents** - You can group the contents by namespace, location, or component type. The XSLT elements from each group are sorted alphabetically (named templates are presented first and the match ones second).
- **Information about main, imported, and included stylesheets** - This information consists of:
  - XSLT modules included or imported by the current stylesheet;
  - the XSLT stylesheets where the current stylesheet is imported or included
  - and the stylesheet location.



**Figure 110: Information About an XSLT Stylesheet**

If you choose to split the output into multiple files, the table of contents is displayed in the left frame. The contents are grouped using the same criteria as the split.

After the documentation is generated, you can collapse details for some stylesheet XSLT elements using the **Showing** view.



**Figure 111: The Showing View**

For each element included in the documentation, the section presents the element type followed by the element name (value of the name or match attribute for match templates).

**Function func:substring-before-last**

**Documentation**

**Description**  
Get the substring before the last occurrence of the given substring

**Parameters**

**string**  
The string in which to search

**searched**  
The string to search

**Return**  
The substring starting from the start of the **string** to the index of the last occurrence of **searched**

**Namespace**  
http://www.oxygenxml.com/doc/xsl/functions

**Type**  
xs:string

**Used by**

Template	<b>Nindex</b>
Function	<b>func:substring-before-last(\$string as item(), \$searched as item())</b>
Variable	<b>indexFile</b>

**References**

Function	<b>substring-before-last(\$string as item(), \$searched as item())</b>
----------	--

**Parameters**

QName	Namespace
searched	No namespace
string	No namespace

**Import precedence**  
7

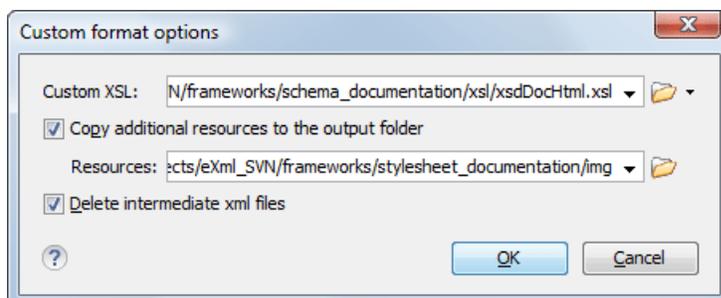
**Source**

```
<xsl:function as="xs:string" name="func:substring-before-last">
  <xsl:param name="string"/>
  <xsl:param name="searched"/>
  <xsl:variable name="toReturn">
    <xsl:choose>
      <xsl:when test="contains($string, $searched)">
        <xsl:variable name="before" select="substring-before($string, $searched)"/>
        <xsl:variable name="rec" select="func:substring-before-last(substring-after($string, $searched), $searched)"/>
        <xsl:concat($before, $rec)
      </xsl:when>
      <xsl:otherwise>
        $string
      </xsl:otherwise>
    </xsl:choose>
  </xsl:variable>
  $toReturn
</xsl:function>
```

**Figure 112: Documentation for an XSLT Element**

### Generate Documentation in a Custom Format

XSLT stylesheet documentation can be also generated in a custom format. You can choose the format from the [XSLT Stylesheet Documentation](#) dialog. Specify your own stylesheet to transform the intermediary XML generated in the documentation process. You must write your stylesheet based on the schema `xslDocSchema.xsd` from `[Oxygen-install-folder]/frameworks/stylesheet_documentation`. You can create a custom format starting from one of the stylesheets used in the predefined HTML, PDF, and DocBook formats. These stylesheets are available in `[Oxygen-install-folder]/frameworks/stylesheet_documentation/xsl`.



**Figure 113: The Custom Format Options Dialog**

When using a custom format, you can also copy additional resources into the output folder or choose to keep the intermediate XML files created during the documentation process.

## Generating Documentation From the Command Line Interface

You can export the settings of the **XSLT Stylesheet Documentation** dialog to an XML file by pressing the **Export settings** button. With the exported settings file, you can generate the same documentation from the command line by running the script `stylesheetDocumentation.bat` (on Windows) / `stylesheetDocumentation.sh` (on Mac OS X / Unix / Linux) located in the Oxygen XML Editor installation folder. The script can be integrated in an external batch process launched from the command-line interface.

The command-line parameter of the script is the relative path to the exported XML settings file. The files which are specified with relative paths in the exported XML settings are resolved relative to the script directory.

### Example of an XML Configuration File

```
<serialized>
  <map>
    <entry>
      <String xml:space="preserve">xsd.documentation.options</String>
      <xsdDocumentationOptions>
        <field name="outputFile">
          <String xml:space="preserve">${cfn}.html</String>
        </field>
        <field name="splitMethod">
          <Integer xml:space="preserve">1</Integer>
        </field>
        <field name="openOutputInBrowser">
          <Boolean xml:space="preserve">>true</Boolean>
        </field>
        <field name="format">
          <Integer xml:space="preserve">1</Integer>
        </field>
        <field name="customXSL">
          <null/>
        </field>
        <field name="deleteXMLFiles">
          <Boolean xml:space="preserve">>true</Boolean>
        </field>
        <field name="includeIndex">
          <Boolean xml:space="preserve">>true</Boolean>
        </field>
        <field name="includeGlobalElements">
          <Boolean xml:space="preserve">>true</Boolean>
        </field>
        <field name="includeGlobalAttributes">
          <Boolean xml:space="preserve">>true</Boolean>
        </field>
        <field name="includeLocalElements">
          <Boolean xml:space="preserve">>true</Boolean>
        </field>
        <field name="includeLocalAttributes">
          <Boolean xml:space="preserve">>true</Boolean>
        </field>
        <field name="includeSimpleTypes">
          <Boolean xml:space="preserve">>true</Boolean>
        </field>
        <field name="includeComplexTypes">
          <Boolean xml:space="preserve">>true</Boolean>
        </field>
        <field name="includeGroups">
          <Boolean xml:space="preserve">>true</Boolean>
        </field>
        <field name="includeAttributesGroups">
          <Boolean xml:space="preserve">>true</Boolean>
        </field>
        <field name="includeRedefines">
          <Boolean xml:space="preserve">>true</Boolean>
        </field>
        <field name="includeReferencedSchemas">
          <Boolean xml:space="preserve">>true</Boolean>
        </field>
        <field name="detailsDiagram">
          <Boolean xml:space="preserve">>true</Boolean>
        </field>
        <field name="detailsNamespace">
          <Boolean xml:space="preserve">>true</Boolean>
        </field>
        <field name="detailsLocation">
          <Boolean xml:space="preserve">>true</Boolean>
        </field>
      </xsdDocumentationOptions>
    </entry>
  </map>
</serialized>
```

```

<field name="detailsType">
  <Boolean xml:space="preserve">true</Boolean>
</field>
<field name="detailsTypeHierarchy">
  <Boolean xml:space="preserve">true</Boolean>
</field>
<field name="detailsModel">
  <Boolean xml:space="preserve">true</Boolean>
</field>
<field name="detailsChildren">
  <Boolean xml:space="preserve">true</Boolean>
</field>
<field name="detailsInstance">
  <Boolean xml:space="preserve">true</Boolean>
</field>
<field name="detailsUsedby">
  <Boolean xml:space="preserve">true</Boolean>
</field>
<field name="detailsProperties">
  <Boolean xml:space="preserve">true</Boolean>
</field>
<field name="detailsFacets">
  <Boolean xml:space="preserve">true</Boolean>
</field>
<field name="detailsAttributes">
  <Boolean xml:space="preserve">true</Boolean>
</field>
<field name="detailsIdentityConstr">
  <Boolean xml:space="preserve">true</Boolean>
</field>
<field name="detailsEscapeAnn">
  <Boolean xml:space="preserve">true</Boolean>
</field>
<field name="detailsSource">
  <Boolean xml:space="preserve">true</Boolean>
</field>
<field name="detailsAnnotations">
  <Boolean xml:space="preserve">true</Boolean>
</field>
</xsdDocumentationOptions>
</entry>
</map>
</serialized>

```

## Finding XSLT References and Declarations

The following actions are available for search operations related with XSLT references and declarations:

- **Document > References >  > Search References** - Searches all references of the item found at current cursor position in the defined scope, if any. If a scope is defined but the current edited resource is not part of the range of determined resources, a warning dialog is shown. This dialog allows you to define another search scope.
- **Document > References > Search References in...** - Searches all references of the item found at current cursor position in the file or files that you specify when define a scope in the dialog above.
- **Document > References >  Search Declarations** - Searches all declarations of the item found at current cursor position in the defined scope, if any. If a scope is defined but the current edited resource is not part of the range of resources determined by this scope, a warning dialog is shown.
- **Document > References > Search Declarations in...** - Searches all declarations of the item found at current cursor position in the file or files that you specify when define a new scope.
- **Document > References > Search Occurrences in File** - Searches all occurrences of the item at the caret position in the currently edited file.
- **Document > Schema > Show Definition** - Moves the cursor to the location of the definition of the current item.

 **Note:** You can also use the **Ctrl (Meta on MAC OS) + Click** shortcut on a reference to display its definition.

## Highlight Component Occurrences

When a component (for example variable or named template) is found at current cursor position, Oxygen XML Editor performs a search over the entire document to find the component declaration and all its references. When found, they are highlighted both in the document and in the stripe bar, at the right side of the document.

 **Note:** Oxygen XML Editor also supports occurrences highlight for template modes.

Customizable colors are used: one for the component definition and another one for component references. Occurrences are displayed until another component is selected and a new search is performed. All occurrences are removed when you start to edit the document.

This feature is set on automatic search by default and can be configured in the **Options > Preferences > Editor > Mark Occurrences** page. A search can also be triggered with the **Search > Search Occurrences in File (Ctrl+Shift+U)** contextual menu action. Matches are displayed in separate tabs of the **Results** view.

## XSLT Refactoring Actions

The following actions allow changing the structure of an XSLT stylesheet without changing the results of running it in an XSLT transformation:

- **Document > Refactoring >  > Create Template from Selection...** - Opens a dialog that allows you to specify the name of the new template to be created. The possible changes to perform on the document can be previewed before altering the document. After pressing OK, the template is created and the selection is replaced with a `<xsl:call-template>` instruction referring the newly created template.

 **Note:** The selection must contain well-formed elements only.

 **Note:** The newly created template is indented and its name is highlighted in the `<xsl:call-template>` element.

- **Document > Refactoring >  > Create Stylesheet from Selection...** - Creates a separate stylesheet and replaces the selection with a `<xsl:include>` instruction referring the newly created stylesheet.

 **Note:** The selection must contain a well-formed top-level element.

- **Document > Refactoring > Extract Attributes as xsl:attributes...** - Extracts the attributes from the selected element and represents each of them with a `<xsl:attribute>` instruction. For example from the following element:

```
<person id="Big{test}Boss"/>
```

you obtain:

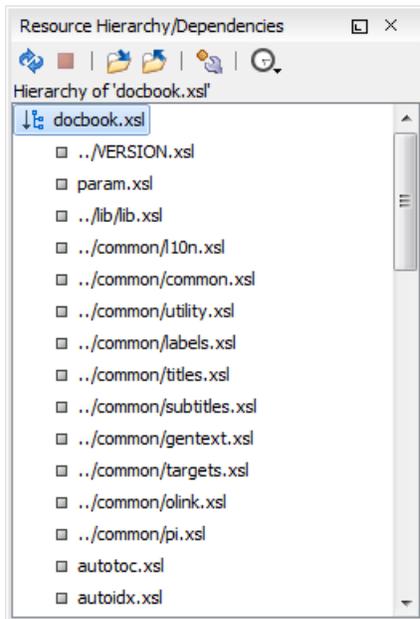
```
<person>
  <xsl:attribute name="id">
    <xsl:text>Big</xsl:text>
    <xsl:value-of select="test"/>
    <xsl:text>Boss</xsl:text>
  </xsl:attribute>
</person>
```

- **contextual menu of current editor > Refactoring >  Rename Component...** - Renames the selected component. Specify the new name for the component and the files affected by the modification as described for [XML Schema](#).

## Resource Hierarchy/Dependencies View

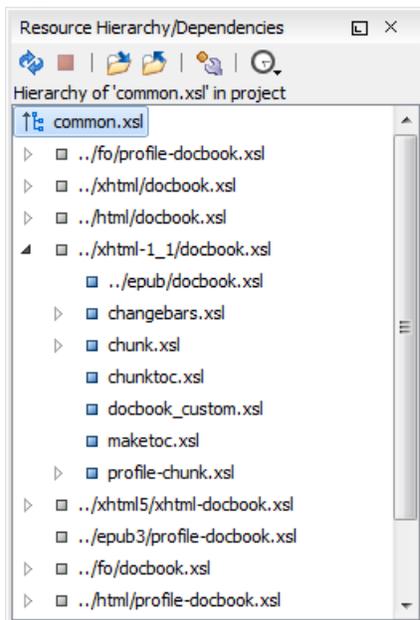
The **Resource Hierarchy/Dependencies** view allows you to see the hierarchy/dependencies for a stylesheet. You can open the view from **Window > Show View > Resource Hierarchy/Dependencies**.

If you want to see the hierarchy of a stylesheet, select the desired stylesheet in the project view and choose **Resource Hierarchy** from the contextual menu.



**Figure 114: Resource Hierarchy/Dependencies View - Hierarchy for docbook.xml**

If you want to see the dependencies of a stylesheet, select the desired stylesheet in the project view and choose **Resource Dependencies** from the contextual menu.



**Figure 115: Resource Hierarchy/Dependencies View - Dependencies for common.xml**

The following actions are available in the **Resource Hierarchy/Dependencies** toolbar:

-  - Refreshes the hierarchy/dependencies structure.
-  - Stop the hierarchy/dependencies computing.
-  - Allows you to choose a stylesheet to compute the hierarchy structure.
-  - Allows you to choose a stylesheet to compute the dependencies structure.
-  - Allows you to configure a scope to compute the dependencies structure.
-  - Allows you to repeat a previous dependencies computation.

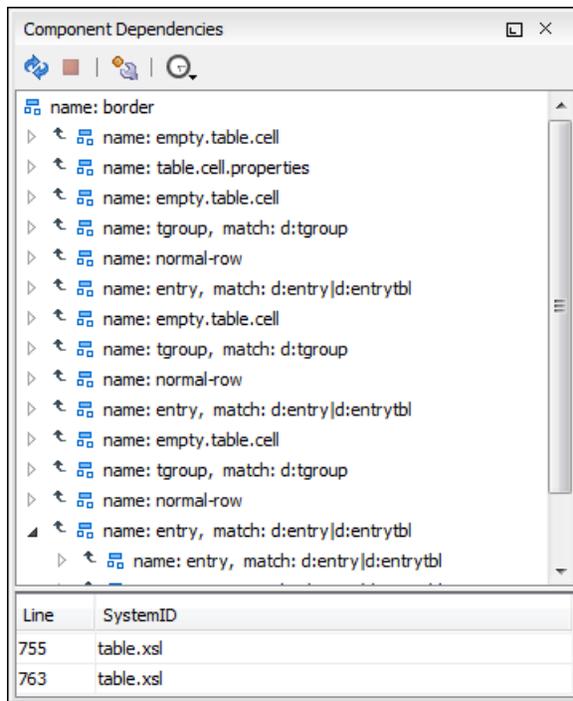
The following actions are available in the contextual menu:

- **Open** - Opens the stylesheet. Alternatively, you can open the stylesheet by a double-click on the Hierarchy/Dependencies structure;
- **Copy location** - Copies the location of the stylesheet;
- **Show Resource Hierarchy** - Shows the hierarchy for the selected stylesheet;
- **Show Resource Dependencies** - Shows the dependencies for the selected stylesheet;
-  **Add to Master Files** - Adds the currently selected resource in *the Master Files directory*;
- **Expand All** - Expands all the children of the selected stylesheet from the Hierarchy/Dependencies structure;
- **Collapse All** - Collapses all the children of the selected stylesheet from the Hierarchy/Dependencies structure.

## Component Dependencies View

The Component Dependencies view allows you to see the dependencies for a selected XSLT component. You can open the view from **Window > Show View > Component Dependencies**.

If you want to see the dependencies of an XSLT component, select the desired component in the editor and choose the **Component Dependencies** action from the contextual menu. The action is available for all named components (templates, variables, parameters, attribute sets, keys, etc).



**Figure 116: Component Dependencies View - Hierarchy for table.xsl**

In the Component Dependencies view you have several actions in the toolbar:

-  - Refreshes the dependencies structure.
-  - Stops the dependencies computing.
-  - Allows you to configure a search scope to compute the dependencies structure. You can decide to use automatically the defined scope for future operations by checking the corresponding checkbox.
-  - Allows you to repeat a previous dependencies computation.

The following actions are available on the contextual menu:

- **Go to First Reference** - Selects the first reference of the referred component from the current selected component in the dependencies tree.
- **Go to Component** - Shows the definition of the current selected component in the dependencies tree.

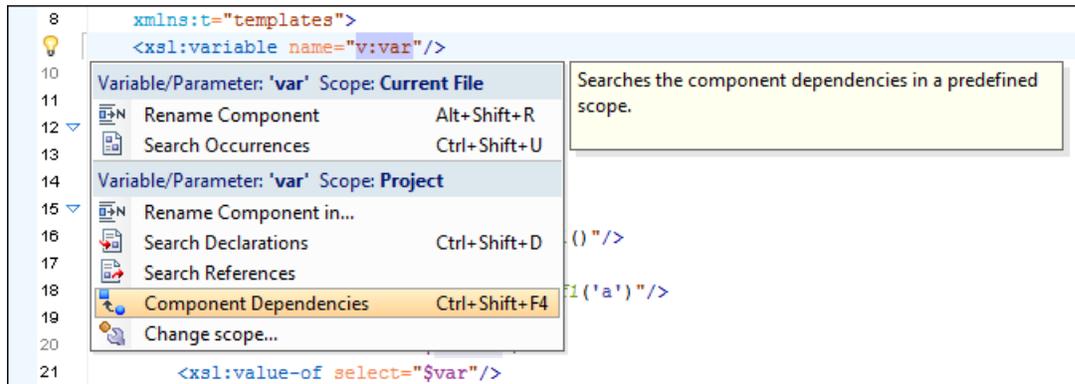
**Tip:**

If a component contains multiple references to another, a small table is shown containing all references.

When a recursive reference is encountered, it is marked with a special icon

## XSLT Quick Assist Support

It is activated automatically when the cursor is positioned inside a component name. It is accessible via a yellow bulb help marker placed on the cursor line, in the editor line number stripe. Also, you can invoke the quick assist menu if you press **Alt + 1** keys (**Meta + Alt + 1** on Mac OS X) on your keyboard.



**Figure 117: XSLT Quick Assist Support**

The quick assist support offers direct access to the following actions:

- **Rename Component** - Allows in-place editing of the current component. When you use in-place editing, the component and all its references in the document are decorated with a thin border. All the changes you make to the component at caret position are updated in real time to all component's occurrences. To exit in-place editing, press either the **Esc** or **Enter** key on your keyboard.
- **Search Occurrences** - Searches all occurrences of the file within the current scope.
- **Rename Component in...** - Renames the component and all its dependencies;
- **Search Declarations** - Searches the declaration of the component in a predefined scope. It is available only when the context represents a component name reference;
- **Search References** - Searches all references of the component in a predefined scope;
- **Component Dependencies** - Searches the component dependencies in a predefined scope;
- **Change Scope...** - Configures the scope that will be used for future search or refactor operations;

## Linking Between Development and Authoring

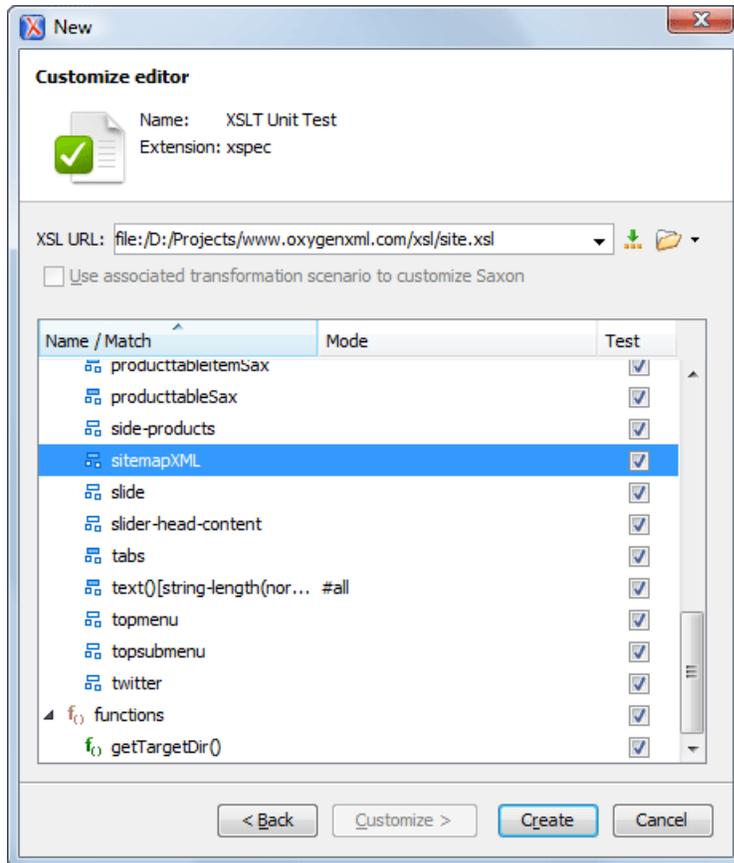
The Author mode is available for the XSLT editor presenting the stylesheets in a nice visual rendering.

## XSLT Unit Test (XSpec)

XSpec is a behavior driven development (BDD) framework for XSLT and XQuery. XSpec consists of a syntax for describing the behavior of your XSLT or XQuery code, and some code that enables you to test your code against those descriptions.

To create an XSLT Unit Test, go to **File > New > XSLT Unit Test**. You can also create an XSLT Unit Test from the contextual menu of an XSL file in the **Project** view. Oxygen XML Editor allows you to customize the XSpec document when you create it. In the customization dialog, you can enter the path to an XSL document or to a master XSL document.

When you create an XSpec document based on an XSL document, Oxygen XML Editor uses information from the validation and transformation scenarios associated with the XSL file. From the transformation scenario Oxygen XML Editor uses extensions and properties of Saxon 9.4.0.4, improving the ANT scenario associated with the XSpec document.



**Figure 118: The New XSLT Unit Test wizard**

An XSpec file contains one, or more test scenarios. You can test a stylesheet in one of the following ways:

- test an entire stylesheet;

Testing is performed in a certain context. You can define a context as follows:

- inline context - building the test based on a string;

```
<x:scenario label="when processing a para element">
  <x:context>
    <para>...</para>
  </x:context>
  ...
</x:scenario>
```

- based on an external file, or on a part of an external file extracted with an XPath expression.

```
<x:scenario label="when processing a para element">
  <x:context href="source/test.xml" select="/doc/body/p[1]" />
  ...
</x:scenario>
```

- test a function;

```
<x:scenario label="when capitalising a string">
  <x:call function="eg:capital-case">
    <x:param select="'an example string'" />
    <x:param select="true()" />
  </x:call>
  ...
</x:scenario>
```

- test a template with a name.

```
<x:call template="createTable">
  <x:param name="nodes">
    <value>A</value>
    <value>B</value>
  </x:param>
  <x:param name="cols" select="2" />
</x:call>
```

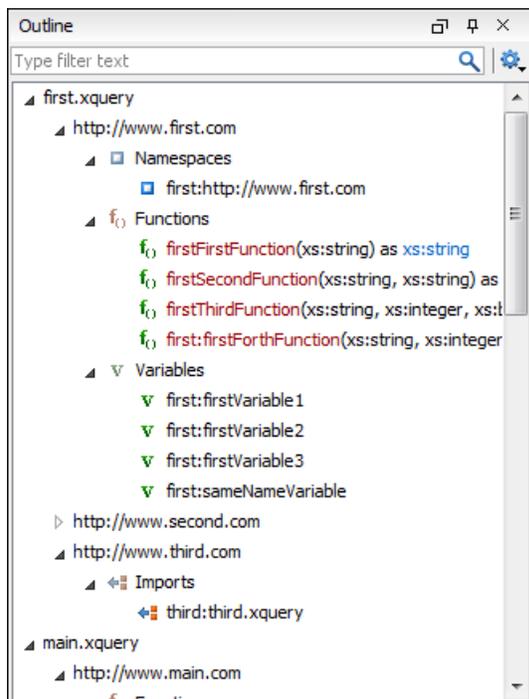
You are able to refer test files between each other, which allows you to define a suite of tests. For further details about test scenarios, go to <http://code.google.com/p/xspec/wiki/WritingScenarios>.

## Editing XQuery Documents

This section explains the features of the XQuery editor and how to use them.

### XQuery Outline View

The XQuery document structure is presented in the **XQuery Outline** view. The outline tree presents the list of all the components (namespaces, imports, variables, and functions) from both the edited XQuery file and its imports. It allows quick access to a component by knowing its name. It can be opened from the **Window > Show View > Outline** menu action.



**Figure 119: XQuery Outline View**

The following actions are available in the **Settings** menu on the Outline view's toolbar:

- **Selection update on caret move** - Controls the synchronization between **Outline** view and source document. The selection in the **Outline** view can be synchronized with the caret moves or the changes performed in the XQuery editor. Selecting one of the components from the **Outline** view also selects the corresponding item in the source document.
- **Sort** - Allows you to alphabetically sort the XQuery components.
- **Show all components** - Displays all collected components starting from the current file. This option is set by default.
- **Show local components** - Displays components defined in the current file only.

- **Group by location/namespace/type** - Allows you to group the components by location, namespace, and type. When grouping by namespace, the main XQuery module namespace is presented first in the **Outline** view.

If you know the component name, you can search it in the **Outline** view by typing its name in the filter text field from the top of the view or directly on the tree structure. When you type the component name in the filter text field you can switch to the tree structure using the arrow keys of the keyboard, **(Enter)**, **(Tab)**, **(Shift-Tab)**. To switch from tree structure to the filter text field, you can use **(Tab)**, **(Shift-Tab)**.

 **Tip:** The search filter is case insensitive. The following wildcards are accepted:

- \* - any string
- ? - any character
- , - patterns separator

If no wildcards are specified, the string to search is used as a partial match (like \*textToFind\*).

The upper part of the view contains a filter box which allows you to focus on the relevant components. Type a text fragment in the filter box and only the components that match it are presented. For advanced usage you can use wildcard characters (\*, ?) and separate multiple patterns with commas.

## Folding in XQuery Documents

In a large XQuery document, the instructions enclosed in the '{' and '}' characters can be collapsed so that only the needed instructions remain in focus. The same *folding features available for XML documents* are also available in XQuery documents.

```

8 let $minRating := min($review/reviews/review[@movie-id = $movie-id]/rating)
9 return
10 <movie id="{ $movie/@id }">
11 { $movie/title }
12 { $movie/year }
13 <avgRating>
14 {
15   if ($avgRating) then $avgRating else "not rated"
16 }
17 </avgRating>
18 <maxRating>
19   <value>
20     { [2 lines]
23   </value>
24   { [5 lines]
30 </maxRating>
31 <minRating>
32   <value>
33     { [2 lines]
36   </value>
37     { [5 lines]
43 </minRating>
44 </movie>

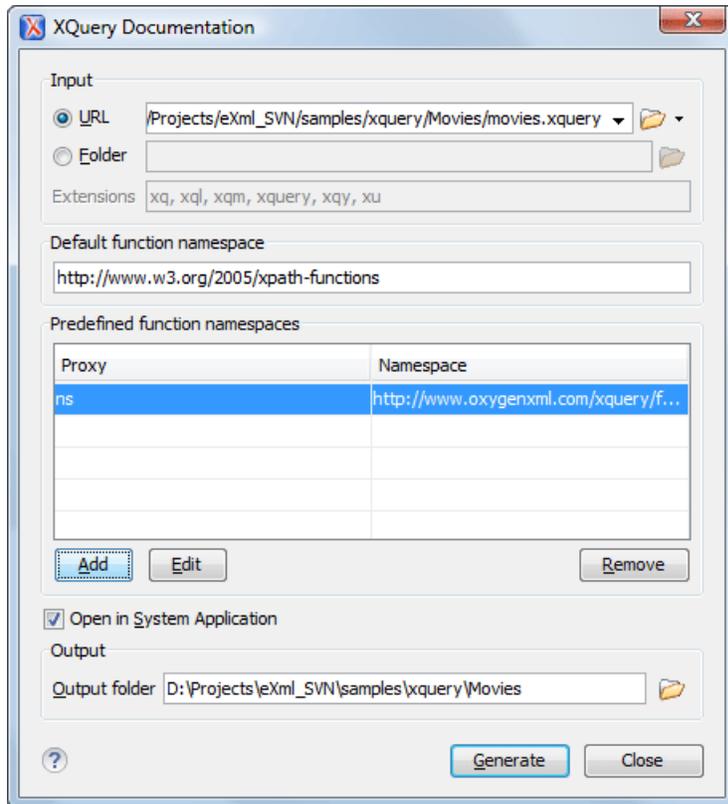
```

**Figure 120: Folding in XQuery Documents**

There is available the action **Go to Matching Bracket** **Ctrl+Shift+G** on contextual menu of XQuery editor for going to matching character when cursor is located at '{' character or '}' character. It helps for finding quickly matching character of current folding element.

## Generating HTML Documentation for an XQuery Document

To generate HTML documentation for an XQuery document, use the dialog **XQuery Documentation**. It is opened with the action **Tools > Generate Documentation > XQuery Documentation....** . It can be also opened from the **Project Tree's contextual menu > Generate Documentation > XQuery Documentation....** . The dialog enables the user to configure a set of parameters of the process of generating the HTML documentation. The parameters are:



**Figure 121: The XQuery Documentation Dialog**

- **Input** - The **Input** panel allows the user to specify either the **File** or the **Folder** which contains the files for which to generate the documentation. One of the two text fields of the **Input** panel must contain the full path to the XQuery file. Extensions for the XQuery files contained in the specified directory can be added as comma-separated values. Default there are offered xquery, xq, xqy.
- **Default function namespace** - Optional URI for the default namespace for the submitted XQuery, only if it exists.
- **Predefined function namespaces** - Optional engine dependent, predefined namespaces that the submitted XQuery refers to. They allow the conversion to generate annotation information to support the presentation component hypertext linking, only if the predefined modules have been loaded into the local xqDoc XML repository.
- **Open in Browser/System Application** - Select this option if you want the result to be opened in the system application associated with that file type.

 **Note:** If you already set the **Default Internet browser** option in the **Global** preferences page, it takes precedence over the default system application settings.

- **Output** - Allows the user to specify where the generated documentation is saved on disk.

## Editing CSS Stylesheets

---

This section explains the features of the editor for CSS stylesheets and how these features should be used.

### Validating CSS Stylesheets

Oxygen XML Editor includes a built-in CSS validator integrated with the general validation support, bringing the *usual validation features* to CSS stylesheets.

When the current editor is a CSS type one, the **Validate** toolbar provides a  **Validation options** button for quick access to the *CSS validator options* in the Oxygen XML Editor user preferences.

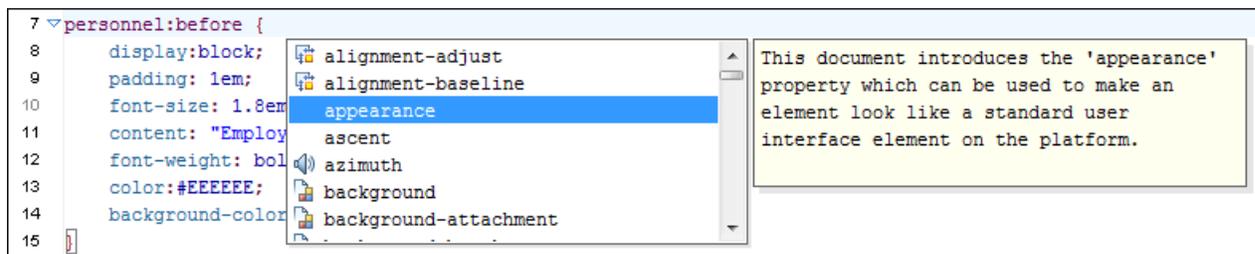
The CSS properties accepted by the validator are the ones included in the current CSS profile that is selected in *the CSS validation preferences*. The profile **CSS 3 with Oxygen extensions** includes all the CSS 3 standard properties and the *CSS extensions specific for Oxygen* that can be used in *Author mode*. That means all Oxygen specific extensions are accepted in a CSS stylesheet by *the built-in CSS validator* when this profile is selected.

You can add custom CSS properties with a file called `customProperties.xml` located in the folder `[Oxygen-install-folder]/endorsed/builtin/css-validator`. The custom properties and their values are accepted by the CSS validator and are listed in the content completion window when editing a CSS stylesheet. For example the custom property called **custom** with the possible values **customValue1** and **customValue2** is specified with the following configuration file `customProperties.xml`:

```
<?xml version="1.0" encoding="UTF-8"?>
<css_keywords>
  <property name="custom">
    <summary>Description for custom property.</summary>
    <value name="customValue1"/>
    <value name="customValue2"/>
  </property>
</css_keywords>
```

## Content Completion in CSS Stylesheets

A content completion assistant like *the one available for XML documents* offers the CSS properties and the values available for each property. It is activated on the **(CTRL - Space)** shortcut and it is context-sensitive when invoked for the value of a property.



**Figure 122: Content Completion in CSS Stylesheets**

The properties and the values offered as proposals are dependent on the CSS Profile selected in the *Options > Preferences > CSS Validator* page, **Profile** combo box. The CSS 2.1 set of properties and property values is used for most of the profiles, excepting CSS 1 and CSS 3. For these two, specific proposal sets are used.

The profile **CSS 3 with Oxygen extensions** includes all the CSS 3 standard properties and the *CSS extensions specific for Oxygen* that can be used in *Author mode*.

You can add custom CSS properties with a file called `customProperties.xml` located in the folder `[Oxygen-install-folder]/endorsed/builtin/css-validator`. The custom properties and their values are accepted by the CSS validator and are listed in the content completion window when editing a CSS stylesheet. For example the custom property called **custom** with the possible values **customValue1** and **customValue2** is specified with the following configuration file `customProperties.xml`:

```
<?xml version="1.0" encoding="UTF-8"?>
<css_keywords>
  <property name="custom">
    <summary>Description for custom property.</summary>
    <value name="customValue1"/>
    <value name="customValue2"/>
  </property>
</css_keywords>
```

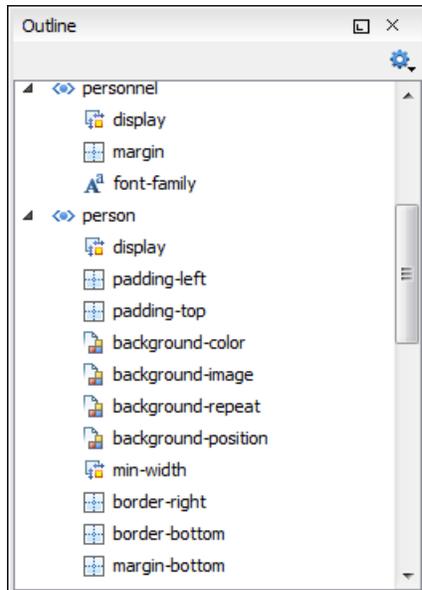
## CSS Outline View

The CSS **Outline** view presents the import declarations for other CSS stylesheet files and all the selectors defined in the current CSS document. The selector entries can be presented as follows:

- in the order they appear in the document;

- sorted by element name used in the selector;
- sorted by the entire selector string representation.

You can synchronize the selection in the **Outline** view with the caret moves or the changes you make in the stylesheet document. When you select an entry from the **Outline** view, Oxygen XML Editor highlights the corresponding import or selector in the CSS editor.



**Figure 123: CSS Outline View**

The selectors presented in this view can be quickly found using the key search field. When you press a sequence of character keys while the focus is in the view, the first selector that starts with that sequence is selected automatically.

## Folding in CSS Stylesheets

In a large CSS stylesheet document, some styles can be collapsed so that only the needed styles remain in focus. The same [folding features available for XML documents](#) are also available in CSS stylesheets.

 **Note:** To enhance your editing experience, you can select entire blocks (parts of text delimited by brackets) by double-clicking after an opening or in front of a closing bracket.

## Formatting and Indenting CSS Stylesheets (Pretty Print)

If the edited CSS stylesheet becomes unreadable because of the bad alignment of the text lines, [the pretty-print operation available for XML documents](#) is also available for CSS stylesheets. It works in the same way as for XML documents and is available as the same menu and toolbar action.

## Other CSS Editing Actions

The CSS editor type offers a reduced version of [the popup menu available in the XML editor](#). Only [the split actions](#), [the folding actions](#), [the edit actions](#) and a part of [the source actions](#) (only the actions **To lower case**, **To upper case**, **Capitalize lines**) are available.

## Editing JSON Documents

---

This section explains the features of the Oxygen XML Editor JSON Editor and how to use them.

## JSON Editor Text Mode

The **Text Mode** of the JSON editor provides the usual actions specific for a plain text editor: undo / redo, copy / paste, find / replace, drag and drop, and other editor actions like *validation* and *formatting and indenting (pretty print) document*.

You can use the two **Text** and **Grid** buttons available at the bottom of the editor panel if you want to switch between the editor **Text Mode** and **Grid Mode**.

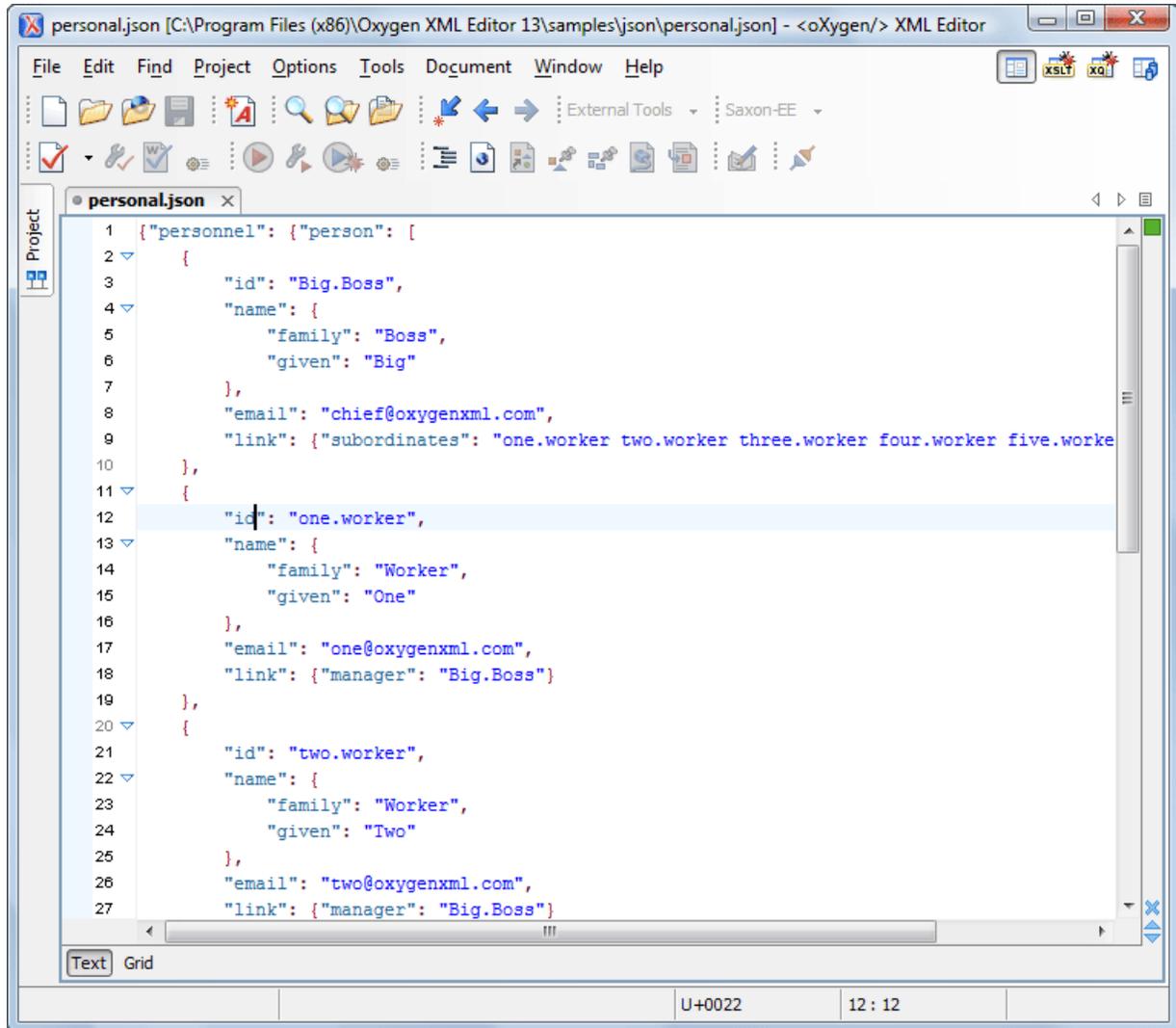


Figure 124: JSON Editor Text Mode

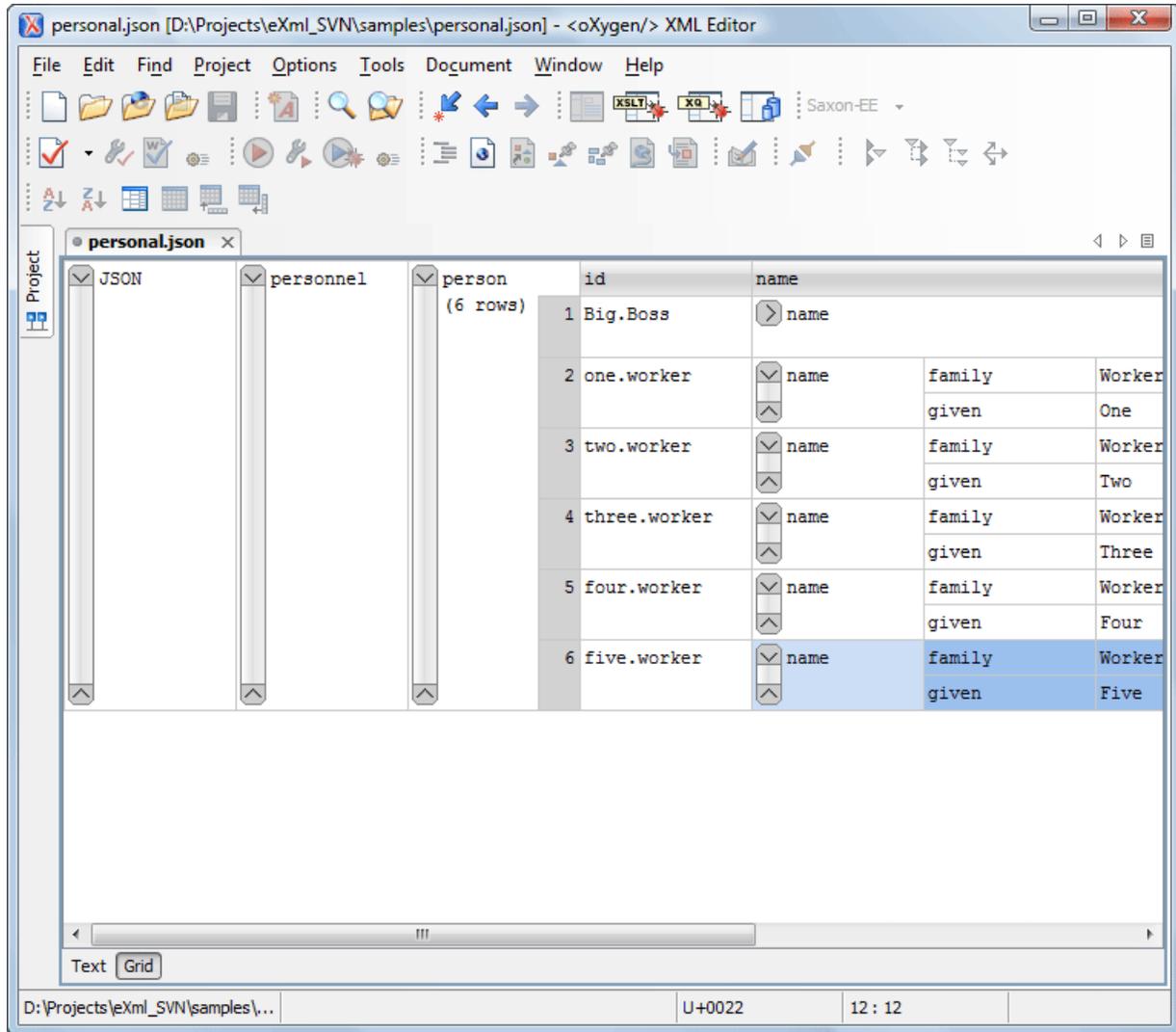
### Syntax highlight in JSON Documents

Oxygen XML Editor supports *Syntax Highlight* for JavaScript / JSON editors and provides default configurations for the JSON set of tokens. You can customize the foreground color, background color and the font style for each JSON token type.

### Folding in JSON

In a large JSON document, the data enclosed in the '{' and '}' characters can be collapsed so that only the needed data remain in focus. The *folding features available for XML documents* are available in JSON documents.

## JSON Editor Grid Mode



**Figure 125: JSON Editor Grid Mode**

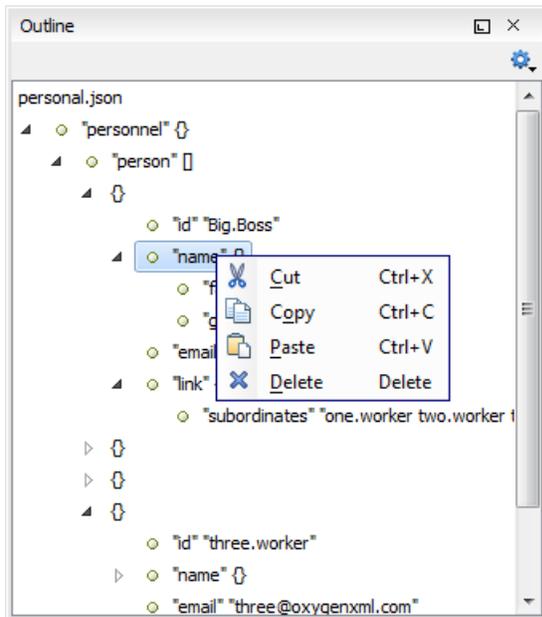
Oxygen XML Editor allows you to view and edit the JSON documents in the *Grid Mode*. The JSON is represented in Grid mode as a compound layout of nested tables in which the JSON data and structure can be easily manipulated with table-specific operations or drag and drop operations on the grid components. You can also use the following JSON-specific contextual actions:

- **Array** - Useful when you want to convert a JSON *value* to *array*.
- **Insert value before** - Inserts a value before the currently selected one.
- **Insert value after** - Inserts a value after the currently selected one.
- **Append value as child** - Appends a value as a child of the currently selected value.

You can *customize the JSON grid appearance* according to your needs. For instance you can change the font, the cell background, foreground, or even the colors from the table header gradients. The default width of the columns can also be changed.

## JSON Outline View

The JSON **Outline** view displays the list of all the components of the JSON document you are editing. To enable the JSON **Outline** view, go to **Window > Show view > Outline**.



**Figure 126: The JSON Outline View**

The following actions are available in the contextual menu of the JSON **Outline** view:

-  **Cut**;
-  **Copy**;
-  **Paste**;
-  **Delete**.

The settings menu of the JSON **Outline** view allows you to enable  **Selection update on caret move**. This option controls the synchronization between the **Outline** view and source the document. Oxygen XML Editor synchronizes the selection in the **Outline** view with the caret moves or the changes you make in the JSON editor. Selecting one of the components from the **Outline** view also selects the corresponding item in the source document.

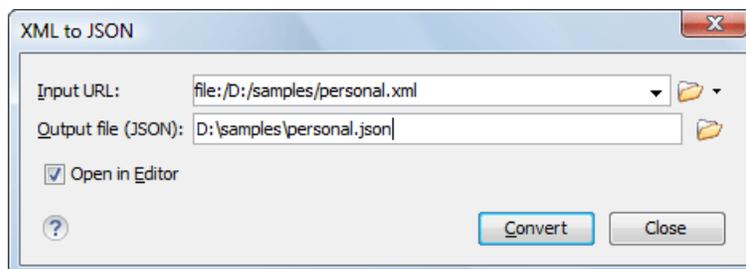
## Validating JSON Documents

Oxygen XML Editor includes a built-in JSON validator (based on the free JAVA source code available on [www.json.org](http://www.json.org)), integrated with the general validation support.

## Convert XML to JSON

The steps for converting an XML document to JSON are the following:

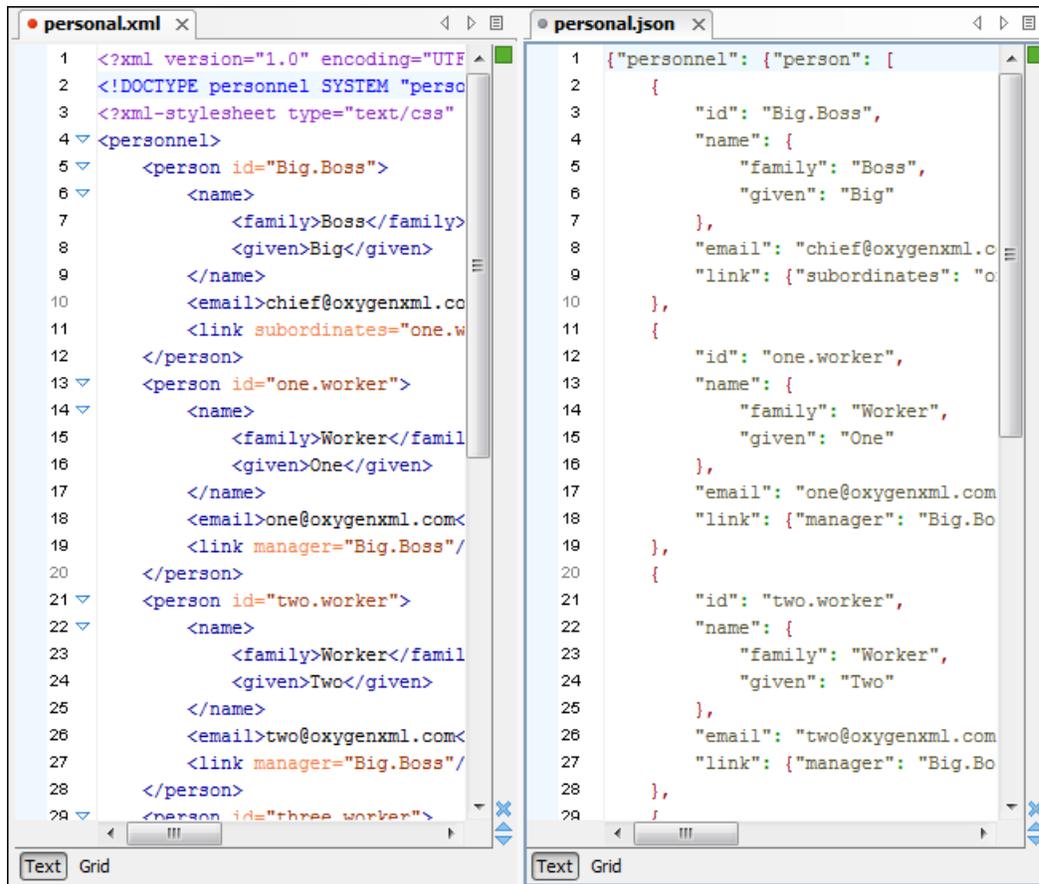
1. Go to menu **Tools > XML to JSON...**  
The **XML to JSON** dialog is displayed:



2. Choose or enter the **Input URL** of the XML document.

3. Choose the **Output file** that will contain the conversion JSON result.
4. Check the **Open in Editor** option to open the JSON result of the conversion in the Oxygen XML Editor JSON Editor
5. Click the **OK** button.

The operation result will be a document containing the JSON conversion of the input XML URL.



## Editing StratML Documents

Strategy Markup Language (StratML) is an XML vocabulary and schema for strategic plans. Oxygen XML Editor supports StratML Part 1 (Strategic Plan) and StratML Part 2 (Performance Plans and Reports) and provides templates for the following documents:

- **Strategic Plan** (StratML Part 1);
- **Performance Plan** (StratML Part 2);
- **Performance Report** - (StratML Part 2);
- **Strategic Plan** - (StratML Part 2).

You can view the components of a StratML document in the **Outline** view. Oxygen XML Editor implements a default XML with XSLT transformation scenario for this document type, called StratML to HTML.

## Editing JavaScript Documents

This section explains the features of the Oxygen XML Editor JavaScript Editor and how you can use them.

## JavaScript Editor Text Mode

Oxygen XML Editor allows you to create and edit JavaScript files and assists you with useful features such as syntax highlight, content completion, and outline view. To enhance your editing experience, you can select entire blocks (parts of text delimited by brackets) by double-clicking after an opening or in front of a closing bracket.

```

12 function newPage(filename, overlay) {
13     divs = document.getElementsByTagName("div");
14
15     if (divs) {
16         var xdiv = divs[0];
17
18         if (xdiv) {
19             var xid = xdiv.getAttribute("id");
20
21             var mytoc = window.top.frames[0];
22             if (mytoc.lastUnderlined) {
23                 mytoc.lastUnderlined.style.textDecoration = "none";
24             }
25
26             var tdiv = xbGetElementById(xid, mytoc);
27
28             if (tdiv) {
29                 var ta = tdiv.getElementsByTagName("a").item(0);
30                 ta.style.textDecoration = "underline";
31                 mytoc.lastUnderlined = ta;
32             }
33         }
34     }
35
36     if (overlay != 0) {
37         overlaySetup('lc');
38     }

```

**Figure 127: JavaScript Editor Text Mode**

The contextual menu of the **JavaScript** editor offers the following options:

-  **Cut** - allows you to cut fragments of text from the editing area;
-  **Copy** - allows you to copy fragments of text from the editing area;
-  **Paste** - allows you to paste fragments of text in the editing area;
-  **Toggle comment** - allows you to comment a line or a fragment of the JavaScript document you are editing. This option inserts a single comment for the entire fragment you want to comment;
-  **Toggle line comment** - allows you to comment a line or a fragment of the JavaScript document you are editing. This option inserts a comment for each line of the fragment you want to comment;
- **Go to matching bracket** - use this option to find the closing, or opening bracket, matching the bracket at the caret position. When you select this option, Oxygen XML Editor moves the caret to the matching bracket, highlights its row, and decorates the initial bracket with a rectangle;

 **Note:** A rectangle decorates the opening, or closing bracket which matches the current one at all times.

- **Compare** - select this option to open the **Diff Files** dialog and compare the file you are editing with a file you choose in the dialog.
- **Open** - allows you to select one of the following options:
  - **Open File at Caret** - select this option to open the source of the file located at the caret position;
  - **Open File at Caret in System Application** - select this option to open the source of the file located at the caret position with the application that the system associates with the file;

- **Open in Browser/System Application** - select this option to open the file in the system application associated with the file type.
  - 👉 **Note:** If you already set the **Default Internet browser** option in the **Global** preferences page, it takes precedence over the default system application settings.
- **Folding** - allows you to select one of the following options:
  -  **Toggle Fold** - toggles the state of the current fold;
  -  **Collapse Other Folds (Ctrl+NumPad /)** - folds all the elements except the current element;
  -  **Collapse Child Folds (Ctrl+NumPad .)** - folds the elements indented with one level inside the current element;
  -  **Expand Child Folds**- unfolds all child elements of the currently selected element;
  -  **Expand All (Ctrl+NumPad \*)** - unfolds all elements in the current document.
- **Source** - allows you to select one of the following options:
  - **To Lower Case** - converts the selection content to lower case characters;
  - **To Upper Case** - converts the selection content to upper case characters;
  - **Capitalize Lines** - converts to upper case the first character of every selected line;
  - **Join and Normalize** - joins all the rows you select to one row and normalizes the content;
  - **Insert new line after** - inserts a new line after the line at the caret position.

## Content Completion in JavaScript Files

When you edit a JavaScript document, the *content completion assistant* presents you a list of the elements you can insert at the caret position. The following icons decorate the elements in the content completion list of proposals depending on their type:

-  - function;
-  - variable;
-  - object;
-  - property;
-  - method.

- 👉 **Note:** These icons decorate both the elements from the content completion list of proposals and from the **Outline** view.

```

12 function newPage(filename, overlay) {
13     divs = document.getElementsByTagName("div");
14
15     if (divs) {
16         var xdiv = divs[0];
17
18         if (xdiv) {
19             var xid =
20                 var mytoc
21                 if (mytoc
22                 mytoc.lastU
23                 )
24                 )
25                 var tdiv
26
27
28         if (tdiv) {
29             var ta = tdiv.getElementsByTagName("a").item(0);
30             ta.style.textDecoration = "underline";
31             mytoc.lastUnderlined = ta;
32         }
33     }
34 }
35
36 if (overlay != 0) {
37     overlaySetup('lc');
38 }

```

**Figure 128: JavaScript Content Completion Assistant**

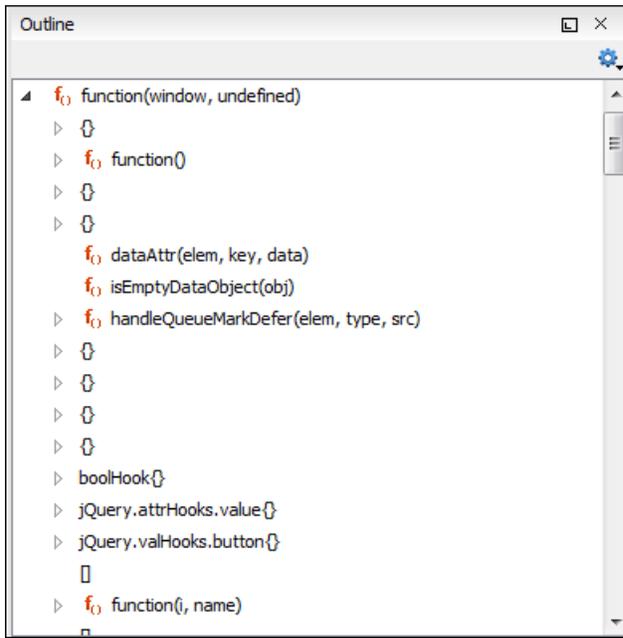
The content completion assistant collects:

- method names from the current file and from the library files;
- functions and variables defined in the current file.

In case you edit the content of a function, the content completion list of proposals contains all the local variables defined in the current function, or in the functions that contain the current one.

## JavaScript Outline View

Oxygen XML Editor present a list of all the components of the JavaScript document you are editing in the **Outline** view. To open the **Outline** view, go to **Window > Show View > Outline**.



**Figure 129: The JavaScript Outline View**

The following icons decorate the elements in the **Outline** view depending on their type:

-  - function;
-  - variable;
-  - object;
-  - property;
-  - method.

 **Note:** These icons decorate both the elements from the content completion list of proposals and from the **Outline** view.

The contextual menu of the JavaScript **Outline** view contains the usual  **Cut**,  **Copy**,  **Paste**, and  **Delete** actions. From the settings menu, you can enable the Update selection on caret move option to synchronize the **Outline** view with the editing area.

## Validating JavaScript Files

You have the possibility to validate the JavaScript document you are editing. Oxygen XML Editor uses the Mozilla Rhino library for validation. For more information about this library, go to <http://www.mozilla.org/rhino/doc.html>. The JavaScript validation process checks for errors in the syntax. Calling a function that is not defined is not treated as an error by the validation process. The interpreter discovers this error when executing the faulted line. Oxygen XML Editor can validate a JavaScript document both on-request and automatically.

## Editing XProc Scripts

An XProc script is edited as an XML document that is validated against a RELAX NG schema. If the script has an associated transformation scenario, then the XProc engine from the scenario is invoked as validating engine. The default engine for XProc scenarios is the Calabash engine which comes with Oxygen XML Editor version 14.2.

The content completion inside the element `input / inline` from the XProc namespace <http://www.w3.org/ns/xproc> offers elements from the following schemas depending on the `port` attribute of `input` and the parent of `input`. When

invoking the content completion inside the XProc element `inline`, depending on the attribute `port` of its parent input element and the parent of element `input`, elements from different schemas are offered inside the proposals list.

- If the value of the `port` attribute is `stylesheet` and element `xslt` is the parent of element `input`, the content completion assistant offers XSLT elements.
- If the value of the `port` attribute is `schema` and element `validate-with-relax-ng` is the parent of element `input`, the content completion assistant offers RELAX NG schema elements.
- If the value of the `port` attribute is `schema` and element `validate-with-xml-schema` is the parent of element `input`, the content completion assistant offers XML Schema schema elements.
- If the value of the `port` attribute is `schema` and element `validate-with-schematron` is the parent of element `input`, the content completion assistant offers either ISO Schematron elements or Schematron 1.5 schema elements.
- If the above cases do not apply, then the content completion window offers elements from all the schemas from the above cases.

The XProc editor renders with dedicated coloring schemes the XPath expressions. You can customize the coloring schemes in the **Options > Preferences > Editor > Colors** preferences page.

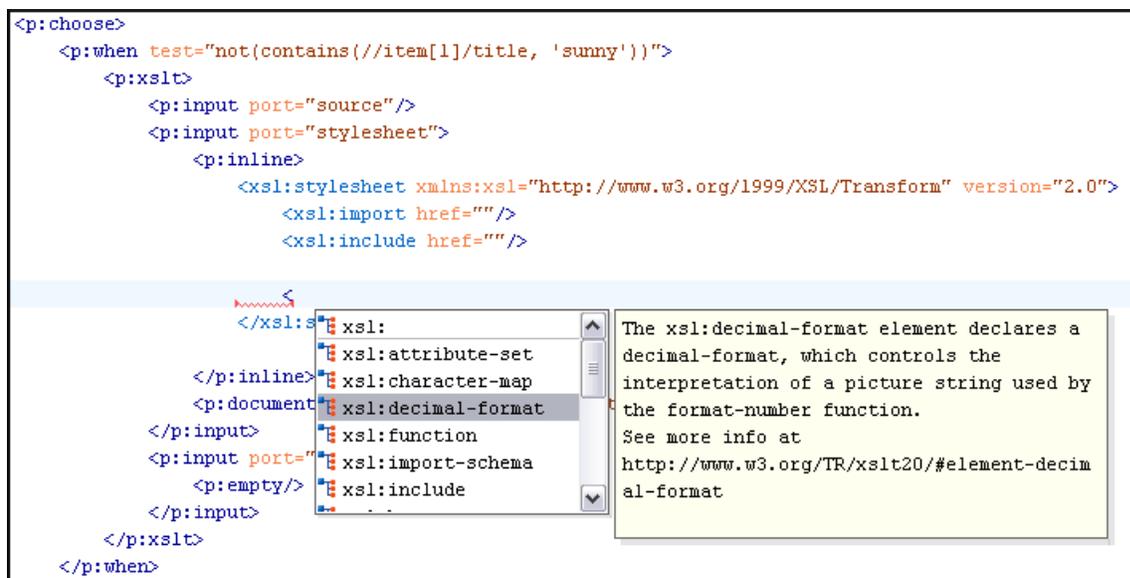


Figure 130: XProc Content Completion

## Editing Schematron Schemas

Schematron is a simple and powerful Structural Schema Language for making assertions about patterns found in XML documents. It relies almost entirely on XPath query patterns for defining rules and checks. Schematron validation rules allow you to specify a meaningful error message (as opposed to a cryptic error code). This error message is provided to the user if an error is encountered during the validation stage.

Oxygen XML Editor uses the Skeleton XSLT processor for validation and conforms with ISO Schematron or Schematron 1.5. It allows you to validate XML documents against Schematron schema or against combined RELAX NG / W3C XML Schema and Schematron.

Oxygen XML Editor assists you in editing Schematron documents with schema-based content completion and syntax highlight. A basic Schematron template is available in the **New Document** wizard.

- 👉 **Note:** When you create a Schematron document, Oxygen XML Editor provides a built-in transformation scenario. You are able to use this scenario to obtain the XSLT style-sheet corresponding to the Schematron schema. You can apply this XSLT stylesheet to XML documents to obtain the Schematron validation results.

The Schematron editor renders with dedicated coloring schemes the XPath expressions. To customize the coloring schemes, go to **Options > Preferences > Editor > Colors**.

You can validate the content using the **Validate** action at any time. Another way to validate schemas is to check them against their own Schematron schema rules using **External validation** action.

## Combined RELAX NG / W3C XML Schemas and Schematron Schema

Schematron rules can be embedded into W3C Schema through annotation (using the `appinfo` element) or in any element on any level of a RELAX NG Schema (taking into account that the RELAX NG validator ignores all elements that are not in the RELAX NG namespace).

Oxygen XML Editor accepts such documents as Schematron validation schemas and it is able to extract and use the embedded rules. To validate a document with both RELAX NG schema and its embedded Schematron rules, you need two persistence associations like in the following example:

```
<?xml-model href="percent.rng" type="application/xml" schematypens="http://relaxng.org/ns/structure/1.0"?>
<?xml-model href="percent.rng" type="application/xml" schematypens="http://purl.oclc.org/dsdl/schematron"?>
```

The second association validates your document with Schematron rules extracted from the RELAX NG Schema. Similarly you can specify as Schematron Schema a W3C XML Schema having the Schematron rules embedded:

```
<?xml-model href="percent.xsd" type="application/xml" schematypens="http://purl.oclc.org/dsdl/schematron"?>
```

## Validate an XML Document

To validate an XML document against a Schematron schema, invoke the **Validate** action either from the application's toolbar or from the **Project** view's contextual menu. If you would like to add a persistence association between your Schematron rules and the current edited XML document, use the Associate Schema action. A custom processing instruction is added into the document and the validation process will take into account the Schematron rules:

```
<?xml-model href="percent.sch" type="application/xml" schematypens="http://purl.oclc.org/dsdl/schematron"?>
```

The possible errors which might occur during the validation process are presented in the **Errors** panel at the bottom area of the Oxygen XML Editor window. Each error is flagged with a severity level that can be one of *warning*, *error*, *fatal* or *info*.

To set a severity level, Oxygen XML Editor looks for the following information:

- the `role` attribute, which can have one of the following values:
  - `warn` or `warning`, to set the severity level to *warning*;
  - `error`, to set the severity level to *error*;
  - `fatal`, to set the severity level to *fatal*;
  - `info` or `information`, to set the severity level to *info*.
- the start of the message, after trimming leading white-spaces. Oxygen XML Editor looks to match the following exact string of characters (case sensitive):
  - `Warning:`, to set the severity level to *warning*;
  - `Error:`, to set the severity level to *error*;
  - `Fatal:`, to set the severity level to *fatal*;
  - `Info:`, to set the severity level to *info*;



**Note:** Displayed message does not contain the matched prefix.

- if none of the previous rules match, Oxygen XML Editor sets the severity level to *error*.

## SVG Documents

---

SVG is a platform for two-dimensional graphics. It has two parts: an XML-based file format and a programming API for graphical applications. Just to enumerate some of the key features: shapes, text, and embedded raster graphics with many painting styles, scripting through languages such as ECMAScript and support for animation.

SVG is a vendor-neutral open standard that has important industry support. Companies like Adobe, Apple, IBM, and others have contributed to the W3C specification. Many documentation frameworks, including DocBook, have support for SVG by defining the graphics directly in the document.

Oxygen XML Editor adds SVG support by using the [Batik](#) package, an open source project developed by the Apache Software Foundation. [Oxygen XML Editor's default XML catalog](#) solves the SVG DTD.

- 👉 **Note:** Batik partially supports SVG 1.1. Here you can find a detailed list of supported elements, attributes and properties: [Batik implementation status](#).
- 👉 **Tip:** To render SVG images which use Java scripting, copy the `js.jar` library from the Batik distribution into the Oxygen XML Editor `lib` folder and restart the application.
- 👉 **Tip:** There are many navigation shortcuts which can be used for navigation in the SVG Viewer like:
  - The arrow keys or **(Shift + Left Click)** move the image.
  - **(Ctrl + Right Click)** rotates the image.
  - **(Ctrl + I)** and **(Ctrl + O)** or **(Ctrl + Left Click)** to zoom in or out.
  - **(Ctrl + T)** to reset the transform.

### The Standalone SVG Viewer

To browse and open any SVG file having the `.svg` or `.svgz` extension, use the **Tools > SVG Viewer ...** action. If the file is included in the current project, then you can open it by right-clicking on it and selecting **Open with > SVG Viewer**. The following actions are available in a contextual menu:

- **Zoom in** - Zooms in the image by a factor of 2. The action is also available on **Mouse Wheel Up**;
- **Zoom out** - Zooms out the image by a factor of 2. The action is also available on **Mouse Wheel Down**;
- **Rotate** - Rotates the image 90 degrees clockwise;
- **Refresh** - Refreshes the image, by reloading the SVG file.

- 👉 **Note:** When you open the SVG viewer, the active SVG is displayed.

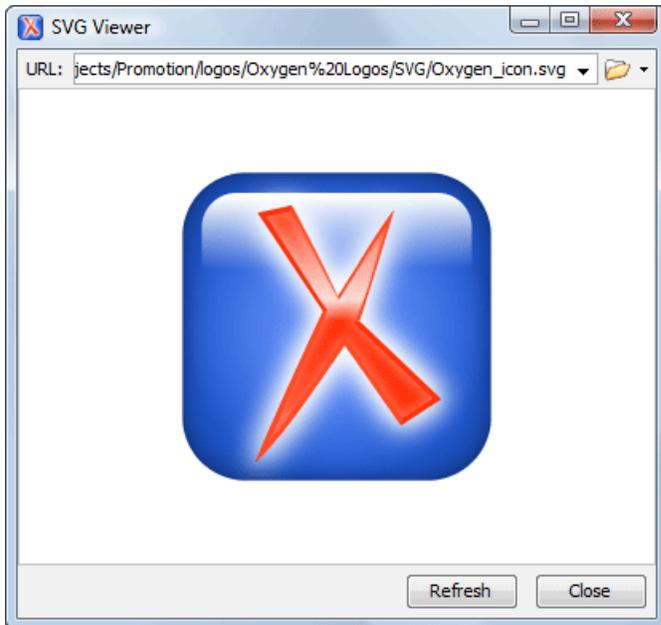


Figure 131: SVG Viewer

## The Preview Result Panel

This panel can render the result of an *XSL transformation* that generates SVG documents.



Figure 132: Integrated SVG Viewer

The basic use-case of Oxygen XML Editor consists in the development of the XSL stylesheets capable of producing rich SVG graphics. For example, you have an XML document describing the evolution of a parameter over time and you create a graphic from it. You can start with a static SVG, written directly in Oxygen XML Editor or exported from a graphics tool like the Adobe suite. Extract then the parts that are dependent of the data from the XML document and create the XSL templates. Select the option **Show as SVG** in *the dialog for configuring the XSLT transformation scenario*. When you run the transformation, the SVG result is displayed in the SVG result panel.

## Integrating External Tools

Sometimes an external tool which can be launched from the command line and which is different than a *FO processor* is needed. Oxygen XML Editor offers you the option of integrating such a tool by specifying just the command line for starting the executable file and its working directory. To integrate such a tool, *go to Options > Preferences > External Tools*

If the external tool is applied on one of the files opened in Oxygen XML Editor, *enable the option* for saving all edited files automatically when an external tool is applied.

External tools can be launched from the **External tools** toolbar or from the submenu **Tools > External tools**. While the action is running its icon is a stop icon: . When the tool has finished running, it changes the icon back to the original run icon: . Please note that even though you can stop the external tool by invoking the action again while it is running, that doesn't mean you can also stop the processes spawned by that external tool. This is especially a limiting factor when running a batch file as the batch will be stopped but without actually stopping the processes that the batch was running at that time.

### Integrating the Ant Tool

As example let us integrate *the Ant build tool* in Oxygen XML Editor:

- *Download* and *install* Ant on your computer;
- Test your Ant installation from the command-line interface in the directory where you want to use Ant from Oxygen XML Editor, for example run the clean target of your build.xml file  
C:\projects\XMLproject\build.xml:

```
ant clean
```

- *Go to Options > Preferences > External Tools*;
- Create a new external tool entry with the name **Ant tool**, the working directory C:\projects\XMLproject and the command line "C:\projects\XMLproject\ant.bat" clean obtained by browsing to the ant.bat file from directory C:\projects\XMLproject;
- Run the tool from **Tools > External Tools > Ant tool**. You can see the output in the **Command results** panel:

```
Started: "C:\projects\XMLproject\ant.bat" clean
Buildfile: build.xml

clean:
[echo] Delete output files.
[delete] Deleting 5 files from C:\projects\XMLproject

BUILD SUCCESSFUL
Total time: 1 second
```

## Editing Large Documents

When you open a document with a file size larger than the limit configured in *Preferences > Editor > Open > Save*, Oxygen XML Editor prompts you to choose whether you want to optimize the loading of the document for large files or for huge files.

Depending on the size of the document, a recommend approach is enabled by default. In case your file has a size smaller than 300 MB, the recommended approach is *Optimize loading for large files*. For documents that exceed 300 MB the recommended approach is *Optimize loading for huge files*.

### File sizes smaller than 300 Megabytes

For editing large documents (file size up to 300 Megabytes), a special memory optimization is implemented on loading such a file so that the total memory allocated for the application is not exceeded.

A temporary buffer file is created on disk so you have to make sure that the available free disk space is at least double the size of the large file that you want to edit. For example, Oxygen XML Editor can load a 200-Megabytes file using a minimum memory setting of 512 Megabytes and at least 400-Megabytes free disk space.

The increase of the maximum size of editable files comes with the following restrictions:

- A file larger than the value of the above option is edited only in Text mode.
- The *automatic validation* is not available when editing a very large file.
- The XPath filter is disabled in *the Find/Replace dialog*.
- The bidirectional Unicode support (right-to-left writing) is disabled.
- *The option Format and indent the document on open* is disabled for non-XML documents. For XML documents, it is done optimizing the memory usage but without respecting the options set in *the Format preferences page*.
- Less precise localizations for the results of an *XPath expression*.

## XML file sizes greater than 300 MB

XML files tend to become larger and larger mostly because they are frequently used as a format for database export or for porting between different database formats. Traditional XML text editors simply cannot handle opening these huge export files, some having sizes exceeding one gigabyte, because all the file content must be loaded in memory before the user can actually view it.

The loaded file is split in multiple pages (each having about 1MB in size). Each page is individually loaded (and edited) in the **Text** mode by using the special horizontal slider located at the top of the editing area. The loading operation is very fast and has no upper limit for the size of the loaded file.

The increase of the maximum size of editable files comes with the following restrictions:

- only XML files UTF-8, UTF-16, and ASCII encoded are loaded;
- a file larger than the value of the above option is edited only in Text mode;
- the *automatic validation* is not available when editing a very large file;
- the XPath filter is disabled in *the Find/Replace dialog*;
- the bidirectional Unicode support (right-to-left writing) is disabled;
- *the option Format and indent the document on open* is disabled for non-XML documents. For XML documents, it is done optimizing the memory usage but without respecting the options set in *the Format preferences page*;
- the **Outline** view is not supported;
- the editor is wrapped by default;
- the **Find/Replace** dialog only supports the **Find** action;
- saving changes is possible if **Safe save** is activated;
- the **undo** operation is not available if you go to other pages and come back to the modified page;
- no localization support available for the results of an *XPath expression*.

## Insufficient Memory

---

If the application displays an *out of memory* (**OutOfMemoryError**) error when you try to edit very large files, this means that the memory allocated to the application is insufficient. Apply one or more steps from the following list to avoid the error:

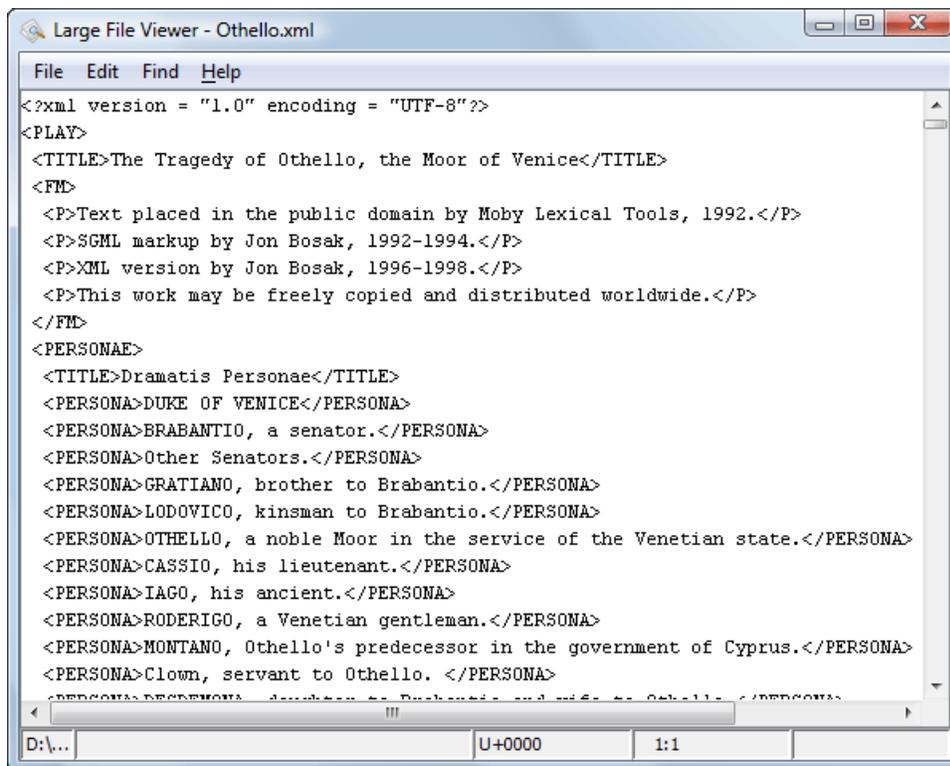
- Use the *-Xmx parameter* to adjust the maximum memory available to the application at startup.
- Make sure that you close other files before opening the large file.
- The large file is opened in *Text editing mode* because it uses less memory than other editing modes. You can set the default editing mode *in the Preferences dialog*.
- If the file is too large for the editor to handle, you can *open it in Large File Viewer*.

## Large File Viewer

XML files tend to become larger and larger mostly because they are frequently used as a format for database export or for porting between different database formats. Traditional XML text editors simply cannot handle opening these huge export files, some having sizes exceeding one gigabyte, because all the file content must be loaded in memory before the user can actually view it.

The best performance of the viewer is obtained for encodings that use a fixed number of bytes per character, like UTF-16 or ASCII. The performance for UTF-8 is very good for documents that use mostly characters of the European languages. For the same encoding, the rendering performance is higher for files consisting of long lines (up to few thousands characters) and may degrade for short lines. In fact, the maximum size of a file that can be rendered in the Large File Viewer decreases when the total number of the text lines of the file increases. Trying to open a very large file, for example a file of 4 GB with a very high number of short lines (100 or 200 characters per line) may produce an *out of memory* error (**OutOfMemoryError**) which would require either increasing the Java heap memory with the `-Xmx` startup parameter or decreasing the total number of lines in the file.

The powerful **Large File Viewer** is available from the **Tools** menu or as a standalone application. You can also right click a file in your project and choose to open it with the viewer. It uses an efficient structure for indexing the opened document. No information from the file is stored in the main memory, just a list of indexes in the file. In this way the viewer can open very large files, up to 10 gigabytes. If the opened file is XML, the encoding used to display the text is detected from the XML prolog of the file. For other file types, the encoding is taken from the Oxygen XML Editor options. See [Encoding for non XML files](#).



**Figure 133: The Large File Viewer**

**Large File Viewer** components:

- The menu bar provides menu driven access to all the features and functions available in **Large File Viewer**.
  - **File > Open** opens files in the viewer (also available in the contextual pop-up menu).
  - **File > Exit** closes the viewer.
  - **Edit > Copy** copies the selected text to clipboard (also available in the contextual pop-up menu).
  - **Find > Find** opens a reduced **Find** dialog providing some basic search options like:

- **Case sensitive** - When checked, operations are case-sensitive.
  - **Regular Expression** - When checked, allows using any regular expression in *PERL* syntax.
  - **Wrap around** - Continues the find from the start (end) of the document after reaching the end (start) if the search is in forward (backward) direction.
  - **Help > Help** provides access to this User Manual.
  - The status bar provides information about the current opened file path, the Unicode representation of the character at caret position and the line and column in the opened document where the caret is located.
-  **Attention:** For faster computation the **Large File Viewer** uses a fixed font (plain, monospace font of size 12) to display characters. The font is *not* configurable from the Oxygen XML Editor **Preferences** page.
-  **Tip:** The best performance of the viewer is accomplished for encodings that use a fixed number of bytes per character, like UTF-16 or ASCII. The performance for UTF-8 is very good for documents that use mostly characters of the European languages. For the same encoding the rendering performance is high for files consisting of short lines (up to a few thousand characters) and may degrade for long lines.

## Handling Bidirectional (BIDI) Text

---

Bidirectional documents contain text in both directionalities, usually involving characters from different types of alphabets.

Oxygen XML Editor allows you to edit bidirectional text documents, offering the following capabilities:

- Automatic recognition of bidirectional content;
- Text mode editing;
- *Grid mode editing*;

 **Note:** Bidirectional content cannot render Bold and Italic styling

 **Note:** The bidirectional editing support can be disabled when opening *very large documents* to enhance performance while editing.

## Hex Viewer

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When the Unicode characters that are visible in a text viewer or editor are not enough and you need to see the byte values of each character of a document, you can start the hex viewer that is available on the **Tools** menu. It has two panels: the characters are rendered in the right panel and the bytes of each character are displayed in the left panel. There is a 1:1 correspondence between the characters and their byte representation: the byte representation of a character is displayed in the same matrix position of the left panel as the character in the matrix of the right panel.

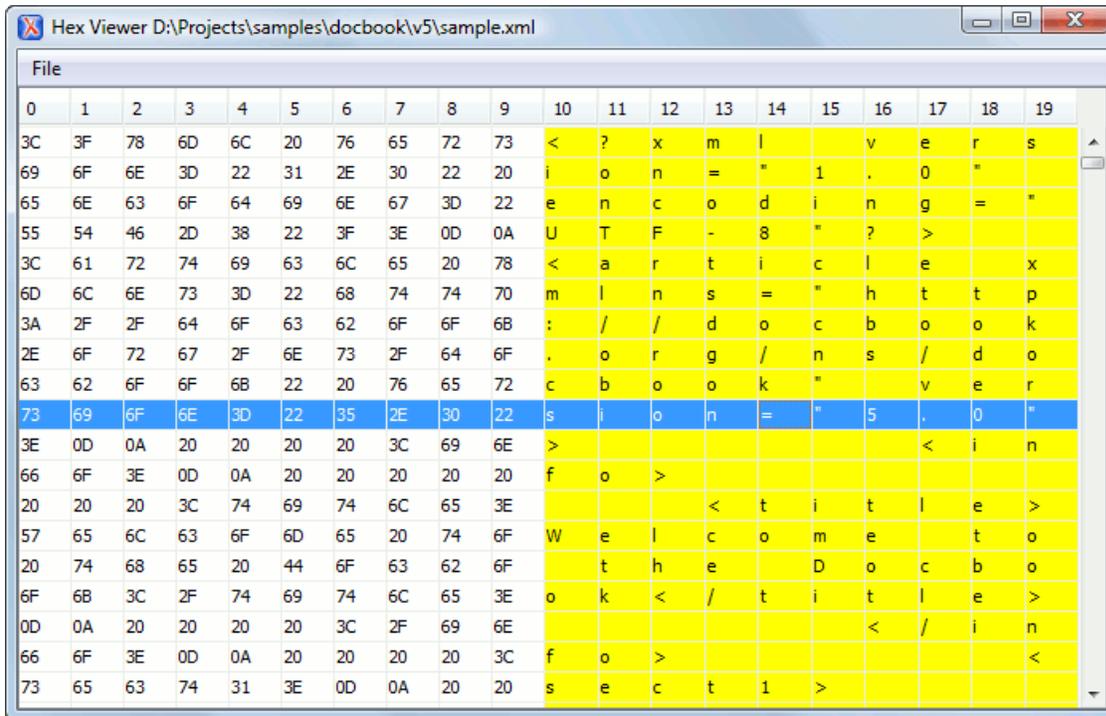


Figure 134: Hex Viewer

To open a file in **Hex Viewer** use the **File > Open** action. Alternatively, you can drag a file and drop it in the **Hex Viewer** panel.

## Scratch Buffer

A handy addition to the document editing is the **Scratch Buffer** view used for storing fragments of arbitrary text during the editing process. It can be used to drop bits of paragraphs (including arbitrary XML markup fragments) while rearranging and editing the document and also to drag and drop fragments of text from the scratch buffer to the editor panel. The **Scratch Buffer** is basically a text area offering XML syntax highlight. The view contextual menu contains basic edit actions like **Cut**, **Copy**, and **Paste**.

## Handling Read-Only Files

If a file marked as read-only is opened in Oxygen XML Editor you can by default perform modifications to it. This behavior is controlled by the *Can edit read only files* option. When attempting to save such files you will be prompted to save them to another location.

You can check out the read-only state of the file by looking in the *Properties view*. If you modify the file properties from the operating system and the file becomes writable, you are able to modify it on the spot without having to reopen it.

The read-only state is marked with a lock decoration which appears in the editor tab and specified in the tooltip for a certain tab.

## Editing Documents with Long Lines

The documents containing long lines can affect performance when opened in the text editor. If you choose to present the document with line wrap, some features are affected:

- The editor uses the Monospaced font.
- You cannot set font styles from **Options > Preferences > Editor > Colors**.
- Automatic validation is disabled.
- Automatic spell checking is disabled.
- **XPath** field is disabled in the **Find/Replace** dialog.
- Less precise localization for executed XPaths. The XPath executions use SAX sources for smaller memory footprint. We recommend using XPath 2.0 instead of XPath 1.0 because it has increased speed and a smaller memory footprint. Running an XPath expression requires additional memory about 2 or 3 times the size of the document on disk.

The last two restrictions are valid only for XML documents.

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# Chapter 5

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## Authoring in the Visual Editor

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**Topics:**

- [Tagless XML Authoring](#)
- [General Author Presentation](#)
- [Smart Paste Support](#)

This chapter presents the WYSIWYG like editor targeted for content authors, also called Author editor.

## Tagless XML Authoring

Once the structure of the XML document and the required restrictions on the elements and attributes are fixed with an XML schema the editing of the document is easier in a WYSIWYG (what-you-see-is-what-you-get) editor in which the XML markup is not visible.

This tagless editor is available as the Author mode of the XML editor. The Author mode is activated by pressing the Author button at the bottom of the editing area where the mode switches of the XML editor are available: Text, Grid, and Author. The Author mode renders the content of the XML document visually based on a CSS stylesheet associated with the document. Many of the actions and features available in Text mode are also available in Author mode.

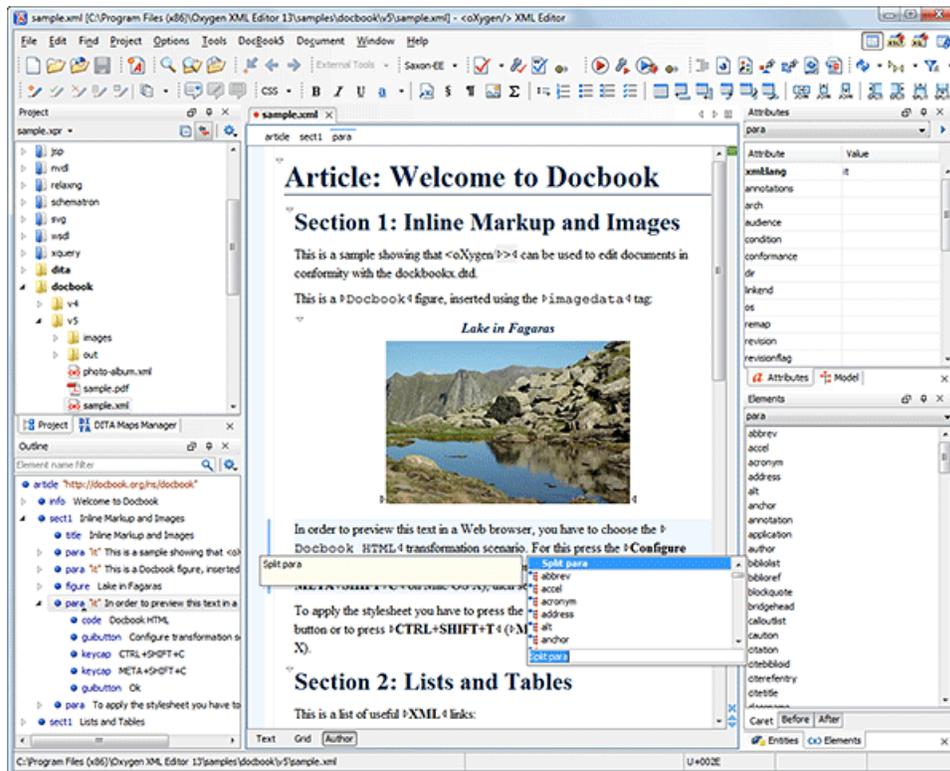


Figure 135: Author editing mode

### Associating a CSS with an XML document

The tagless rendering of the XML document in the Author mode is driven by a CSS stylesheet which conforms to the [version 2.1 of the CSS specification](#) from the W3C consortium. Also some CSS 3 features like namespaces and custom extensions of the CSS specification are supported.

The CSS specification is convenient for driving the tagless rendering of XML documents as it is an open standard maintained by the W3C consortium. A stylesheet conforming to this specification is easy to [develop and edit](#) in Oxygen XML Editor as it is a plain text file with a simple syntax.

The association of such a stylesheet with an XML document is straightforward: an `xml-stylesheet` XML processing instruction with the attribute `type="text/css"` must be inserted at the beginning of the XML document. In case you do not want to alter your XML documents, you should set-up a *document type*.

For XHTML documents, there is a second method for the association of a CSS stylesheet: an element `link` with the `href` and `type` attributes in the head child element of the `html` element as specified in the [W3C CSS specification](#).

## Author Mode User Roles

There are two main types of users of the Author mode: *framework developers* and *content authors*. A *framework developer* is a technical person with advanced XML knowledge who defines the framework for authoring XML documents in the tagless editor. Once the framework is created or edited by the developer, it is distributed as a deliverable component ready to plug into the application to the content authors. A *content author* does not need to have advanced knowledge about XML tags or operations like validation of XML documents or applying an XPath expression to an XML document. The author just plugs the framework set-up by the developer into the application and starts editing the content of XML documents without editing the XML tags directly.

The framework set-up by the developer is called *document type* and defines a type of XML documents by specifying all the details needed for editing the content of XML documents in tagless mode:

- the CSS stylesheet which drives the tagless visual rendering of the document;
- the rules for associating an XML schema with the document which is needed for content completion and validation of the document;
- transformation scenarios for the document;
- XML catalogs;
- custom actions available as buttons on the toolbar.

The tagless editor comes with some ready to use predefined document types for XML frameworks largely used today like DocBook, DITA, TEI, XHTML.

## General Author Presentation

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A content author edits the content of XML documents in tagless mode disregarding the XML tags as they are not visible in the editor. If he edits documents conforming to one of the predefined types he does not need to configure anything as the predefined document types are already configured when the application is installed. Otherwise he must plug the configuration of the document type into the application. This is as easy as unzipping an archive directly in the `[Oxygen-install-folder]/frameworks` folder.

In case the edited XML document does not belong to one of the document types *set up in Preferences* you can specify the CSS stylesheets to be used by inserting an `xml-stylesheet` processing instructions. You can insert the processing instruction by editing the document or by using the  **Associate XSLT/CSS stylesheet** action.

The syntax of such a processing instruction is:

```
<?xml-stylesheet type="text/css" media="media type" title="title"
href="URL" alternate="yes|no"?>
```

You can read more about associating a CSS to a document in the section about *customizing the CSS of a document type*.

When the document has no CSS association or the referred stylesheet files cannot be loaded, a default one is used. A warning message is also displayed at the beginning of the document presenting the reason why the CSS cannot be loaded.

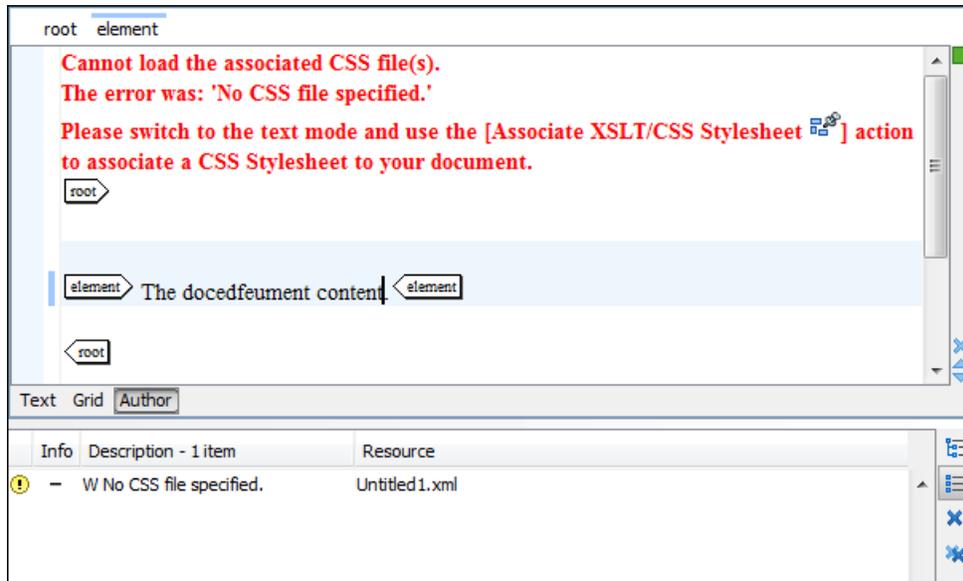


Figure 136: Document with no CSS association default rendering

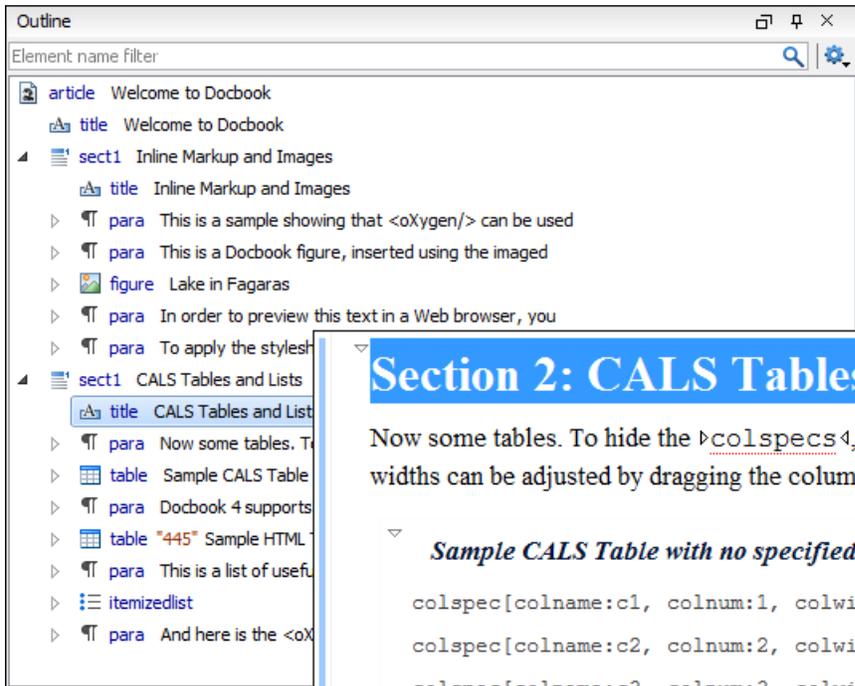
## Author Views

The content author is supported by special views which are automatically synchronized with the current editing context of the editor panel. The views present additional information about this context thus helping the author to see quickly the current location in the overall document structure and the available editing options.

### Outline View

The **Outline** view offers the following functionality:

- *Document Overview*
- *Outline View Specific Actions*
- *Modification Follow-up*
- *Document Structure Change*
- *Document Tag Selection*



**Figure 137: The Outline View**

### XML Document Overview

The **Outline** view displays a general tag overview of the current edited XML document. It also shows the correct hierarchical dependencies between the tag elements. This functionality makes it easier for the user to be aware of the document structure and the way tags are nested.

The **Outline** view allows you to:

- insert or delete nodes using pop-up menu actions;
- move elements by dragging them to a new position in the tree structure;
- highlight elements in the **Author** editor area.



**Note:** The **Outline** view is synchronized with the **Author** editor area. When you make a selection in the **Author** editor area, the corresponding elements of the selection are highlighted in the **Outline** view and vice versa. This functionality is available both for single and multiple selection. To deselect one of the elements, use **Ctrl + Click**.

Document errors (such as an element inserted in an invalid position, or a wrong attribute name, or a missing required attribute value) are highlighted in the **Outline** tree:

- a red exclamation mark decorates the element icon;
- a dotted red underline decorates the element name and value;
- a tooltip provides more information about the nature of the error, when you hover with the mouse pointer over the faulted element.

### Modification Follow-up

When editing, the Outline view dynamically follows the modifications introduced by the user, showing in the middle of the panel the node which is currently being modified. This gives the user better insight on location where in the document one is positioned and how the structure of the document is affected by one's modifications.

### Document Structure Change

Entire XML elements can be moved or copied in the edited document using only the mouse in the **Outline** view in drag-and-drop operations. Several drag and drop actions are possible:

- If you drag an XML element in the **Outline** view and drop it on another one in the same panel then the dragged element will be moved after the drop target element.
- If you hold the mouse pointer over the drop target for a short time before the drop then the drop target element will be expanded first and the dragged element will be moved inside the drop target element after its opening tag.
- You can also drop an element before or after another element if you hold the mouse pointer towards the upper or lower part of the targeted element. A marker will indicate whether the drop will be performed before or after the target element.
- If you hold down the **(Ctrl)** key after dragging, there will be performed a copy operation instead of a move one.

The drag and drop action in the **Outline** view can be *disabled and enabled from the Preferences dialog*.

 **Tip:** You can select and drag multiple nodes in the Author Outline tree.

## Outline Filters

The following actions are available in the  **Settings** menu on the Outline view's toolbar:

-  **Flat presentation mode of the filtered results** - when active, the application flattens the filtered result elements to a single level.
-  **Show comments and processing instructions** - show/hide comments and processing instructions in the **Outline** view.
-  **Show element name** - show/hide element name.
-  **Show text** - show/hide additional text content for the displayed elements.
-  **Show attributes** - show/hide attribute values for the displayed elements. The displayed attribute values can be changed from *the Outline preferences panel*.
-  **Configure displayed attributes** - displays the *XML Structured Outline preferences page*.

The upper part of the view contains a filter box which allows you to focus on the relevant components. Type a text fragment in the filter box and only the components that match it are presented. For advanced usage you can use wildcard characters (\*, ?) and separate multiple patterns with commas.

## The Contextual Menu of the Outline Tree

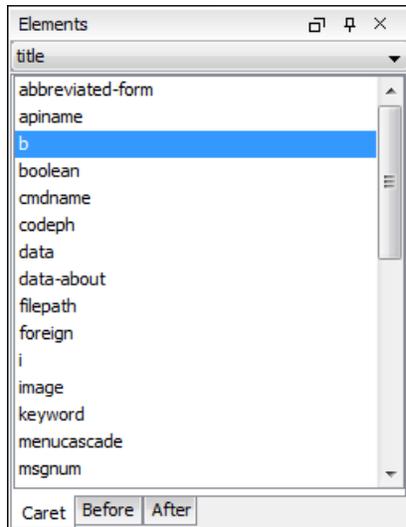
The contextual menu of the **Outline** tree contains the following actions:

- **Edit attributes** - A dialog is presented allowing the user to see and edit the attributes of the selected node.
- The **Append child**, **Insert before** and **Insert after** submenus allow to quickly insert new tags in the document at the place of the element selected in the **Outline** tree. The **Append child** submenu lists the names of all the elements which are allowed by the schema associated with the current document as child of the current element. The effect is the same as typing the '<' character and selecting an element name from the popup menu offered by *the content completion assistant*. The **Insert before** and **Insert after** submenus list the elements which are allowed by the schema associated with the current document as siblings of the current element inserted immediately before respectively after the current element.
- The **Cut**, **Copy** and **Delete** actions execute *the same actions as the Edit menu items with the same name* on the elements currently selected in the **Outline** tree.
- You can insert a well-formed element before, after or as a child of the currently selected element by accessing the **Paste before**, **Paste after** or **Paste as Child** actions.
- The **Toggle Comment** item encloses the currently selected element of the **Outline** tree in an XML comment, if the element is not commented, or removes the comment if it is commented.
- Using the **Rename Element** action the element from the caret position and the elements that have the same name as the current element can be renamed according with the options from the **Rename** dialog.
- The **Expand More / Collapse All** actions expand / collapse the selection and all its children.

 **Tip:** You can copy, cut or delete multiple nodes in the **Outline** by using the contextual menu after selecting multiple nodes in the tree.

## Elements View

The **Elements** view presents a list of all defined elements that you can insert in your document. All elements from a sequence are presented but the invalid proposals (which cannot be inserted in the current context) are grayed-out. The upper part of the view features a combo box that contains the current element's ordered ancestors. Selecting a new element in this combo box updates the list of the allowed elements in **Before** and **After** tabs.



**Figure 138: The Elements View**

Three tabs present information relative to the caret location:

- **Caret** - Shows a list of all the elements allowed at the current caret location. Double-clicking any of the listed elements inserts that element at the caret position.
- **Before** - Shows a list of all elements that can be inserted before the element selected in the combo box. Double-clicking any of the listed elements inserts that element before the element at the caret position.
- **After** - Shows a list of all elements that can be inserted after the element selected in the combo box. Double-clicking any of the listed elements inserts that element after the element at the caret position.

Double clicking an element name in the list surrounds the current selection in the editor panel with the start tags and end tags of the element. If there is no selection, just an empty element is inserted in the editor panel at the cursor position.

## Attributes View

The **Attributes** view presents all the attributes of the current element determined by the schema of the document. It allows you to insert attributes in the current element or change the value of the attributes already inserted. The attributes are rendered differently depending on their state:

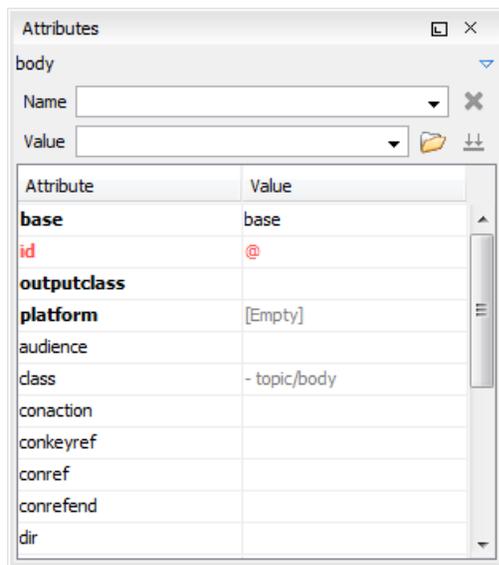
- the names of the attributes with a specified value are rendered with a bold font, and their value with a plain font;
  - 👉 **Note:** The names of the attributes with an empty string value are also rendered bold.
- default values are rendered with a plain font, painted gray;
- empty values display the text "[empty]", painted gray;
- invalid attributes and values are painted red;

Double-click a cell in the **Value** column to edit the value of the corresponding attribute. In case the possible values of the attribute are specified as list in the schema of the edited document, the **Value** column acts as a combo box that allows you to insert the values in the document.

You can sort the attributes table by clicking the **Attribute** column header. The table contents can be sorted as follows:

- by attribute name in ascending order;
- by attribute name in descending order;

- custom order, where the used attributes are displayed at the beginning of the table sorted in ascending order, followed by the rest of the allowed elements sorted in ascending order.



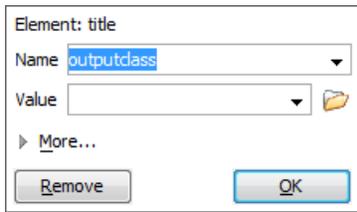
**Figure 139: The Attributes View**

A combo box located in the upper part of the view allows you to edit the attributes of the ancestors of the current element.

The following actions are available in the contextual menu:

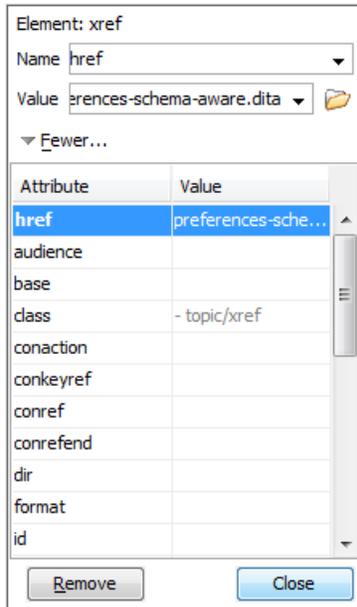
- **Add** - allows you to insert a new attribute. Adding an attribute that is not in the list of all defined attributes is not possible when the *Allow only insertion of valid elements and attributes* schema aware option is enabled;
- **Set empty value** - Specifies the current attribute value as empty;
- **Remove** - Removes the attribute (action available only if the attribute is specified). You can invoke this action by pressing the **(Delete)** or **(Backspace)** keys;
- **Copy** - copies the `attrName="attrValue"` pair to the clipboard. The `attrValue` can be:
  - the value of the attribute;
  - the value of the default attribute, in case the attribute does not appear in the edited document;
  - empty, in case the attribute does not appear in the edited document and has no default value set.
- **Paste** - this action is available in the contextual menu of the **Attributes** view, in the **Text** and **Author** modes. Depending on the content of the clipboard, the following cases are possible:
  - in case the clipboard contains an attribute and its value, both of them are introduced in the **Attributes** view. The attribute is selected and its value is changed if they exist in the **Attributes** view;
  - in case the clipboard contains an attribute name with an empty value, the attribute is introduced in the **Attributes** view and you can start editing it. The attribute is selected and you can start editing it if it exists in the **Attributes** view;
  - in case the clipboard only contains text, the value of the selected attribute is modified.

To edit in place the attributes of an element in the editor panel, select the attribute and press **(Alt + Enter)** on your keyboard. This shortcut pops up a small window with the same content of the **Attributes** view. The default form of the pop-up window presents the **Name** and **Value** fields, with the list of all the possible attributes collapsed.



**Figure 140: Edit attributes in place**

The small right arrow button expands the list of possible attributes allowed by the schema of the document as in the **Attributes** view.



**Figure 141: Edit attributes in place - full version**

The **Name** field auto-completes the name of the attribute: the complete name of the attribute is suggested based on the prefix already typed in the field as the user types in the field.

### Entities View

This view displays a list with all entities declared in the current document as well as built-in ones. Double clicking one of the entities will insert it at the current cursor position.

Name	Value
lt	<
gt	>
amp	&
apos	'
quot	"
hi-d-att	(topic hi-d)
ut-d-att	(topic ut-d)
indexing-d-att	(topic indexing-d)
hazard-d-att	(topic hazard-d)
abbrev-d-att	(topic abbrev-d)
pr-d-att	(topic pr-d)
sw-d-att	(topic sw-d)
ui-d-att	(topic ui-d)
included-domains	&hi-d-att; ...
nbs	

Figure 142: The Entities View

## The Author Editor

This section explains the features of the CSS-driven WYSIWYG-like editor for XML documents.

### Navigating the Document Content

#### Using the Keyboard

Oxygen XML Editor allows you to quickly navigate through a document using **(Tab)** to go to the next XML node and **(Shift + Tab)** to go to the previous one. The caret is moved to the next / previous editable position. When your caret is positioned in a space preserve element, press a key on your keyboard and then use **(Tab)** to arrange the text. You can also arrange the text using **(Tab)** if you position the cursor in a space preserve element using your mouse. In case you encounter a space preserve element when you navigate through a document and you press no other key, the next **(Tab)** continues the navigation.

To navigate one word forward or backwards, use **Ctrl + Right Arrow**, and **Ctrl + Left Arrow**, respectively. Entities and hidden elements are skipped.

#### Using the Navigation Toolbar

The locations of selected text are stored in an internal list which allows you to navigate between them with the  **Ctrl+Alt+[ Back** and  **Ctrl+Alt+] Forward** buttons from the **Navigation** toolbar. The  **Ctrl+Alt+G Last Modification** button automatically takes you to the latest edited text.

#### Using the Breadcrumb Helpers

A left-hand side stripe paints a vertical thin light blue bar indicating the span of the element found at caret position. Also a top stripe called *breadcrumb* indicates the path from document root to the current element.

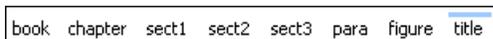


Figure 143: The breadcrumb in Editor view

The last element is also highlighted by a thin light blue bar for easier identification. Clicking one element from the top stripe selects the entire element in the editor view.

The tag names displayed in the breadcrumb can be customized with an Author extension class that implements `AuthorBreadcrumbCustomizer`. See the *Author SDK* for details about using it.

The **Append child**, **Insert before** and **Insert after** submenus of the top stripe popup menu allow you to insert new tags in the document at the place of the selected element. The **Append child** submenu lists the names of all the elements which are allowed by the schema associated with the current document as child of the current element. The effect is the same as typing the '<' character and selecting an element name from the popup menu offered by *the content completion assistant*. The **Insert before** and **Insert after** submenus list the elements which are allowed by the schema associated with the current document as siblings of the current element inserted immediately before respectively after the current element.

The **Cut**, **Copy**, **Paste** and **Delete** items of the popup menu execute *the same actions as the Edit menu items with the same name* on the elements currently selected in the stripe. The **Cut** and **Copy** operations (like the `display:block` property or the tabular format of the data from a set of table cells) preserve the styles of the copied content. The **Paste before**, **Paste after** and **Paste as Child** actions allow the user to insert an well-formed element before, after or as a child of the currently selected element.

The **Toggle Comment** item of the **Outline** tree popup menu encloses the currently selected element of the top stripe in an XML comment, if the element is not commented, or removes the comment if it is commented.

Using the **Rename Element** action the selected element and the elements that have the same name as the current element can be renamed according with the options from the **Rename** dialog.

### Using the Folding Support

When working on a large document, the **folding support** can be used to collapse some elements content leaving in focus only the ones you need to edit. Foldable elements are marked with a small triangle painted in the upper left corner. Hovering with the mouse pointer over that marker, the entire content of the element is highlighted by a dotted border for quick identification of the foldable area. The following actions are available in the contextual menu, **Folding** sub-menu:

-  **Toggle Fold** - toggles the state of the current fold;
-  **Close Other Folds (Ctrl+NumPad /)** - folds all the elements except the current element;
-  **Collapse Child Folds (Ctrl+NumPad .)** - folds the elements indented with one level inside the current element;
-  **Expand Child Folds**- unfolds all child elements of the currently selected element;
-  **Expand All (Ctrl+NumPad \*)** - unfolds all elements in the current document.

### Using the Linking Support

When working on a suite of documents that refer to one another (references, external entities, XInclude, DITA conref, etc), the **linking support** is useful for navigating between the documents. In the predefined customizations that are bundled with Oxygen XML Editor links are marked with an icon representing a chain link: . When hovering with the mouse pointer over the marker, the mouse pointer changes its shape to indicate that the link can be followed and a tooltip presents the destination location. Click a followable link to open the referred resource in an editor. The same effect can be obtained by using the action **Open file at caret** when the caret is in a followable link element.

To position the cursor at the beginning or at the end of the document you can use **(Ctrl+Home)** and **(Ctrl+End)**, respectively.

### Displaying the Markup

In Author view, the amount of displayed markup can be controlled using the following dedicated actions:

-  **Full Tags with Attributes** - Displays full name tags with attributes for both block level as well as in-line level elements.
-  **Full Tags** - Displays full name tags without attributes for both block level as well as in-line level elements.
-  **Block Tags** - Displays full name tags for block level elements and simple tags without names for in-line level elements.
-  **Inline Tags** - Displays full name tags for inline level elements, while block level elements are not displayed.
-  **Partial Tags** - Displays simple tags without names for in-line level elements, while block level elements are not displayed.

-  **No Tags** - None of the tags is displayed. This is the most compact mode.

The default tags display mode can be configured in the [Author options page](#). However, if the document opened in Author editor does not have an associated CSS stylesheet, then the **Full Tags** mode will be used.

Block-level elements are those elements of the source document that are formatted visually as blocks (e. g. paragraphs), while the inline level elements are distributed in lines (e. g. emphasizing pieces of text within a paragraph, inline images, etc). The graphical format of the elements is controlled from the CSS sources via the `display` property.

## Bookmarks

A position in a document can be marked with a bookmark. Later the cursor can go quickly to the marked position with a keyboard shortcut or with a menu item. This is useful to ease the navigation in a large document or to work on more than one document when the cursor must move between several marked positions.

A bookmark can be placed with:

- one of the menu items available on the menu **Edit > Bookmarks > Create**
- the menu item **Edit > Bookmarks > Bookmarks Quick Creation (F9)**
- the keyboard shortcuts associated with these menu items and visible on the menu **Edit > Bookmarks**

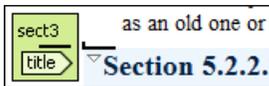
A bookmark can be removed when a new bookmark is placed in the same position as an old one or with the action **Edit > Bookmarks > Remove All**. The cursor can go to a bookmark with one of the actions available on the menu **Edit > Bookmarks > Go to**.

## Position Information Tooltip

When the caret is positioned inside a new context, a tooltip will be shown for a couple of seconds displaying the position of the caret relative to the current element context.

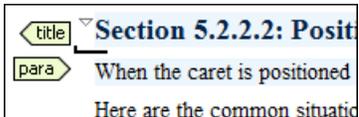
Here are the common situations that can be encountered:

- The caret is positioned before the first block child of the current node.



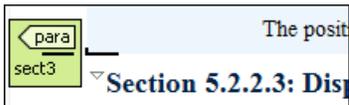
**Figure 144: Before first block**

- The caret is positioned between two block elements.



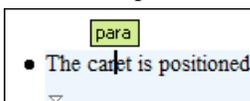
**Figure 145: Between two block elements**

- The caret is positioned after the last block element child of the current node.



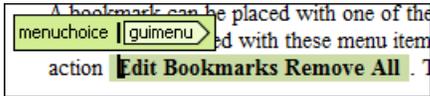
**Figure 146: After last block**

- The caret is positioned inside a node.



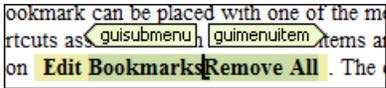
**Figure 147: Inside a node**

- The caret is positioned inside an element, before an inline child element.



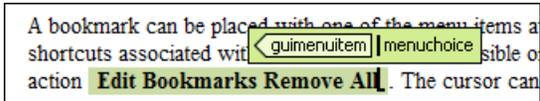
**Figure 148: Before an inline element**

- The caret is positioned between two inline elements.



**Figure 149: Between two inline elements**

- The caret is positioned inside an element, after an inline child element.



**Figure 150: After an inline element**

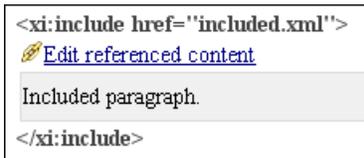
The nodes in the previous cases are displayed in the tooltip window using their names.

You can deactivate this feature by unchecking the **Options > Preferences > Editor / Author > Show caret position tooltip** check box. Even if this option is disabled, you can trigger the display of the position tooltip by pressing **Shift+F2**.

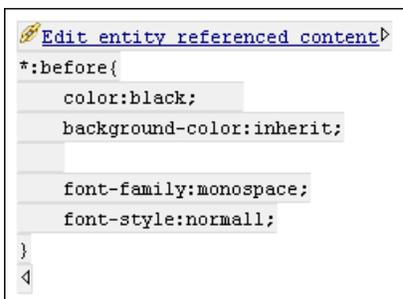
-  **Note:** The position information tooltip is not displayed if one of the modes *Full Tags with Attributes* or *Full Tags* is selected.

## Displaying Referred Content

The references to entities, XInclude, and DITA conrefs are expanded by default in Author mode and the referred content is displayed. You can control this behavior from the *Author options page*. The referred resources are loaded and displayed inside the element or entity that refers them, however the displayed content cannot be modified directly.



**Figure 151: XInclude reference**



**Figure 152: External entity reference**

When the referred resource cannot be resolved, an error will be presented inside the element that refers them instead of the content.

If you want to make modifications to the referred content, you must open the referred resource in an editor. The referred resource can be opened quickly by clicking the link (marked with the icon ) which is displayed before the referred

content or by using the **Edit Reference** action from the contextual menu (in this case the caret is placed at the precise location where the action was invoked in the main file). The referred resource is resolved through the XML Catalog set in **Preferences**.

The referred content is refreshed:

- automatically, when it is modified and saved from Oxygen XML Editor;
- on demand, by using the *Refresh references action*. Useful when the referred content is modified outside the Oxygen XML Editor scope.

## Finding and Replacing Text

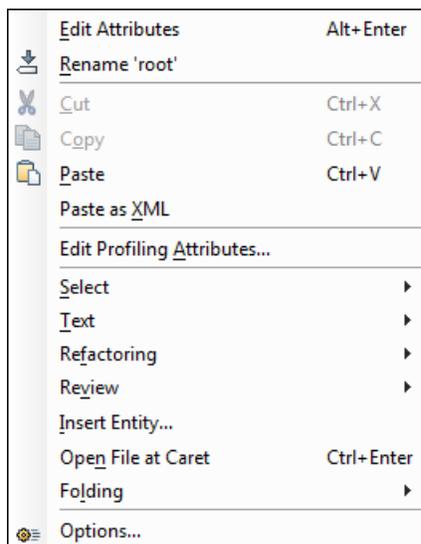
You can search for a specific word or string of characters using the following features:

- *Find/Replace dialog box*
- *Find/Replace in Files dialog box*
- *Quick Find toolbar*
- *Find all Elements dialog box*

Complex search operations may take some time to complete. If a search operation takes more than 5 seconds, you are prompted to decide whether you want to continue the operation or stop it.

## Contextual Menu

More powerful support for editing the XML markup is offered via actions included in the contextual menu. Two types of actions are available: **generic actions** (actions that not depends on a specific document type) and **document type actions** (actions that are configured for a specific document type).



**Figure 153: Contextual menu**

The generic actions are:

- **Edit Attributes** - A pop-up window is displayed allowing you to manage the element attributes;
- **Rename** - The element from the caret position can be renamed quickly using the content completion window. If the *Allow only insertion of valid elements and attributes* schema aware option is enabled only the proposals from the content completion list are allowed, otherwise a custom element name can also be provided;
- **Cut, Copy, Paste** - Common edit actions with the same functionality as those found in the text editor;
- **Paste As XML** - Similar to **Paste** operation, except that the clipboard's content is considered to be XML;
- **Edit Profiling Attributes** - Allows you to select the profiling attributes;
- **Select** - Contains the following actions:
  - **Select > Select Element** - Selects the entire element at the current caret position;

- **Select > Select Content** - Selects the entire content of the element at the current caret position, excluding the start and end tag. Performing this action repeatedly will result in the selection of the content of the ancestor of the currently selected element content;
- **Select > Select Parent** - Selects the parent of the element at the current caret position;

 **Note:** You can select an element by triple clicking inside its content. If the element is empty you can select it by double clicking it.

- **Text** - Contains the following actions:
  - **Text > To Lower Case** - Converts the selection content to lower case characters;
  - **Text > To Upper Case** - Converts the selection content to upper case characters;
  - **Text > Capitalize Sentences** - Converts to upper case the first character of every selected sentence;
  - **Text > Capitalize Words** - Converts to upper case the first character of every selected word;
  - **Text > Count Words** - Counts the number of words and characters (no spaces) in the entire document or in the selection for regular content and read-only content;
 

 **Note:** The content marked as deleted with track changes is ignored when counting words.
- **Refactoring** - Contains a series of actions designed to alter the document's structure:
  - **Toggle Comment** - Encloses the currently selected text in an XML comment, or removes the comment if it is commented;
  - **Split Element** - Splits the content of the closest element that contains the caret's position. Thus, if the caret is positioned at the beginning or at the end of the element, the newly created sibling will be empty;
  - **Join Elements** - Joins two adjacent elements that have the same name. The action is available only when the caret position is between the two adjacent elements. Also, joining two elements can be done by pressing the Delete or Backspace keys and the caret is positioned between the boundaries of these two elements;
  - **Surround with Tag...** - Selected text in the editor is marked with the specified start and end tags;
  - **Surround with '<Tag name>'** - Selected text in the editor is marked with start and end tags used by the last 'Surround with Tag...' action;
  - **Rename Element** - The element from the caret position and the elements that have the same name as the current element can be renamed according with the options from the **Rename** dialog;
  - **Delete Element Tags** - Deletes the tags of the closest element that contains the caret's position. This operation is also executed if the start or end tags of an element are deleted by pressing the **(Delete)** or **(Backspace)** keys;
- **Review** - Provides access to [Track Changes](#) and Manage Comments actions;
- **Insert Entity** - Allows the user to insert a predefined entity or a character entity. Surrogate character entities (range #x10000 to #x10FFFF) are also accepted. Character entities can be entered in one of the following forms:
  - #<decimal value> - e. g. #65;
  - &#<decimal value>; - e. g. &#65;
  - #x<hexadecimal value> - e. g. #x41;
  - &#x<hexadecimal value>; - e. g. &#x41;
- **Open File at Caret** - Opens in a new editor panel the file with the path under the caret position. If the path represents a directory path, it will be opened in system file browser. If the file does not exist at the specified location, the error dialog that is displayed contains a **Create new file** action which displays the **New** file dialog. This allows you to choose the type or the template for the file. If the action succeeds, the file is created with the referred location and name and is opened in a new editor panel. This is useful when you decide first on the file name and after that you want to create it in the exact location specified at the current cursor position;
- **Options** - Opens the [Author options page](#).

Document type actions are specific to some document type. Examples of such actions can be found in the [Predefined document types](#) section.

## Editing XML Documents in Author

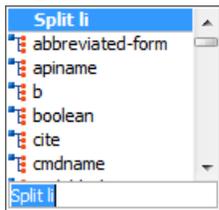
This section details how to edit the text content and the markup of XML documents in Author mode. It explains also how to edit tables and MathML content in Author mode.

### Editing the XML Markup

One of the most useful feature in Author editor is the content completion support. The fastest way to invoke it is to press **(Enter)** or **(Ctrl + Space)** (on *Mac OS X* the shortcut is **(Meta + Space)**) in the editor panel.

Content completion window offers the following types of actions:

- inserting allowed elements for the current context according to the associated schema, if any;
- inserting element values if such values are specified in the schema for the current context;
- inserting new undeclared elements by entering their name in the text field;
- inserting CDATA sections, comments, processing instructions;
- inserting *code templates*.



**Figure 154: Content completion window**

If you press **(Enter)** the displayed content completion window will contain as first entries the **Split <Element name>** items. Usually you can only split the closest block element to the caret position but if it is inside a list item, the list item will also be proposed for split. Selecting **Split <Element name>** splits the content of the specified element around the caret position. Thus, if the caret is positioned at the beginning or at the end of the element, the newly created sibling will be empty.

If the caret is positioned inside a space preserve element the first choice in the content completion window is **Enter** which inserts a new line in the content of the element. If there is a selection in the editor and you invoke content completion, a **Surround with** operation can be performed. The tag used will be the selected item from the content completion window.

By default you are not allowed to insert element names which are not considered by the associated schema as valid proposals in the current context. This can be changed by unchecking the **Allow only insertion of valid elements and attributes** check box from the *Schema aware preferences page*.

 **Note:** The content completion list of proposals contains elements depending on the elements inserted both before and after the caret position.

**Joining two elements** - You can choose to join the content of two sibling elements with the same name by using the **contextual menu > Join elements** action.

The same action can be triggered also in the next situations:

- The caret is located before the end position of the first element and **(Delete)** key is pressed.
- The caret is located after the end position of the first element and **(Backspace)** key is pressed.
- The caret is located before the start position of the second element and **(Delete)** key is pressed.
- The caret is located after the start position of the second element and **(Backspace)** key is pressed.

In either of the described cases, if the element has no sibling or the sibling element has a different name, **Unwrap** operation will be performed automatically.

**Unwrapping the content of an element** - You can unwrap the content of an element by deleting its tags using the **Delete element tags** action from the editor contextual menu.

The same action can be triggered in the next situations:

- The caret is located before the start position of the element and **(Delete)** key is pressed.
- The caret is located after the start position of the element and **(Backspace)** key is pressed.
- The caret is located before the end position of the element and **(Delete)** key is pressed.
- The caret is located after the end position of the element and **(Backspace)** key is pressed.

**Removing all the markup of an element** - You can remove the markup of the current element and keep only the text content with the action  **Remove All Markup** available on the submenu **Refactoring** of the contextual menu and on the toolbar **XML Refactoring**.

When you press **(Delete)** or **(Backspace)** in the presented cases the element is unwrapped or it is joined with its sibling. If the current element is empty, the element tags will be deleted.

When you click on a marker representing the start or end tag of an element, the entire element will be selected. The contextual menu displayed when you right-click on the marker representing the start or end tag of an element contains **Append child**, **Insert Before** and **Insert After** submenus as first entries.

### Code Templates

You can define short names for predefined blocks of code called code templates. The short names are displayed in the Content Completion window when the word at cursor position is a prefix of such a short name. If there is no prefix at cursor position (a whitespace precedes the cursor), all the code templates are listed.

Oxygen XML Editor comes with numerous predefined code templates. You can also *define* your own code templates for any type of editor. For more details, see the [example for XSLT editor code templates](#).

To obtain the template list, you can use the Content Completion on request shortcut key (CTRL+SPACE) or the Code Templates on request shortcut key (CTRL+SHIFT+SPACE). The first shortcut displays the code templates in the same *content completion list with elements from the schema of the document*. The second shortcut displays only the code templates and is the default shortcut of the action **Document > Content Completion > Show Code Templates**.

The syntax of the code templates allows you to use the following *editor variables*:

- **`\${caret}** - The position where the caret is inserted. This variable can be used in a *code template*, in **Author** operations, or in a *selection plugin*.
- **`\${selection}** - The XML content of the current selection in the editor panel. This variable can be used in a *code template* and Author operations, or in a *selection plugin*.
- **`\${ask('message', type, ('real\_value1':'rendered\_value1'; 'real\_value2':'rendered\_value2'; ...), 'default\_value')}** - To prompt for values at runtime, use the *ask('message', type, ('real\_value1':'rendered\_value1'; 'real\_value2':'rendered\_value2'; ...), 'default-value')* editor variable. The following parameters can be set:
  - 'message' - the displayed message. Note the quotes that enclose the message.
  - type - optional parameter. Can have one of the following values:
    - url - input is considered an URL. Oxygen XML Editor checks that the URL is valid before passing it to the transformation;
    - password - input characters are hidden;
    - generic - the input is treated as generic text that requires no special handling;
    - relative\_url - input is considered an URL. Oxygen XML Editor tries to make the URL relative to that of the document you are editing.



**Note:** You can use the `$ask` editor variable in file templates. In this case, Oxygen XML Editor keeps an absolute URL.

- combobox - displays a dialog that contains a non-editable combo-box;
- editable\_combobox - displays a dialog that contains an editable combo-box;
- radio - displays a dialog that contains radio buttons;
- 'default-value' - optional parameter. Provides a default value in the input text box.

### Examples:

- ``${ask('message')}`` - Only the message displayed for the user is specified.

- `${ask('message', generic, 'default')}` - 'message' is displayed, the type is not specified (the default is string), the default value is 'default'.
  - `${ask('message', password)}` - 'message' is displayed, the characters typed are masked with a circle symbol.
  - `${ask('message', password, 'default')}` - same as before, the default value is 'default'.
  - `${ask('message', url)}` - 'message' is displayed, the parameter type is URL.
  - `${ask('message', url, 'default')}` - same as before, the default value is 'default'.
- **`\${timeStamp}** - Time stamp, that is the current time in Unix format. It can be used for example to save transformation results in different output files on each transform.
  - **`\${uuid}** - Universally unique identifier.
  - **`\${id}** - Application-level unique identifier.
  - **`\${cfn}** - Current file name without extension and without parent folder.
  - **`\${cfne}** - Current file name with extension.
  - **`\${cf}** - Current file as file path, that is the absolute file path of the current edited document.
  - **`\${cfd}** - Current file folder as file path, that is the path of the current edited document up to the name of the parent folder.
  - **`\${frameworksDir}** - The path (as file path) of the `frameworks` subfolder of the Oxygen XML Editor installation folder.
  - **`\${pd}** - Current project folder as file path.
  - **`\${oxygenInstallDir}** - Oxygen XML Editor installation folder as file path.
  - **`\${homeDir}** - The path (as file path) of the user home folder.
  - **`\${pn}** - Current project name.
  - **`\${env(VAR\_NAME)}** - Value of the `VAR_NAME` environment variable. The environment variables are managed by the operating system. If you are looking for Java System Properties, use the **`\${system(var.name)}** editor variable.
  - **`\${system(var.name)}** - Value of the `var.name` Java system property. The Java system properties can be specified in the command line arguments of the Java runtime as `-Dvar.name=var.value`. If you are looking for operating system environment variables, use the **`\${env(VAR\_NAME)}** editor variable instead.
  - **`\${date(pattern)}** - Current date. Follows the given pattern. Example: yyyy-MM-dd.

### Editing the XML Content

By default you can type only in elements which accept text content. So if the element is declared as empty or element only in the associated schema you are not allowed to insert text in it. This is also available if you try to insert CDATA inside an element. Instead a warning message is shown:



**Figure 155: Editing in empty element warning**

You can disable this behavior by checking the **Allow Text in empty or element only content** check box in the [Author preferences page](#).

Entire sections or chunks of data can be moved or copied by using the drag and drop support. The following situations can be encountered:

- when both the drag and drop sources are Author pages, an well-formed XML fragment is transferred. The section is balanced before dropping it by adding matching tags when needed.
- when the drag source is the Author page but the drop target is a text-based editor only the text inside the selection is transferred as it is.
- the text dropped from another text editor or another application into the Author page is inserted without changes.

The font size of the current WYSIWYG-like editor can be increased and decreased on the fly with the same actions as in the Text editor:

- **(Ctrl - NumPad+)** or **(Ctrl - +)** or **(Ctrl - mouse wheel forward)** - Increases font size.
- **(Ctrl - NumPad-)** or **(Ctrl - -)** or **(Ctrl - mouse wheel backward)** - Decreases font size.
- **(Ctrl - NumPad0)** or **(Ctrl - 0)** - Restores font size to *the size specified in Preferences*.

### Removing the Text Content of the Current Element

You can remove the text content of the current element and keep only the markup with the action  **Remove Text** available on the submenu **Refactoring** of the contextual menu and on the toolbar **XML Refactoring**. This is useful when the markup of an element must be preserved, for example a table structure but the text content must be replaced.

### Duplicating Elements with Existing IDs

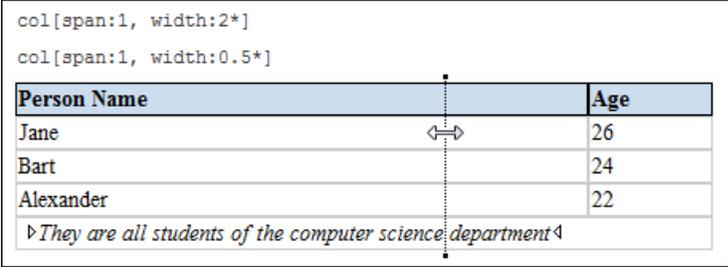
If the **Auto generate IDs for elements** option (available in the **ID Options** dialog from DITA, Docbook and TEI document types) is turned off and you duplicate elements with existing IDs, the duplicates lose these IDs. If the previously mentioned option is active, when you duplicate content, Oxygen makes sure that if there is an ID attribute set in the XML markup, the newly created duplicate has a new, unique ID attribute value. The option **Remove ID's when copying content in the same document** allows you to control if a pasted element should retain its ID.

### Table Layout and Operations

Oxygen XML Editor provides support for editing data in a tabular form. The following operations are available:

- adjusting column width:

You are able to manage table width and column width specifications from the source document. These specifications are supported both in fixed and proportional dimensions. The predefined frameworks (DITA, DocBook, and XHTML) also support this feature. The layout of the tables for these document types takes into account the table width and the column width specifications particular to them. To adjust the width of a column or table, drag the border of the column. The changes you make to a table are committed into the source document.



```
col[span:1, width:2*]
col[span:1, width:0.5*]
```

Person Name	Age
Jane	26
Bart	24
Alexander	22

They are all students of the computer science department

**Figure 156: Resizing a column in Oxygen XML Editor Author editor**

- column and row selection:

To select a row or a column of a table, place the mouse cursor above the column or in front of the row you want to select, then click. When you position the mouse cursor above a column or in front of a row, without clicking, Oxygen XML Editor only highlights the column or the row. When you make a selection, Oxygen XML Editor changes the

cursor to  for row selection and to  for column selection.

- drag and drop:

You can use the drag and drop action to edit the content of a table. You are able to select a column and drag it to another location in the table you are editing. When you drag a column and hover the cursor over a valid drop position, Oxygen XML Editor decorates the target location with bold rectangles. The same drag and drop action is also available for rows.

- copy-paste and cut for columns and rows:

In Oxygen XML Editor, you are able to copy entire rows or columns of the table you are editing. You can paste a copied column or row both inside the source table and inside other tables. The cut operation is also available for rows and columns. You can use the cut and the copy-paste actions for tables located in different documents as well.

-  **Note:** When you paste a column in a non-table content, Oxygen XML Editor introduces a new table which contains the fragments of the source column. The fragments are introduced starting with the header of the column.
-  **Note:** When you copy a column of a CALS table, Oxygen XML Editor preserves the width information of the column. This information is then used when you paste the column in another CALS table.

- content deletion:

To delete only the content of a table, select a row or column and press either delete, or backspace on your keyboard.

To delete an entire row or column, use  **Delete a table row** or  **Delete a table column**.

### DocBook Table Layout

The DocBook table layout supports two models: CALS and HTML.

In the CALS model, you can specify column widths using the `colwidth` attribute of the associated `colspec` element. The values can be fixed or proportional. By default, when you insert, drag and drop, or copy/paste a column, the value of the `colwidth` attribute is `1*`.

▼ *Sample CALS Table with no specified width and proportional column widths*

```

colspec[colname:c1, colnum:1, colwidth:1*]
colspec[colname:c2, colnum:2, colwidth:1.5*]
colspec[colname:c3, colnum:3, colwidth:0.7*]
colspec[colname:c4, colnum:4, colwidth:0.5*]
colspec[colname:c5, colnum:5, colwidth:1.7*]

```

Horizontal Span		a3	a4	a5
f1	f2	f3	f4	f5
b1	b2	b3	b4	▷Vertical◁
c1	Spans ▷Both◁		c4	Span
d1	directions		d4	d5

**Figure 157: CALS table**

### XHTML Table Layout

The HTML table model accepts both table and column widths. Oxygen XML Editor uses the `width` attribute of the `table` element and the `col` element associated with each column. Oxygen XML Editor displays the values in fixed units, proportional units, or percentages.

*Sample HTML Table with fixed width and proportional column widths*

```

col[span:1, width:2.0*]
col[span:1, width:0.5*]

```

Person Name	Age
Jane	26
Bart	24
Alexander	22
▷They are all students of the computer science department◁	

**Figure 158: HTML table**

### DITA Table Layout

Depending on the context, the DITA table layout accepts CALS tables, simple tables, and choice tables.

The simple tables accept only relative column width specifications by using the `relcolwidth` attribute of the `simpletable` element.

Header 1	Header 2
Column 1	Column 2

**Figure 159: DITA simple table**

You can insert choice tables in DITA tasks either using the content completion assistant or using the toolbar and contextual menu actions.

## Image Rendering

The **Author** editor and the output transformation process might render differently the images referenced in the XML document, since they use different rendering engines. The following image formats are supported by default: GIF, JPEG, PNG, SVG, BMP. Oxygen XML Editor also provides experimental support for *CGM images*.

Supported image formats:

- Oxygen XML Editor comes with built-in support for GIF, JPG, JPEG, PNG, SVG, BMP;
- to extend the Oxygen XML Editor support for TIFF, JPEG 2000, WBMP, EPS, and AI, *install the Java Advanced Imaging (JAI) Image I/O Tools plug-in*;
- you are also able to extend the Oxygen XML Editor support for *CGM images*.

When an image cannot be rendered, Oxygen XML Editor **Author** mode displays a warning message that contains the reason why this is happening. Possible causes:

- the image is too large. Enable *Show very large images* option;
- the image format is not supported by default. It is recommended to *install the Java Advanced Imaging(JAI) Image I/O Tools plug-in*.

## Scaling Images

Image dimension and scaling attributes are taken into account when an image is rendered. The following rules apply:

- if you specify only the width attribute of an image, the height of the image is proportionally applied;
- if you specify only the height attribute of an image, the width of the image is proportionally applied;
- if you specify width and height attributes of an image, both of them controls the rendered image;
- if you want to scale proportionally both the width and height of an image, use the *scale* attribute.

### *Installing Java Advanced Imaging(JAI) Image I/O Tools plug-in*

Follow this procedure:

1. Start Oxygen XML Editor and open the **Help > About** dialog. Open the **System properties** tab and look for *java.runtime.name* and *java.home* properties. Keep their values for later use.
2. *Download* the JAI Image I/O kit corresponding to your operating system and Java distribution (found in the *java.runtime.name* property).  
Please note that the JAI API is not the same thing as JAI Image I/O. Make sure you have installed the latter.
3. Execute the installer. When the installation wizard displays the **Choose Destination Location** page, fill-in the **Destination Folder** field with the value of the *java.home* property. Continue with the installation procedure and follow the on-screen instructions.

## Mac OS X Workaround

There is no native implementation of JAI Image I/O for Mac OS X 10.5 and later. However, the JAI Image I/O has a Java implementation fallback which also works on Mac OS X. Some of the image formats are not fully supported in this fallback mode, but at least the TIFF image format is known to be supported.

1. Download a Linux(tar.gz) distribution of JAI Image I/O from:  
<http://download.java.net/media/jai-imageio/builds/release/1.1/> e.g.  
jai\_imageio-1\_1-lib-linux-amd64.tar.gz
2. In the Oxygen/lib directory create a directory named endorsed e.g. Oxygen/lib/endorsed.
3. Unpack the tar.gz and navigate to the lib directory from the unpacked directory. e.g. jai\_imageio-1\_1/lib. Copy the jar files from there(clibwrapper\_jiio.jar and jai\_imageio.jar) to the Oxygen/lib/endorsed directory.
4. Restart the application and the JAI Image I/O support will be up and running.

### Customize Oxygen XML Editor to Render CGM Images (Experimental Support)

Oxygen XML Editor provides experimental support for CGM 1.0 images.



**Attention:** Image hotspots are not supported.

Since it is an experimental support, some graphical elements might be missing from the rendered image.

The CGM rendering support is based on a third party library. In its free of charge variant it renders the images watermarked with the string Demo, painted across the panel. You can find more information about ordering the fully functioning version here: <http://www.bdaum.de/cgmpanel.htm>.

Follow this procedure to enable the rendering of CGM images in **Author** mode:

1. Download the CGMPANEL.ZIP from <http://www.bdaum.de/CGMPANEL.ZIP>.
2. Unpack the ZIP archive and copy the cgmpanel.jar into OXYGEN\_INSTALL\_DIR\lib directory.
3. Restart the application.

### Customize Oxygen XML Editor to Render EPS and AI Images

Most EPS and AI image files include a preview picture of the content. Oxygen XML Editor tries to render this preview picture. The following scenarios are possible:

- the EPS or AI image does not include the preview picture. Oxygen XML Editor cannot render the image.
- the EPS image includes a TIFF preview picture. [Install the Java Advanced Imaging\(JAI\) Image I/O Tools plug-in](#).



**Note:** Some newer versions of the TIFF picture preview are rendered in gray-scale.

- the AI image contains a JPEG preview picture. Oxygen XML Editor renders the image correctly.

## Adding an Image

To insert an image in a document while editing in **Author** mode, use one of the following methods:

- Click the  **Insert Image Reference** action from the toolbar and choose the image file you want to insert. Oxygen XML Editor tries to reference the image with a path that is relative to that of the document you are currently editing. For example, if you want to add the file:/C:/project/xml/dir/img1.jpg image into file:/C:/project/xml/doc1.xml document, Oxygen XML Editor inserts a reference to dir/img1.jpg. This is useful when multiple users work on a common project and they have it stored in different locations in their computers.



**Note:** The  **Insert Image Reference** action is available for the following document types: DocBook 4, DocBook 5, DITA, TEI P4, TEI P5, XHTML.

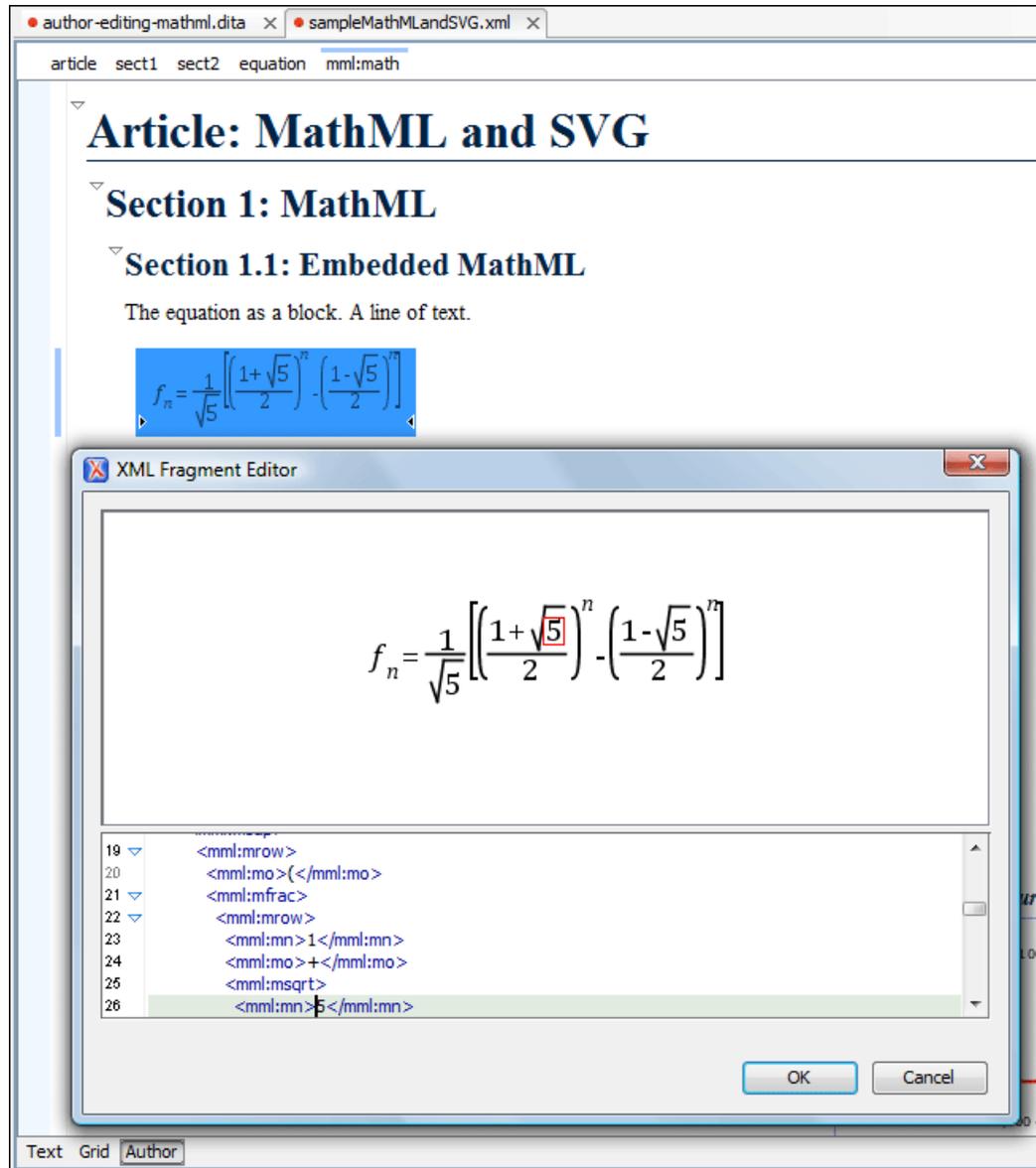
- Drag an image from other application and drop it in the **Author** editor. If it is an image file, it is inserted as a reference to the image file. For example, in a DITA topic the path of the image file is inserted as the value of the href attribute in an image element:

```
<image href="../../../images/image_file.png"/>
```

- Copy the image from other application (like an image editor) and paste it in your document. Oxygen XML Editor prompts you to first save it. After saving the image to a file, a reference to that file path is inserted at the drop position.

## Editing MathML Notations

The **Author** editor includes a built-in editor for *MathML* notations. To start the *MathML* editor, either double click a *MathML* notation, or select the **Edit Equation** action from its contextual menu. In the *MathML* editor you are able to edit the mathematical symbols of a *MathML* notation. You can open a *MathML* file of your current project directly in the *MathML* editor. To do this, select **Open with > MathML editor** from the contextual menu in the **Project** view.



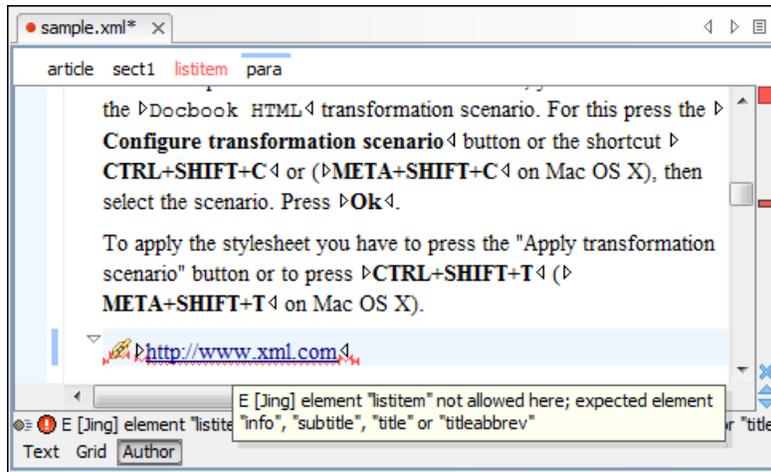
**Figure 160: The default *MathML* editor**

To customize the font size of the mathematical symbols and the *MathFlow* SDK, go to **Options > Preferences > Editor > Edit modes > Author > MathML**.

### Configure the *MathFlow* Editor

The *MathFlow* Components (the *MathFlow* SDK) can replace the default *MathML* editor with a specialized *MathML* editor. You have to [purchase a \*MathML\* component from Design Science](#) and configure it in Oxygen XML Editor with the following procedure:





**Figure 162: Error presenting in Oxygen XML Editor Author editor**

A fragment with a validation error or warning will be marked by underlining the error region with a red color. Also a red sign will mark the position of that line on the right side ruler of the editor panel. The same will happen for a validation warning, only the color will be yellow instead of red.

The ruler on the right of the document is designed to display the errors found during the validation process and also to help the user to locate them more easily. The ruler contains the following areas:

- The top area - a success validation indicator that will turn green in case the validation succeeded or red otherwise. A more detailed report of the errors is displayed in the tool tip. In case there are errors, only the first three of them will be presented in the tool tip.
- The middle area - the errors markers are depicted in red (with a darker color tone for the current selected one). The number of markers shown can be limited by modifying the setting **Options > Preferences > Editor > Document checking > Limit error markers to**.

Clicking on a marker will highlight the corresponding text area in the editor. The error message is displayed both in the tool tip and in the error area on the bottom of the editor panel.

The *Document checking user preferences* are easily accessible from the button displayed at the beginning of the error message on the bottom of the editor panel.

- The bottom area - two navigation arrows that will go to the next or to the previous error and a button for clearing all the error markers from the ruler. The same actions can be triggered from **Document > Automatic validation > Next error (Ctrl + .)** and **Document > Automatic validation (Ctrl + .) > Previous error (Ctrl + ,)**.

The validation status area is the line at the bottom of the editor panel that presents the message of the current validation error. Clicking on  opens the *Document checking* page in Oxygen XML Editor user preferences.

Status messages from every validation action are logged into the *Information view*.

## Whitespace Handling

There are several major aspects of white-space handling in the Oxygen XML Editor Author editor which are important in the following cases:

- when opening documents
- when switching from other editing mode to Author mode
- when saving documents in Author mode
- when switching from Author mode to another one
- **Open documents** - When deciding if the white-spaces from a text node are to be preserved, normalized or stripped, the following rules apply:

- If the text node is inside an element context where the `xml:space="preserve"` is set then the white-spaces are preserved.
- If the CSS property `white-space` is set to `pre` for the node style then the white-spaces are preserved.
- If the text node contains other non-white-space characters then the white-spaces are normalized.
- If the text node contains only white-spaces:
  - If the node has a parent element with the CSS `display` property set to `inline` then the white-spaces are normalized.
  - If the left or right sibling is an element with the CSS `display` property set to `inline` then the white-spaces are normalized.
  - If one of its ancestors is an element with the CSS `display` property set to `table` then the white-spaces are striped.
  - Otherwise the white-spaces are ignored.
- **Save documents** - The Author editor will try to format and indent the document while following the white-space handling rules:
  - If text nodes are inside an element context where the `xml:space="preserve"` is set then the white-spaces are written without modifications.
  - If the CSS property `white-space` is set to `pre` for the node style then the white-spaces are written without any changes.
  - In other cases the text nodes are wrapped.

Also, when formatting and indenting an element that is not in a space-preserve context, additional line separators and white-spaces are added as follows:

- Before a text node that starts with a white-space.
  - After a text node that ends with a white-space.
  - Before and after CSS `block` nodes.
  - If the current node has an ancestor that is a CSS `table` element.
- **Editing documents** - You can insert space characters in any text nodes. Line breaks are permitted only in space-preserve elements. Tabs are marked in the space-preserve elements with a little marker.

### Minimize Differences Between Versions Saved on Different Computers

The number of differences between versions of the same file saved by different content authors on different computers can be minimized by imposing the same set of formatting options when saving the file, for all the content authors. An example for a procedure that minimizes the differences is the following.

1. Create an Oxygen XML Editor project file that will be shared by all content authors.
2. Set your own preferences in the following panels of the **Preferences** dialog: **Editor / Format** and **Editor / Format / XML**.
3. Save the preferences of these two panels in the Oxygen XML Editor project by selecting the button **Project Options** in these two panels.
4. Save the project and commit the project file to your versioning system so all the content authors can use it.
5. Make sure the project is opened in the **Project** view.
6. Open and save your XML files in the Author mode.
7. Commit the saved XML files to your versioning system.

When other content authors will change the files only the changed lines will be displayed in your diff tool instead of one big change that does not allow to see the changes between two versions of the file.

## Review

### Tracking Document Changes

**Track Changes** is a way to keep track of the changes you make to a document. To activate track changes for the current document, either choose **Edit > Review > Track Changes** or click the **Track Changes** button on the **Author Review** toolbar. When **Track Changes** is enabled, your modifications are highlighted using a distinctive color. The name of the author who is currently making changes and the colors can be customized from the *Review* preferences page.

Docbook 4 supports also the **XHTML** tables:

*Sample XHTML Table with fixed width and proportional column widths*

```
col[span:1, width:2.08*]
col[span:1, width:0.46*]
```

Person Name	Age
Jane	26
Bart	24
Alexander	22
John	25

*They belong are all students of the computer science department*

Inserted by John Doe  
 Wed Apr 08 16:10:32 EEST 2009

This is a list of useful **XML** links:

**Figure 163: Change Tracking in Author Mode**

When hovering a change the tooltip displays information about the author and modification time.

**Track Changes** highlights textual changes. Editing attributes or performing a **split** or **surround with** operation are not highlighted by **Track Changes**. The following table offers you a detailed view of the tracked and untracked changes:

Tracked Changes	Untracked Changes
Inserting, deleting content (text or elements).	Editing attributes.
Drag and drop content (text or elements).	Performing a <b>Surround with</b> operation.
Cutting, or pasting content (text or elements).	Performing a <b>Split</b> operation.
Inserting, deleting and changing the structure of tables	
Inserting and editing lists and their content	
Inserting and deleting entities	
Deleting element tags	

If the selection in the **Author** contains track changes and you are copying it, the clipboard contains the selection with all the *accepted* changes. This filtering is performed only if the selection is not entirely inside a tracked change.

 **Tip:** The changes are stored in the document as processing instructions and they do not interfere with validating and transforming it. For each change the author name and the modification time are preserved. The following processing instructions are examples of storing *insert* and *delete* changes in the document:

- `<?oxy_insert_start author="John Doe" timestamp="20090408T164459+0300"?>all<?oxy_insert_end?>`
- `<?oxy_delete author="John Doe" timestamp="20090508T164459+0300" content="belong"?>`

 **Note:** The **Outline** view is synchronized with the **Track Changes**. Deleted content is rendered with a strike through in the **Outline** view.

## Adding Comments into a Document

You can associate a note or a comment to a selected area of text content. Comments can highlight virtually any content from your document, except *read-only* text. The difference between such comments and change tracking is that a comment can be associated to an area of text without modifying or deleting the text.

The actions for managing comments are **Add Comment...**, **Edit Comment...**, **Delete Comment...** and **Manage Comments...** and are available on the **Author Review** toolbar and on the **Review** submenu of the contextual menu of Author editor.

 **Tip:** The comments are stored in the document as processing instructions containing information about the author name and the comment time:

```
<?oxy_comment_start author="John Doe" timestamp="20090508T164459+0300" comment="Do not change this content"?>
  Important content
<?oxy_comment_end?>
```

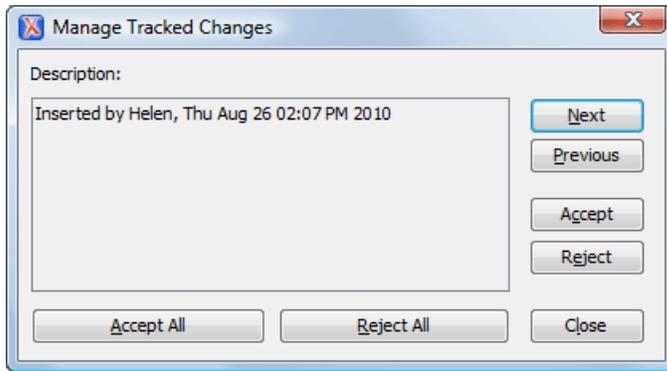
Comments are persistent highlights with a colored background. The background color is customizable or can be assigned automatically by the application. This behavior can be controlled from the [Review options page](#).

## Managing Changes

You can review the changes you or other authors made and then accept or reject them using the **Track Changes** toolbar

buttons  or the similar actions from the **Edit > Review** menu.

- **Track Changes** - Enables or disables track changes support for the current document.
- **Accept Change(s)** - Accepts the change located at the caret position. If you select a part of a delete or insert change, then only the selected content is accepted. If you select multiple changes, all of them are accepted. For an insert change, it means keeping the inserted text and for a delete change it means removing the content from the document.
- **Reject Change(s)** - Rejects the change located at the caret position. If you select a part of a delete or insert change, then only the selected content is rejected. If you select multiple changes, all of them are rejected. For an insert change, it means removing the inserted text and for a delete change it means preserving the original content from the document.
- **Comment Change** - You can decide to add additional comments to an already existing change. The additional description appears in the tooltip when hovering over the change and in the **Manage Tracked Changes** dialog when navigating changes.
- **Manage Tracked Changes** - Action designed to find and manage all changes in the current document.



**Figure 164: Manage Tracked Changes**

The dialog offers the following actions:

- **Next** - Finds the next change in the document.
- **Previous** - Finds the previous change in the document.
- **Accept** - Accepts the current change. This action is also available on the contextual menu.
- **Reject** - Rejects the current change. This action is also available on the contextual menu.
- **Accept All** - Accepts all changes in the document.
- **Reject All** - Rejects all changes in the document.

The dialog is not modal and it is reconfigured after switching between the dialog and one of the opened editors.

### Track Changes Visualization Modes

Three specialized actions allow you to switch between the following visualization modes:

-  **View All Changes/Comments** - this mode is active by default. When you use this mode, all tracked changes are represented in the Author mode;
-  **View Final** - this mode offers a preview of the document as if all tracked changes (both inserted and deleted) were accepted;
-  **View Original** - this mode offers a preview of the document as if all tracked changes (both inserted and deleted) were rejected. You cannot edit the document in this mode. Attempting to do so switches the view mode to **View All Changes**.

 **Note:** All three actions are available only in a drop-down list in the **Author Review** toolbar.

 **Note:** If you use  **View Final** mode and  **View Original** mode, highlighted comments are not displayed. To display highlighted comments, use  **View All Changes/Comments**.

### Track Changes Behavior

This section explains the behaviour of the **Track Changes** feature depending on the context and whether it is activated.

You can use the **Track Changes** feature to keep track of multiple actions.

What do you want to do?

- *Keep tracking of inserted content;*
- *Keep tracking of deleted characters;*
- *Keep tracking of deleted content;*
- *Keep tracking of copied content;*
- *Keep tracking of pasted content.*

### *Keep Tracking of Inserted Content*

When **Track Changes** is disabled and you insert content, the following cases are possible:

- making an insertion in a **Delete** change - the change is split in two and the content is inserted without being marked as change;
- making an insertion in a **Delete** change - the change is split in two and the content is inserted without being marked as change;
- making an insertion in an **Insert** change, the change is split in two and the content is inserted without being marked as change;
- making an insertion in regular content - regular insertion.

When **Track Changes** is enabled and you insert content, the following cases are possible:

- making an insertion in a **Delete** change - the change is split in two and the current inserted content appears marked as an INSERT;
- making an insertion in an **Insert** change:
  - if the original insertion was made by another user, the change is split in two and the current inserted content appears marked as an INSERT by the current author;
  - if the original **Insert** change was made by the same user, the change is just expanded to contain the inserted content. The creation time-stamp of the previous insert is preserved;
  - if we insert in regular content, the current inserted content appears marked as an **Insert** change.

### *Keep Tracking of Deleted Characters*

When **Track Changes** is disabled and you delete content character by character, the following cases are possible:

- deleting content in an existing **Delete** change - nothing happens;
- deleting content in an existing **Insert** change - the content is deleted without being marked as a deletion and the INSERT change shrinks accordingly;
- deleting in regular content - regular deletion.

When **Track Changes** is enabled and you delete content character by character, the following cases are possible:

- deleting content in an existing **Delete** change:
  - if the same author created the **Delete** change, the previous change is marked as deleted by the current author;
  - if another author created the **Delete** change, nothing happens.
- deleting content in an existing **Insert** change:
  - if the same author created the **Insert** change, the content is deleted and the **Insert** change shrinks accordingly;
  - if another author created the **Insert** change, the **Insert** change is split in two and the deleted content appears marked as a **Delete** change by the current author.
- deleting in regular content - the content is marked as **Delete** change by the current author.

### *Keep Tracking of Deleted Content*

When **Track** changes is disabled and you delete selected content, the following cases are possible:

- the selection contains an entire **Delete** change - the change disappears and the content is deleted;
- the selection intersects with a **Delete** change (starts or ends in one) - nothing happens;
- the selection contains an entire **Insert** change - the change disappears and the content is deleted ;
- the selection intersects with an **Insert** change (starts or ends in one), the **Insert** change is shrieked and the content is deleted.

When **Track** changes is enabled and you delete selected content, the following cases are possible:

- the selection contains an entire **Delete** change - the change is considered as rejected and then marked as deleted by the current author, along with the other selected content;

- the selection intersects a **Delete** change (starts or ends in one) - the change is considered as rejected and marked as deleted by the current author, along with the other selected content;
- the selection contains an entire **Insert** change:
  - if the **Insert** is made by the same author, the change disappears and the content is deleted;
  - if the **Insert** is made by another author, the change is considered as accepted and then marked as deleted by the current author, along with the other selected content;
- if the selection intersects an **Insert** change (starts or ends in one), the **Insert** change shrinks and the part of the **Insert** change that intersects with the selection is deleted.

#### *Keep Tracking of Copied Content*

When **Track Changes** is disabled and you copy content the following cases are possible:

- if the copied area contains **Insert** or **Delete** changes, these are also copied to the clipboard.

When **Track Changes** is enabled and you copy content the following cases are possible:

- if the copied area contains **Insert** or **Delete** changes, these are all accepted in the content of the clipboard (the changes will no longer be in the clipboard).

#### *Keep Tracking of Pasted Content*

When **Track Changes** is disabled and you paste content the following cases are possible:

- if the clipboard content contains INSERT OR DELETE changes, they will be preserved on paste.

When **Track Changes** is enabled and you paste content the following cases are possible:

- if the clipboard content contains **Insert** or **Delete** changes, all the changes are accepted and then the paste operation proceeds according to the insertion rules.

### **Track Changes Limitations**

Recording changes has limitations and there is no guarantee that rejecting all changes will return the document to exactly the same state in which it originally was. Some of the limitations are listed below:

1. Attribute modifications are not recorded by change tracking.
2. Recorded changes are not hierarchical, a change cannot contain other changes inside. For example, if you delete an insertion made by another user, then reject the deletion, the information about the author who made the previous insertion is not preserved.
3. Surrounding a selection with a certain element is not (yet) recorded as a change.

### **Track Changes Markup**

Depending on the type of your edits, the following track changes markup appears in a document when you activate the

 **Track Changes** feature:

<b>Edit Type</b>	<b>Element Start Tag</b>	<b>Element End Tag</b>	<b>Element Attributes</b>
Insertion	<?oxy_insert_start?>	<?oxy_insert_end?>	author, timestamp
Deletion	<?oxy_delete?>	_	author, timestamp, content
Comment	<?oxy_comment_start?>	<?oxy_comment_end?>	author, timestamp, comment, mid

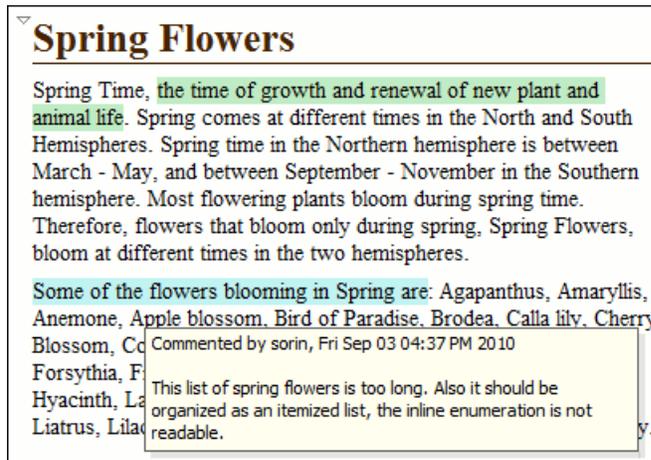
In case a comment is intersecting with another, the mid attribute is used to correctly identify start tags and end tags.

### Intersecting Comments Markup

```
<?oxy_comment_start author="Andrew" timestamp="20130111T151520+0200" comment="Do we have a
task about pruning trees?"?>Unpruned
  <?oxy_comment_start author="Matthew" timestamp="20130111T151623+0200" comment="What time
of the year do they flower?" mid="3"?>lilacs<?oxy_comment_end?>
  flower reliably every year<?oxy_comment_end mid="3"?>
```

## Managing Comments

A comment is marked in Author editor with a background color which can be configured for each user name.



**Figure 165: Manage Comments in Author Editor**

You can manage comments using the following actions:

-  **Add Comment...** - Allows you to insert a comment at the cursor position or on a specific selection of content. The action is available on the Author toolbar.
-  **Edit Comment...** - Allows you to change an existing content. The action is available both on the Author toolbar and the contextual menu.
-  **Manage Comments...** - Opens a dialog that allows you to manage all comments contained in the current document. You can cycle through comments, edit, and remove individual comments or all comments. The action is available on the Author toolbar.
-  **Remove Comment(s)...** - Removes the comment at the cursor position or all comments found in the selected content. The action is available on the Author contextual menu, **Review** sub-menu.

## Managing Highlights

Use the  **Highlight** tool to mark the text in your document using different colours.

You can find the  **Highlight** option on the main toolbar, in the **Edit > Review** menu, or in the contextual menu of a document, in the **Review** list of options.

What do you want to do?

- *Mark selected text;*
- *Mark fragments of the document you are editing;*
- *Remove highlighting.*

 **Tip:** In case the  **Highlight** tool is not available on your toolbar, enable **Author Comments** in the contextual menu of the toolbar.

 **Note:** Oxygen XML Editor keeps the highlighting of a document between working sessions.

## Mark Selected Text

To mark the text you select in a document, follow these steps:

1. Select the text you want to highlight.

 **Note:** To mark more than one part of the document you are editing, press and hold **Ctrl** and using your cursor select the parts you want to highlight.

2. Click the small arrow next to the  **Highlight** icon and select the colour that you want to use for highlighting. The selected text is highlighted.
3. Click the **Highlight** icon to exit the highlighting mode.

## Mark Document Fragments

To mark fragments in a document, follow these steps:

1. Click the  **Highlight** icon on the toolbar. The highlighting mode is on. The cursor changes to a dedicated symbol that has the same color with the one set in the **Highlight** palette.
2. Select the text you want to highlight with your cursor.
3. To highlight different fragments using multiple colors, click the small arrow next to the  **Highlight** icon, choose the colour that you want to use for highlighting, and repeat **step 2**. The fragments are highlighted.
4. To exist the highlighting mode, press **Esc** on your keyboard, click the  **Highlight** icon, or start editing the document.

## Remove Highlighting from the Entire Document or Part of It.

To remove highlighting from the document you are editing, follow these steps:

1. Select the text you want to remove highlighting from using your cursor, or press **CTRL+A** in case you want to select all of the text.
2. Click the small arrow next to the  **Highlight** icon and select **No color (erase)**. The highlighting is removed.
3. Click the **Highlight** icon to exit the highlighting mode.

## Author Callouts

A *callout* is a vertical stripe, with a balloon-like look, that Oxygen XML Editor displays in the right side of the editing area. Callouts are decorated with a colored border and also have a colored background. A horizontal line, which has the same color as the border, connects text fragments with their corresponding callouts. Oxygen XML Editor assigns an individual color for the callouts depending on the user who is editing the document. To customize the list of these colors, go to **Options > Preferences > Editor > Edit Modes > Author > Review**. You are able to add, edit, or remove colors in this list. You can choose to use the same color for any user who modifies the content or inserts a comment. To do this, select the **fixed** option and choose a color from the color box. Once you set a fixed color for a user you are able to edit it. Press the color box and select a different color from the **Choose color** dialog box.

Oxygen XML Editor uses callouts to provide an enhanced view of the changes you, or other authors make to a document. They hold specific information depending on their type. In addition, Oxygen XML Editor uses callouts to display *comments* that you associate with fragments of the document you are editing. For more information about editing comments, go to [Managing Comments](#). To enable callouts, go to **Options > Preferences > Editor > Edit Modes > Author > Review > Callouts**. Enable the following options:

- **Comments** - Oxygen XML Editor displays comment callouts when you insert a comment. You can use two types of comments in Oxygen XML Editor:

- author review comments: comments that you associate with specific fragments of text;
- change comments: comments that you add in an already existing insertion or deletion callout.

By default, the fragment of text that you comment is highlighted and a horizontal line connects it with the comment callout. A comment callout contains the name of the author who inserts the callout and the comment itself. To customize the content of a comment callout and display the date and time of its insertion, go to **Options > Preferences > Editor > Edit Modes > Author > Review > Callouts** and enable **Show review time**;



**Figure 166: Comment Callouts**

- **Track Changes deletions** - Oxygen XML Editor displays deletion callouts when you delete a fragment of text. By default, a deletion callout contains the type of callout (*Deleted*) and the name of the author that makes the deletion. You are able to customize the content of a deletion callout to display the date and time of the deletion and the deleted fragment itself. To do this, go to **Options > Preferences > Editor > Edit Modes > Author > Review > Callouts** and enable **Show review time** and **Show deleted content in callout**;

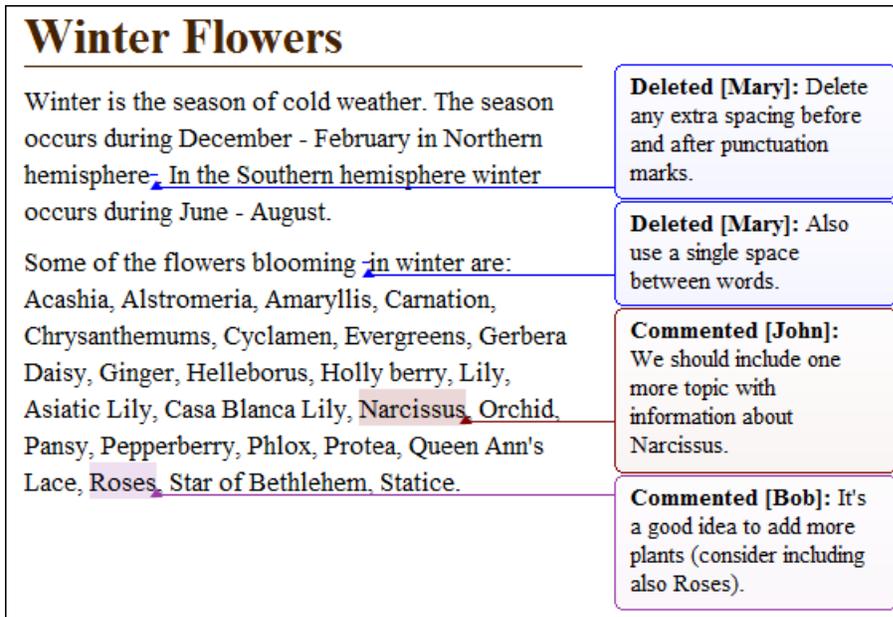


**Figure 167: Deletion Callouts**

- **Track Changes insertions** - Oxygen XML Editor displays insertion callouts when you insert a fragment of text. By default, an insertion callout contains the type of callout (*Inserted*) and the name of the author that makes the insertion. You are able to customize the content of an insertion callout to contain the date and time of the insertion and the inserted fragment itself. To do this, go to **Options > Preferences > Editor > Edit Modes > Author > Review > Callouts** and enable **Show review time** and **Show inserted content in callout**.



**Figure 168: Insertion Callouts**

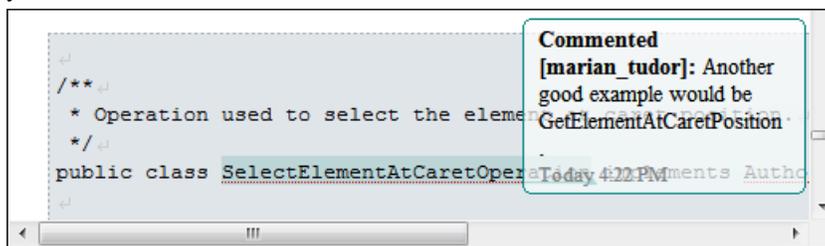


**Figure 169: Multiple Authors Callouts**

- 👉 **Note:** Oxygen XML Editor displays callouts only if **View All Changes/Comments** mode is selected. Oxygen XML Editor does not display callouts in **View Final** and **View Original** modes.

To select a callout, either click the callout or its source. Selected callouts have a more intense background and a bold border. The connecting line between the source and the callout is also rendered in bold font. If you select a fragment of text which is associated with one or more callouts, the callouts are highlighted.

- 👉 **Important:** The callouts are displayed in the right side of the editing area. However, in some cases, the text you are editing can span into the callouts area. For example, this situation can appear for callouts associated with wide images or space-preserve elements (like *codeblock* in DITA or *programlisting* in DocBook) which contain long fragments. To help you view the text under the covered area, Oxygen XML Editor applies transparency to these callouts. When the caret is located under a callout, the transparency is enhanced, allowing you both to edit the covered content and to access the contextual menu of the editing area.



**Figure 170: Transparent Callout**

- 👉 **Note:** Oxygen XML Editor does not display callouts located in folded areas of the edited document.

The following actions are available in the contextual menu of an insertion, or deletion callout:

- **Accept Change:** select this option to accept the changes you or other authors make to a document;
- **Reject Change:** select this option to reject the changes you or other authors make to a document;
- **Comment Change:** select this option to comment an existing change in your document. You are also able to add a comment to a change from the **Comment Change** button available on the **Author Review** toolbar;
- **Callouts Options:** select this option to open the [preferences page](#) of the callouts.

The following options are available in the contextual menu of the comment callouts:

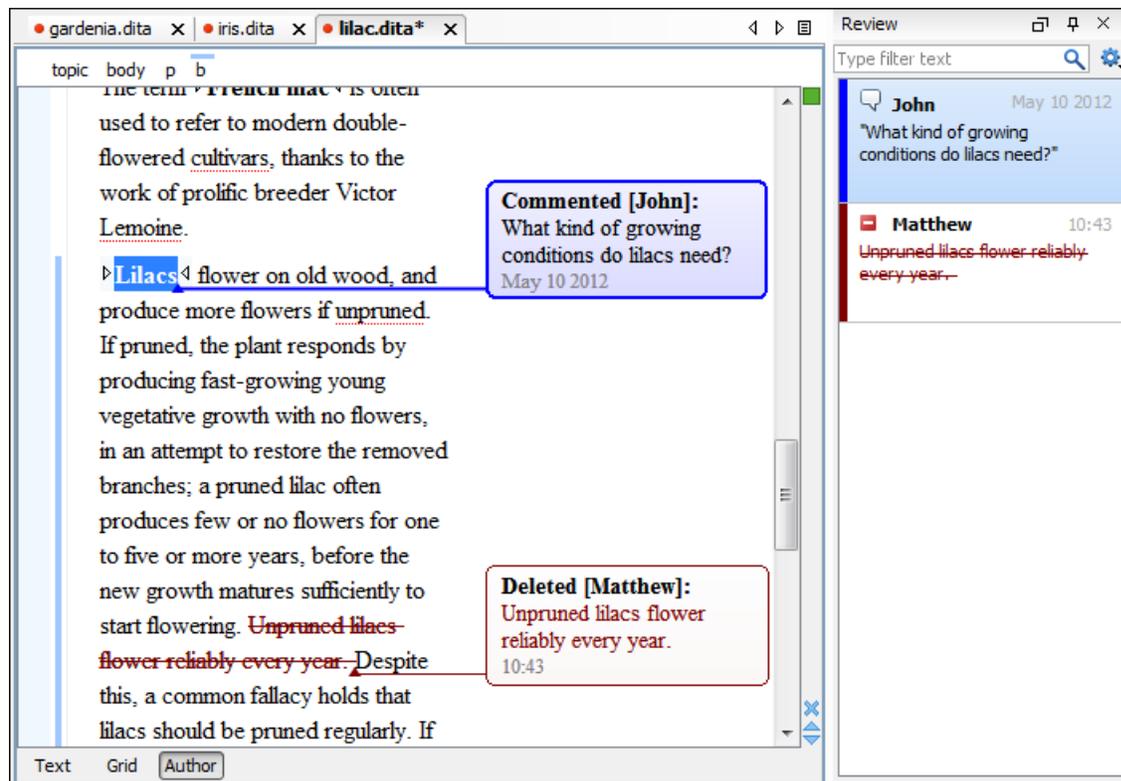
- **Edit Comment:** select this option to modify the content of a comment callout;
  - 👉 **Note:** The text area is disabled if you are not the author which inserted the comment.
- **Remove Comment:** select this option to remove a comment callout;
- **Callouts Options:** select this option to open the [preferences page](#) of the callouts.

When you print a document from Oxygen XML Editor, all callouts you, or other authors added to the document are printed. For a preview of the document and its callouts, go to **File > Print preview....**

## The Review View

The **Review** view is a framework-independent panel, available both for built-in, and custom XML document frameworks. It is designed to offer an enhanced way of monitoring all the changes that you make to a document. This means you are able to view and control highlighted, commented, inserted, and deleted content from a single view.

The **Review** view is useful when you are working with documents that contain large quantities of edits. The edits are presented in a compact form, in the order they appear in the document. Each edit is marked with a type-specific icon.



**Figure 171: The Review View**

To activate the **Review** view, do one of the following:

- click the  **Manage reviews** button on the **Author Review** toolbar;
- right click in a document and from the contextual menu go to **Review, Manage reviews**;
- go to **Window > Show View > Review**.

This view and the editing area are synchronized. When you select an edit listed in the **Review** view, its corresponding fragment of text is highlighted in the editing area and. The reverse is also true. For example, when you place the caret inside an area of text marked as inserted, its corresponding edit is selected in the list.

The upper part of the view contains a filtering area which allows you to search for specific edits. The **Settings** allows you to:

- **Show highlights** - controls whether the **Review** view displays the highlighting in your document;
- **Show comments** - controls whether the **Review** view displays the comments in the document you are editing;
- **Show track changes** - controls whether the **Review** view displays the inserted and deleted content in your document;
- **Show review time** - displays the time when the edits from the **Review** view were made.

The following actions are available when you hover the edits in the **Review** view, using the cursor:

- **Remove** - this action is available for highlights and comments presented in the **Review** view. Use this action to remove these highlights or comments from your document;
- **Accept** - this action is available for inserted and deleted content presented in the **Review** view. Use this action to accept the changes in your document;
- **Reject** - this action is available for inserted and deleted content presented in the **Review** view. Use this action to reject the changes in your document.

Depending on the type of an edit, the following actions are available in its contextual menu in the **Review** view:

- **Show comment** - this option is available in the contextual menu of changes not made by you and of any comment listed in the **Review** view. Use this option to view a comment in the **Show comment** dialog;
- **Edit comment** - this option is available in the contextual menu of your comments, listed in the **Review** view. Use this action to start editing the comment;
- **Remove comment** - this option is available in the contextual menu of a comment listed in the **Review** view. Use this action to remove the selected comment;
- **Show only reviews by** - this option is available in the contextual menu of any edit listed in the **Review** view. Use this action to keep visible only the edits of a certain author in the view;
- **Remove all comments** - this option is available in the contextual menu of any comment listed in the **Review** view. Use this action to remove all the comments that appear in the edited document;
- **Change color** - opens a palette that allows you to choose a new color for the highlighted content;
- **Remove highlight** - removes the selected highlighting;
- **Remove highlights with the same color** - removes all the highlighting in a document that has the same color;
- **Remove all highlights** - clears all the highlighting in your document;
- **Accept change** - accepts the selected change;
- **Reject change** - rejects the selected change;
- **Comment change** - this option is available in the contextual menu of an insertion or deletion that you made. Use this option to open the **Edit comment** dialog and comment the change you made;
- **Accept all changes** - accepts all the changes made to a document;
- **Reject all changes** - rejects all the changes made to a document.

## Profiling / Conditional Text

Conditional text is a way to mark blocks of text meant to appear in some renditions of the document, but not in others. It differs from one variant of the document to another, while unconditional text appear in all document versions.

For instance you can mark a section of a document to be included in the manual designated for the *expert* users, other for the *novice* users manual while unmarked sections are included in any rendition.

You can use conditional text when you develop documentation for:

- a series of similar products
- different releases of a product
- various audiences

The benefits of using conditional text include reduced effort for updating and translating your content and an easy way to customize the output for various audiences.

Oxygen XML Editor comes with a preconfigured set of profiling attribute values for some of the most popular document types. These attributes can be redefined to match your specific needs. Also, you can define your own profiling attributes for a custom document type.

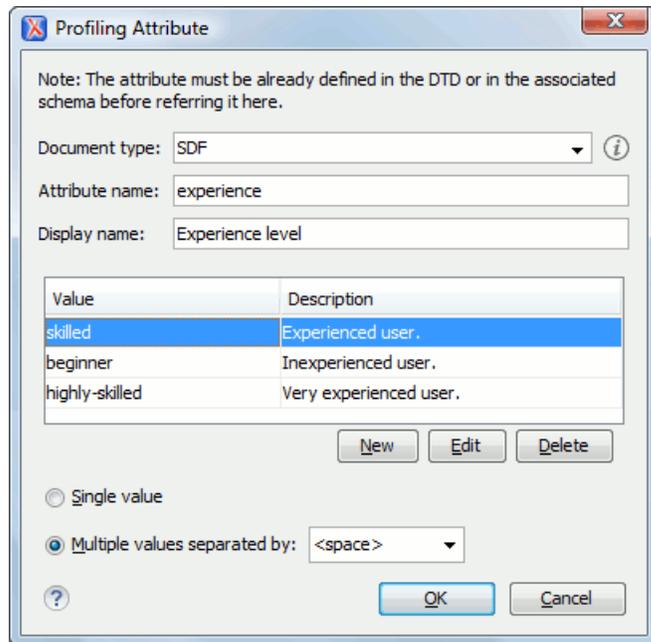
## Create Profiling Attributes

 **Note:** To ensure the validity of the document, the attribute must be already defined in the document DTD or schema before referring it here.

To create custom profiling attributes for a specific document type, follow these steps:

1. Open the **Profiling/Conditional Text** preferences page from application's toolbar **Options > Preferences > Editor > Edit modes > Author** menu .
2. In the **Profiling Attributes** area, press the **New** button.

The following dialog is opened:



3. Fill-in the dialog as follows:
  - a) Choose the document type on which the profiling attribute is applied. \* and ? are used as wildcards, while ,(comma character) can be used to specify more patterns. For example use *DITA\** to match any document type name that starts with *DITA*.
  - b) Set the attribute name.
  - c) Set a display name. This field is optional, being used only as a more descriptive rendering in application's profiling dialogs.
  - d) Use the **New**, **Edit**, **Delete** buttons to add, edit and delete possible values of the attribute. Each attribute value can have a description.
  - e) Choose whether the attribute accepts a single value (**Single value** option checked) or multiple values. Multiple values can be separated by a default delimiter (*space*, *comma*, *semicolon*), or a custom one, that must be supported by the specified document type. For example, the DITA document type only accepts spaces as delimiters for attribute values.
4. Click **OK**.
5. Click **Apply** to save the profiling attribute.

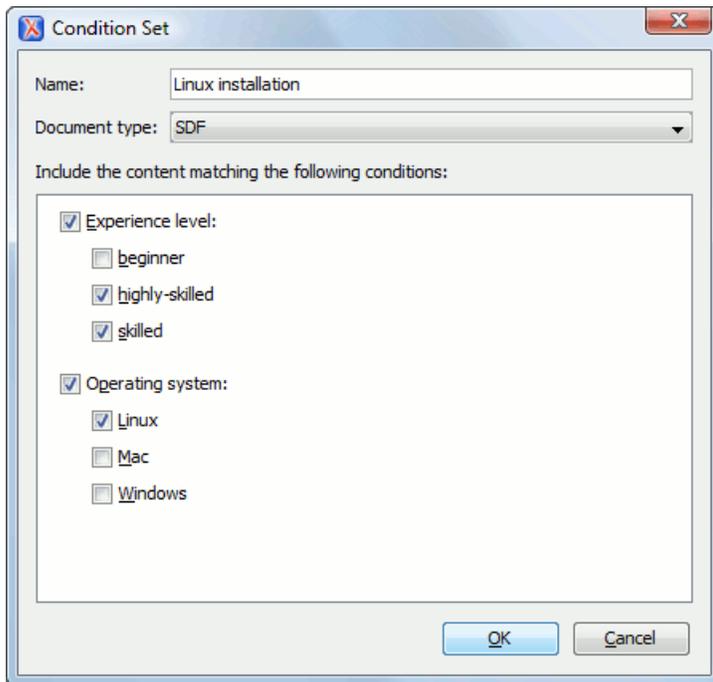
## Create Profiling Condition Sets

Several profiling attributes can be aggregated into a profiling condition set that allow you to apply more complex filters on the document content. A Profiling Condition Set is a very powerful and convenient tool used to preview the content that goes into the published output. For example, an installation manual available both in Windows and Linux variants can be profiled to highlight only the Linux procedures for more advanced users.

To create a new profiling condition set:

1. Open the **Profiling/Conditional Text** preferences page from application's toolbar **Options > Preferences > Editor > Edit modes > Author** menu .
2. In the **Profiling Condition Sets** area, press the **New** button.

The following dialog is opened:



3. Fill-in the dialog as follows:
  - a) Type the condition set's name.
  - b) Choose the document type for which you have previously defined profiling attributes.  
After choosing a document type, all profiling attributes and their possible values are listed in the central area of the dialog.
  - c) Define the combination of attribute values by ticking the appropriate checkboxes.
4. Click **OK**.
5. Click **Apply** to save the condition set. All saved profiling condition sets are available in the  **Profiling / Conditional Text toolbar menu**.

### Apply Profiling Condition Sets

All defined Profiling Condition Sets are available as shortcuts in the Profiling / Conditional Text menu. Just click on a menu entry to apply the condition set. The filtered content is grayed-out.

An element is filtered-out when one of its attributes is part of the condition set and its value does not match any of the value covered by the condition set.

As an example, let us suppose that you have the following document:

▼ **Spray painting**

**Short Description:** When paint is applied using a spray nozzle, it is referred to as spray painting.

**Context:**

▼ The garage is a good place to spray paint.

**Step 1**  
Move the car out of the garage to avoid getting paint on it. Audience [novice]

**Step 2**  
Place newspaper, cardboard, or a drop-cloth on the garage floor. Audience [expert]

**Step 3**  
Place the object to be painted on the covered area. Audience [expert] Other [prop2]

**Step 4**  
Follow the directions on the paint can to paint the object. Audience [expert] Other [prop1]

**Step 5**  
Let the paint dry thoroughly before you move the object. Audience [novice] Other [prop1]

If you apply the following condition set it means that you want to filter-out the content written for non-expert audience and having the *Other* attribute value different than *prop1*.

**Condition Set**

Name: Expert user

Document type: DITA\*

Include the content matching the following conditions:

- Audience:
  - expert
  - novice
- Platform:
  - linux
  - windows
- Product:
  - product1
  - product2
- Other:
  - prop1
  - prop2

? OK Cancel

And this is how the document looks like after you apply the *Expert user* condition set:

▼ **Spray painting**

**Short Description:** When paint is applied using a spray nozzle, it is referred to as spray painting.

**Context:**

▼ The garage is a good place to spray paint.

**Step 1**

Move the car out of the garage to avoid getting paint on it. Audience [novice]

**Step 2**

Place newspaper, cardboard, or a drop-cloth on the garage floor. Audience [expert]

**Step 3**

Place the object to be painted on the covered area. Audience [expert] Other [prop2]

**Step 4**

Follow the directions on the paint can to paint the object. Audience [expert] Other [prop1]

**Step 5**

Let the paint dry thoroughly before you move the object. Audience [novice] Other [prop1]

## Apply Profiling Attributes

Profiling attributes are applied on element nodes.

You can apply profiling attributes on a text fragment, on a single element, or on multiple elements in the same time. To profile a fragment from your document, select the fragment in the **Author** mode and follow these steps.

 **Note:** If there is no selection in your document, the profiling attributes are applied on the element at caret position.

1. Invoke the **Edit Profiling Attributes...** action from the contextual menu.

The displayed dialog shows all profiling attributes and their values, as defined on the document type of the edited content. The checkboxes corresponding with the values already set in the profiled fragment are enabled.

2. In the **Edit Profiling Attributes** dialog, enable the checkboxes corresponding to the attribute values you want to apply on the document fragment. The profiling attributes having different values set in the elements of the profiled fragment are marked with a gray background and they are disabled by default. You can change the values of these attributes by choosing the **Change Now** option associated with all attributes.
3. Click **OK** to finish the profiling configuration.

The attributes and attributes values selected in the **Edit Profiling Attributes** dialog are set on the elements contained in the profiled fragment.

If you select only a fragment of an element's content, this fragment is wrapped in phrase-type elements on which the profiling attributes are set. Oxygen XML Editor comes with predefined support for DITA and Docbook. For more developer-level customization options, see the [Customize Profiling Conditions](#) topic.

If **Show Profiling Attributes** option (available in the  **Profiling / Conditional Text toolbar menu**) is set, a light green border is painted around profiled text, in the **Author** mode. Also, all profiling attributes set on the current element are listed at the end of the highlighted block and in its tooltip message. To edit the attributes of a profiled fragment, click one of the listed attributes. A form control pops up and allows you to add or remove attributes using their checkboxes.

## Profiling / Conditional Text Menu

The  **Profiling / Conditional Text** toolbar menu groups the following actions:

- **Show Profiling Attributes** - Enable this option to turn on conditional text markers. They are displayed at the end of conditional text block, as a list of attribute name and their currently set values.
- The list of all profiling condition sets that match the current document type. Click on a condition set entry to activate it.
-  **Configure Profiling Condition Sets...** - Link to the [Profiling / Conditional Text](#) preference page, where you can manage profiling attributes and profiling condition sets.

## Smart Paste Support

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The *Smart Paste* capability was developed to help authors copy content from various sources (like web pages or office-type documents) and paste it into DITA, TEI, Docbook and XHTML documents. Oxygen XML Editor eases this process by keeping the original text styling (like bold, italics) and formatting (like lists, tables, paragraphs), while providing assistance to obtain a valid structured document.

The Oxygen XML Editor *Smart Paste* support encapsulates the following capabilities:

- The conversion of the copied content into valid DITA, Docbook, TEI and XHTML fragments:

Styled content can be inserted in the Author editor by copying or dragging it from:

- Office-type applications (**Microsoft Word** and **Microsoft Excel**, **OpenOffice.org Writer** and **OpenOffice.org Calc**);
- web browsers (like **Mozilla Firefox** or **Microsoft Internet Explorer**);
- the **Data Source Explorer** view (where resources are available from WebDAV or CMS servers).

The styles and general layout of the copied content like: sections with headings, tables, list items, bold, and italic text, hyperlinks, are preserved by the paste operation by transforming them to the equivalent XML markup of the target document type. This is available by default in the following *predefined document types*: [DITA](#), [DocBook 4](#), [DocBook 5](#), [TEI 4](#), [TEI 5](#), [XHTML](#).

This support is enabled by default, but you can disable it through the [Convert external content on paste](#) option, available in the **Schema Aware** preferences.

- Inserting the converted fragment at the correct location in the document.

This capability is controlled by the [Smart paste and drag and drop](#) option, available in the **Schema Aware** preferences.

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# Chapter

# 6

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## Author for DITA

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### Topics:

- [Creating DITA Maps and Topics](#)
- [Editing DITA Maps](#)
- [Transforming DITA Maps and Topics](#)
- [Available Output Formats](#)
- [DITA-OT Customization](#)
- [DITA Specialization Support](#)
- [Use a New DITA Open Toolkit in Oxygen XML Editor](#)
- [Reusing Content](#)
- [Moving and Renaming Resources](#)
- [DITA Profiling / Conditional Text](#)
- [Working with MathML](#)

This chapter presents the Author features that are specific for editing DITA XML documents.

## Creating DITA Maps and Topics

The basic building block for DITA information is the DITA topic. DITA provides the following topic types:

- *Concept* - For general, conceptual information such as a description of a product or feature.
- *Task* - For procedural information such as how to use a dialog.
- *Reference* - For reference information.

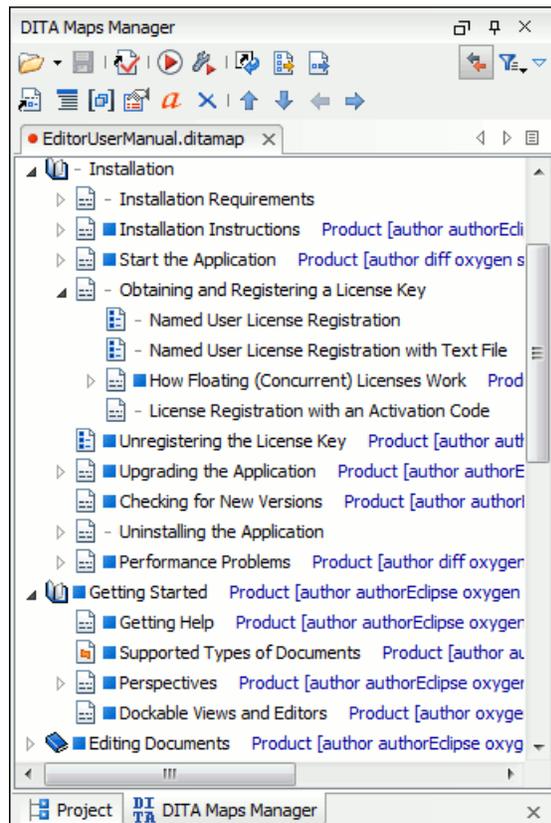
You can organize topics into a DITA map or bookmap. A map is a hierarchy of topics. A bookmap supports also book divisions such as chapters and book lists such as indexes. Maps do not contain the content of topics, but only references to them. These are known as topic references. Usually the maps and bookmaps are saved on disk or in a CMS with the extension '.ditamap'.

Maps can also contain relationship tables that establish relationships between the topics contained within the map. Relationship tables are also used to generate links in your published document.

You can use your map or bookmap to generate a deliverable using an output type such as XHTML, PDF, HTML Help or Eclipse Help.

## Editing DITA Maps

Oxygen XML Editor provides a special view for editing DITA maps. The **DITA Maps Manager** view presents a map in a simplified table-of-contents manner allowing the user to navigate easily to the referred topics and maps, make changes and perform transformations to various output formats using the DITA-OT framework bundled with Oxygen XML Editor.



**Figure 172: The DITA Maps Manager View**

The view supports opening multiple documents at the same time.

All files which have the extension `.ditamap` or `.bookmap` are open in the **DITA Maps Manager** view. In addition, you can right click the file in the **Project** view and select **Open with**. If you opened the DITA map file in the editor panel you can open it also in this special DITA map view by right clicking on the title tab of the editor panel and selecting the **Open in DITA Maps Manager** action from the popup menu.

Drag and drop operations are allowed inside the view. You can move topics inside the same map or between different maps by dragging and dropping them into the desired position. Also, you can copy topics by dragging them while pressing the **Ctrl** (**Meta** on Mac OS) key.

The toolbar includes the actions which are also available on menu **DITA Maps**:

-  **Reopen** - You can use this drop-down to reopen recently viewed DITA maps. Apart from the history of the recently viewed DITA maps, the drop-down also contains the **Clear history**,  **Open**, and  **Open URL** actions;
  - **Clear history** - Removes the list with the recently viewed DITA maps;
  -  **Open** - Allows opening the map in the **DITA Maps Manager** view. You can also open a map by dragging it in the **DITA Maps Manager** view from the file system explorer;
  -  **Open URL** - Allows opening remote maps in the **DITA Maps Manager** view. See [Open URL](#) for details;
  - **Open from Data Source Explorer** - Allows you to open a DITA Map from a data source explorer;
  -  **Save (Ctrl+S)** - Saves the current DITA map;
  -  **Validate and Check for Completeness** - *Checks the validity and integrity* of the map;
  -  **Apply Transformation Scenario(s)** - *Applies the DITA map transformation scenario* that is associated with the current map from the view;
  -  **Configure Transformation Scenario(s)...** - Allows *associating a DITA map transformation* scenario with the current map;
  -  **Refresh References** - You can use this action to manually trigger a refresh and update of all titles of referred topics. This action is useful when the referred topics are modified externally. When they are modified and saved from the Oxygen XML Editor Author, the DITA Map is updated automatically;
  -  **Open Map in Editor with Resolved Topics** - Opens the DITA Map in the main editor area with content from all topic references expanded in-place; Content from the referenced topics is presented as read-only and you have to use the contextual menu action **Edit Reference** to open the topic for editing.
  -  **Open Map in Editor** - For complex operations which cannot be performed in the simplified DITA maps view (like editing a relationship table) you can open the map in the main editing area;
-  **Note:** You can also use this action to open referenced DITA Maps in the **Editor**.
-  **Link with Editor** - Disables/Enables the synchronization between the file path of the current editor and the selected topic reference in the **DITA Maps Manager** view;
-  **Note:** This button is disabled automatically when you move to the **Debugger** perspective.
-  **Profiling/Conditional Text** menu with the following actions:
    - **Show Profiling Attributes** - Enables/Disables displaying the values of the profiling attributes at the end of the titles of topic references. When enabled, the values of the profiling attributes are displayed both in the **DITA Maps Manager** view and in the **Author** editor;
    -  **Configure Profiling Condition Sets ...** - Opens the preferences panel for adding and editing the profiling conditions that can be applied in the **DITA Maps Manager** view and the **Author** editor;
-  **Tip:** If your map references other DITA maps they will be shown expanded in the DITA Maps tree and you will also be able to navigate their content. For editing you will have to open each referenced map in a separate editor. You can choose not to expand referenced maps in the **DITA Maps Manager** view or referenced content in the opened editors by unchecking the **Display referred content** checkbox available in the [Author preferences page](#).

The following edit actions can be performed on an opened DITA Map:

-  **Insert Reference** - Inserts a reference to a topic file. You can find more details about this action in the [Inserting a Reference, a Key Definition, a Topic Set](#) topic;
  -  **Insert Topic Heading** - Inserts a topic heading. You can find more details about this action in the [Inserting a Topic Heading](#) topic;
  -  **Insert Topic Group** - Inserts a topic group. You can find more details about this action in the [Inserting a Topic Group](#) on page 287 topic;
  -  **Edit Properties** - Edit the properties of a selected node. You can find more details about this action in the [Edit Properties](#) on page 287 topic;
  - **Edit Profiling Attributes** - Allows you to select the profiling attributes;
  -  **Edit Attributes** - Allows you to edit all the attributes of a selected node. You can find more details about this action in the [Attributes View](#) on page 241 topic;
  - **Rename resource** - allows you to [change the name of a resource linked in the edited DITA Map](#);
  - **Move resource** - allow you to [change the location on disk of a resource linked in the edited DITA Map](#);
  -  **Delete** - Deletes the selected node;
  -  **Move Up (Alt + Up)** - Moves the selected nodes in front of their respective previous siblings;
  -  **Move Down (Alt + Down)** - Moves the selected nodes after their next respective siblings;
  -  **Promote (Alt + Left)** - Moves the selected nodes after their respective parents as siblings;
  -  **Demote (Alt + Right)** - Moves the selected nodes as children to their respective previous siblings;
-  **Note:** As an alternative to these actions, you can select one or multiple topics, then drag and drop them to the desired position inside the map.

## Editing Actions

-  **Important:** References can be made either by using the href attribute or by using the new keyref attribute to point to a key defined in the map. Oxygen XML Editor tries to resolve both cases. keyrefs are solved relative to the current map.

In addition to being available on the toolbar and on the contextual menu, more navigation actions and all edit actions appear in the **DITA Maps** menu. The menu is only available when the view is active on screen.

In addition to the edit actions described above, the contextual menu contains the following actions:

- **Open** - opens in the editor the resources referred by the nodes you select;
- **Append Child/Insert After** - sub-menus containing the following actions:
  - **Reference** - appends/Inserts a topic reference as a child/sibling of the selected node;
  - **Reference to the current edited file** - appends/Inserts a topic reference to the current edited file as a child/sibling of the selected node;
  - **New topic** - create a new topic from templates, saves it on disk and adds it into the DITA map;
  - **Anchor Reference, Key Definition, Map Reference, Topic Reference, Topic Set, Topic Set Reference** - allows you to insert a reference to a topic file, a map file, a topic set, or a key definition;
  - **Topic heading** - appends/Inserts a topic heading as a child/sibling of the selected node;
  - **Topic group** - appends/Inserts a topic group as a child/sibling of the selected node;
- **Find/Replace in Files** - find and replace in files using the scope of the current edited map;
- **Check Spelling in Files** - checks the spelling of the files in the scope of the current edited map;
- **Search References** - finds in the current map all references to the selected topic reference (topicref or mapref element) and to each element with an ID attribute contained in the selected topic. If the current selection in the **DITA Maps Manager** view is a keydef element the action will find any element with an attribute idref, keyref, conref or conkeyref that points to the selected keydef. A shortcut can be set for this action in [the Menu Shortcut Keys preferences](#).
- **Cut, Copy, Paste, Undo, Redo** - common edit actions with the same functionality as those found in the text editor;

- **Paste Before, Paste After** - pastes the content of the clipboard before, respectively after, the selected node;

You can also arrange the nodes by dragging and dropping one or more nodes at a time. Drop operations can be performed before, after or as child of the targeted node. The relative location of the drop is indicated while hovering the mouse over a node before releasing the mouse button for the drop.

Drag and drop operations allow you to:

- **Copy** - select the nodes you want to copy and start dragging them. Before dropping them in the appropriate place, press and hold the **Ctrl** key (**Meta** key on Mac). The mouse pointer changes to indicate that a copy operation is performed;
- **Move** - select the nodes you want to move and drag and drop them in the appropriate place;
- **Promote Alt+Left Arrow / Demote Alt+Right Arrow** - you can move nodes between child and parent nodes which ensures both **Promote~~Alt+Left Arrow~~** and **Demote~~Alt+Right Arrow~~** operations.

Apart from the above actions, the contextual menu of the root of the map contains the following two options:

- **Open Map in Editor** - opens the ditamap in the **Editor** view;



**Note:** The bubble displayed on the **Editor** tab of a ditamap opened in the **Editor** view is rendered blue.

- **Open Map in Editor with resolved topics** - opens the ditamap in the editor view and displays the content referred by the links in the ditamap.



**Tip:**

You can open and edit linked topics easily by double clicking the references or by right-clicking and choosing **Open in editor**. If the referenced file does not exist you are allowed to create it.

By right clicking the map root element you can open and edit it in the main editor area for more complex operations.

You can decide to open the reference directly in the Author mode and keep this setting as a default.

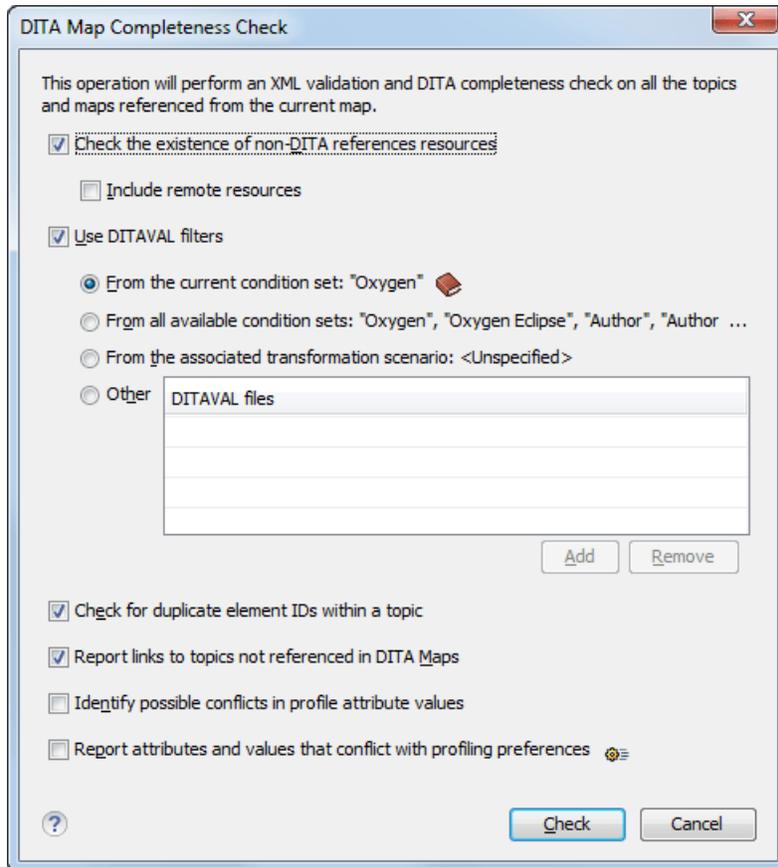
## Creating a Map

Here are the steps to create a DITA map are the following:

1. Go to menu **File > New** or click on the  **New** toolbar button.
2. Select one of the **DITA Map** templates on the tab **From templates** of the **New** dialog.
3. Click the **OK** button.  
A new tab is added in the **DITA Maps Manager** view.
4. Press the  **Save** button on the toolbar of the **DITA Maps Manager** view.
5. Select a location and a file name for the map in the **Save As** dialog.

## Validating DITA Maps

To validate a DITA map click  **Validate and Check for Completeness** on *the DITA Maps Manager view* toolbar, or in the **DITA Maps** menu.



**Figure 173: DITA Map Completeness Check**

The validation process does the following:

- Checks the file paths of the topic references. If a `href` attribute points to an invalid file path it is reported as a separate error in the **Errors** view.
- Validate each referred topic and map. Each topic file is opened and validated against the appropriate DITA DTD. If other map is referred in the main map, it is checked recursively applying the same algorithm as for the main map.

You can customize the operation setting the following options:

- **Check the existence of non-DITA references resources** - extends the validation of referred resources to non-DITA files. Enable the **Include remote resources** options if you want to check that remote referenced binary resources (like images, movie clips, ZIP archives) exist at the specified location;
- **Use DITAVAl filters** - the content of the map is filtered by applying a *profiling condition set* before validation.
  - **From the current condition set** - the map is filtered using the condition set applied currently in the DITA Maps Manager view.
  - **From all available condition sets** - for each available condition set, the map content is filtered using the condition set before validation.
  - **From the associated transformation scenario** - the filtering condition set is specified explicitly as a DITAVAl file in the current transformation scenario associated with the DITA map.
  - **Other DITAVAl files** - for each DITAVAl file from this list, the map content is filtered using the DITAVAl file before validation.

If a link is invalid in the content that resulted from the filtering process, then it is reported as error.

- **Check for duplicate element IDs within a topic** - if an ID is duplicated after assembling all topics referred in the map, it is reported as error.
- **Report links to topics not referenced in DITA Maps** - checks that all referred topics are linked in the DITA map.

- **Identify possible conflicts in profile attribute values** - when a topic's profiling attributes contain values that are not found in parent topics profiling attributes, the content of the topic is overshadowed when generating profiled output. This option reports such possible conflicts.
- **Report attributes and values that conflict with profiling preferences** - looks for profiling attributes and values not defined in the *Profiling / Conditional Text* preferences page. It also checks if profiling attributes defined as *single-value* have multiple values set in the searched topics.

## Create a Topic in a Map

To add a topic to a DITA map, follow these steps:

1. Run the action **Insert Topic Reference** in the view **DITA Maps Manager**.

The action **Insert Topic Reference** is available on the toolbar and on the contextual menu of the view. The action is available both on the submenu **Append Child** (when you want to insert a topic reference in a map as a child of the current topic reference) and on the submenu **Insert After** (when you want to insert it as a sibling of the current topic reference). The toolbar action is the same as the action from the submenu **Insert After**.

2. Select a topic file in the file system dialog called **Insert Topic Reference**.
3. Press the **Insert** button or the **Insert and close** button in the dialog.  
A reference to the selected topic is added to the current map in the view.
4. If you clicked the **Insert** button you can continue inserting new topic references using the *Insert* button repeatedly in the same file system dialog.
5. Close the dialog using the **Close** button.

## Organize Topics in a Map

You can understand better how to organize topics in a DITA map by working with a populated map. You should open the sample map called `flowers.ditamap`, located in the `samples/dita` folder.

1. Open the file `flowers.ditamap`.
2. Select the topic reference *Summer Flowers* and press the  **Move Down** button to change the order of the topic references *Summer Flowers* and *Autumn Flowers*.
3. Make sure that *Summer Flowers* is selected and press the  **Demote** button. This topic reference and all the nested ones are moved as a unit inside the *Autumn Flowers* topic reference.
4. Close the map without saving.

## Create a Bookmap

The procedure for creating a Bookmap is similar with that for creating a DITA Map.

1. Go to menu **File > New** or click on the  **New** toolbar button.  
This action will open *the New wizard*.
2. Select the **DITA Map - Bookmap** template.
3. Click the **OK** button.  
A new tab with the new bookmap is added in *the DITA Maps Manager view*.
4. Press the  **Save** button on the toolbar of the **DITA Maps Manager** view.
5. In the **Save As** dialog select a location and a file name for the map.

## Create a Subject Scheme

The procedure for creating a DITA subject scheme is similar with that for creating a map.

1. Go to menu **File > New** or click on the  **New** toolbar button.  
This action will open *the New wizard*.
2. Select the **DITA Map - Subject Scheme** template.

3. Click the **OK** button.  
A new tab with the new subject scheme document is added in *the DITA Maps Manager view*.
4. Press the  **Save** button on the toolbar of the **DITA Maps Manager** view.
5. In the **Save As** dialog select a location and a file name for the map.

## Create Relationships Between Topics

The DITA map offers the possibility of grouping different types of links between topics in a relationship table instead of specifying the links of each topic in that topic.

1. Open the DITA map file where you want to create the relationship table.

Use the action  **Open** that is available on the toolbar of the **DITA Maps Manager** view.

2. Place the cursor at the location of the relationship table.

3. Run the action  **Insert a DITA reltable**.

The action is available on the **Author** toolbar, on the menu **DITA > Table** and on the **Table** submenu of the contextual menu of the DITA map editor.

This action displays the **Insert Relationship Table** dialog.

4. Set the parameters of the relationship table that will be created: the number of rows, the number of columns, a table title (optional), a table header (optional).

5. Press **OK** in the **Insert Table** dialog.

6. Set the type of the topics in the header of each column.

The header of the table (the `relheader` element) already contains a `relcolspec` element for each table column. You should set the value of the attribute `type` of each `relcolspec` element to a value like *concept*, *task*, *reference*. When you click in the header cell of a column (that is a `relcolspec` element) you can see all the attributes of that `relcolspec` element including the `type` attribute in the **Attributes** view. You can edit the attribute type in this view.

7. Place the cursor in a table cell and run the action  **Insert Topic Reference** for inserting a topic reference in that cell.

The action is available on the **Author** toolbar, on the menu **DITA > Insert** and on the **Insert** submenu of the contextual menu.

8. Optionally for adding a new row to the table / removing an existing row you should run the action  **Insert Row/ Delete Row**.

The actions are available on the **Author** toolbar, on the menu **DITA > Table** and on the **Table** submenu of the contextual menu.

9. Optionally for adding a new column to the table / removing an existing column you should run the action  **Insert Column/ Delete Column**.

The actions are available on the **Author** toolbar, on the menu **DITA > Table** and on the **Table** submenu of the contextual menu.

## Advanced Operations

This section explains how to insert references like chapter, topic reference, topic group or topic heading in a DITA map.

### Inserting a Reference, a Key Definition, a Topic Set

A DITA map can contain various types of references. The targets of the references can be:

- an anchor
- a map

- a topic
- a topic set

The `topicref` element is a reference to a topic (such as a concept, task, or reference) or other resource. A `topicref` can contain other `topicref` elements, and allows you to express navigation or table-of-contents hierarchies, as well as implying relationships between the containing `topicref` and its children. You can set the collection type of a container `topicref` to determine how its children are related to each other. You can also express relationships among `topicref`'s using group and table structures (using `topicgroup` and `reltable`). Relationships end up expressed as links in the output (with each participant in a relationship having links to the other participants by default).

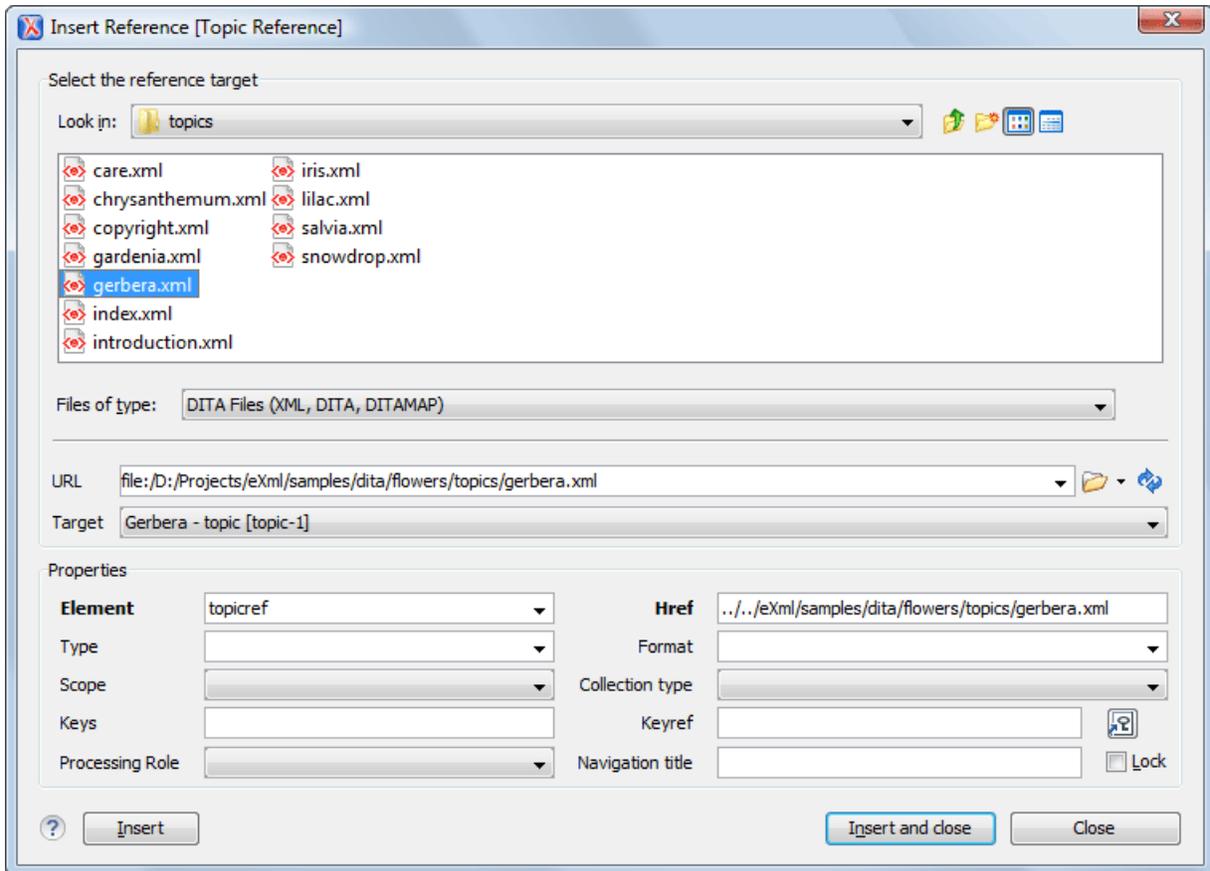
A reference to a topic file, a map file, a topic set, or a key definition may be inserted with the following dialog box which is opened from the actions of the **Append child** and **Insert after** submenus of *the DITA Maps Manager view*'s contextual menu. The content of the **Append child** and **Insert after** submenus depend on the selected node of the DITA map tree on which the contextual menu was invoked. For example if the selected node is the `bookmap` root node the possible child nodes are:

- chapter (the `chapter` element),
- part (the `part` element),
- appendix (the `appendix` element),
- appendices (the `appendices` element)

If the selected node is a `topicref` the possible child nodes are:

- anchor reference (the `anchorref` element),
- topic reference (the `topicref` element),
- map reference (the `mapref` element),
- topic set reference (the `topicsetref` element),
- topic set (the `topicset` element),
- key definition (the `keydef` element),
- topic head (the `topichead` element),
- topic group (the `topicgroup` element)

The same dialog box can be used to insert a non-DITA file like a PDF document.



**Figure 174: Insert Topic Reference Dialog**

By using the **Insert Topic Reference** dialog you can easily browse for and select the source topic file. The **Target** combo box shows all available topics that can be targeted in the file. Selecting a target modifies the **Href** value to point to it which corresponds to the href attribute of the inserted **topicref** element. The **Format** and **Scope** combos are automatically filled based on the selected file and correspond to the **format** and **scope** attributes of the inserted **topicref** element. You can specify and enforce a custom navigation title by checking the **Navigation title** checkbox and entering the desired title.

The file chooser located in the dialog allows you to easily select the desired topic. The selected topic file will be added as a child or sibling of the current selected topic reference, depending on the insert action selected from the contextual menu of the **DITA Maps** view, that is an insert action from the **Append child** submenu or from the **Insert after** one. You can easily insert multiple topic references by keeping the dialog opened and changing the selection in the **DITA Maps Manager** tree. You can also select multiple resources in the file explorer and then insert them all as topic references.

Another easy way to insert a topic reference is to drag files from the **Project** view, file system explorer or **Data Source Explorer** view and drop them into the map tree.

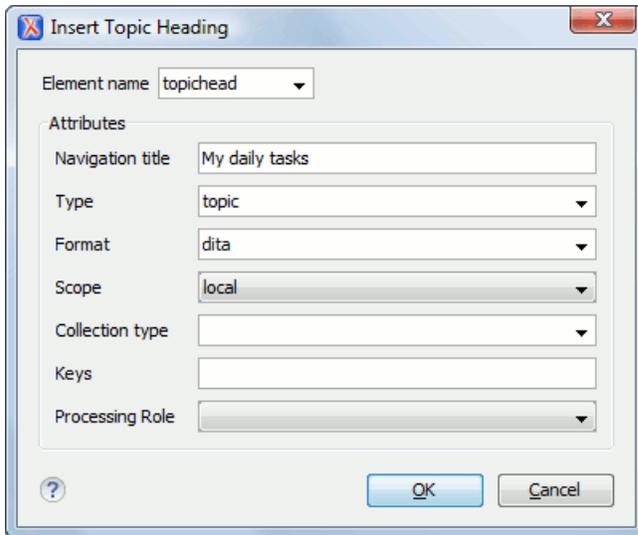
You can also define keys using the **Keys** text field on the inserted **topicref** or **keydef** element. Instead of using the **Href** combo box to point to a location you can reference a key definition using the **Keyref** text field. Use the  **Choose key reference** to access the list of keys defined in the currently open DITA map.

The **Processing Role** combo box allows setting the **processing-role** attribute to one of the allowed values for DITA reference elements: **resource-only**, **normal**, **-dita-use-conref-target**.

### Inserting a Topic Heading

The **topichead** element provides a title-only entry in a navigation map, as an alternative to the fully-linked title provided by the **topicref** element.

A topic heading can be inserted both from the toolbar action and the contextual node actions.



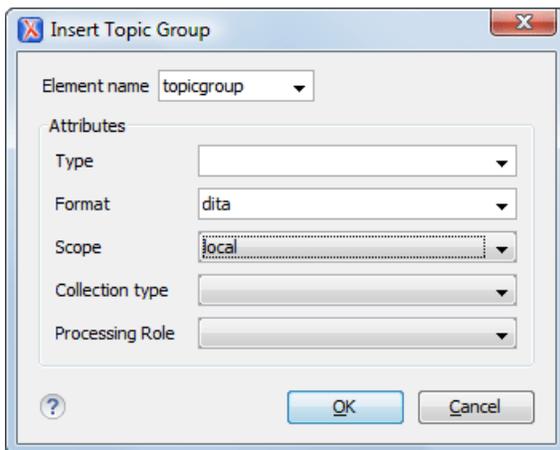
**Figure 175: Insert Topic Heading Dialog**

By using the **Insert Topic Heading** dialog you can easily insert a *topichead* element. The **Navigation title** is required but other attributes can be specified as well from the dialog.

### Inserting a Topic Group

The *topicgroup* element identifies a group of topics (such as a concepts, tasks, or references) or other resources. A *topicgroup* can contain other *topicgroup* elements, allowing you to express navigation or table-of-contents hierarchies, as well as implying relationships between the containing *topicgroup* and its children. You can set the collection-type of a container *topicgroup* to determine how its children are related to each other. Relationships end up expressed as links in the output (with each participant in a relationship having links to the other participants by default).

A topic group may be inserted both from the toolbar action and the contextual node actions.



**Figure 176: Insert Topic Group Dialog**

By using the **Insert Topic Group** dialog you can easily insert a *topicgroup* element. The **Type**, **Format**, **Scope** and **Collection type** attributes can be specified from the dialog.

### Edit Properties

The **Edit properties** action, available both on the toolbar and on the contextual menu, is used to edit the properties of the selected node. Depending on the selected node, the action will perform the following tasks:

- If a *topicref* or *chapter* element is selected, the action will show a dialog similar with the [Insert Topic Reference dialog](#) allowing the editing of some important attributes.

- If a *topichead* element is selected, the action will show a dialog similar with the *Insert Topic Heading dialog* allowing the editing of some important attributes.
- If a *topicgroup* element is selected, the action will show a dialog similar with the *Insert Topic Group dialog* allowing the editing of some important attributes.
- If the map's root element is selected then the user will be able to easily edit the map's title using the **Edit Map title** dialog. By using this dialog you can also specify whether the title will be specified as the *title* attribute to the map or as a *title* element (for DITA-OT 1.1 and 1.2) or specified in both locations.

## Transforming DITA Maps and Topics

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Oxygen XML Editor uses the DITA Open Toolkit (DITA-OT) to transform DITA maps and topics into an output format. For this purpose both the DITA Open Toolkit 1.6.1 and ANT 1.7 come bundled in Oxygen XML Editor.

More information about the DITA Open Toolkit are available at <http://dita-ot.sourceforge.net/>.

### Creating a DITA Transformation Scenario

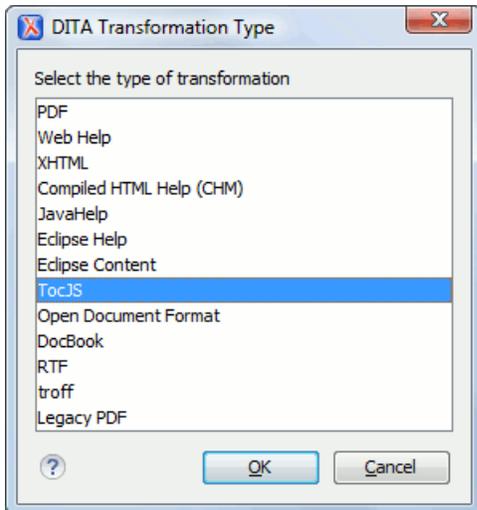
To create a **DITA OT Transformation** scenario, use one of the following methods:

- Go to **Window > Show View** and select  **Transformation Scenarios** to display this view. Click the **New** button and select **DITA OT Transformation**;
- Click the  **Configure Transformation Scenario(s)** **CTRL+Shift+C** button on the **Transformation** toolbar, then click the **New** button and select **DITA OT Transformation**;
- Select **CTRL+Shift+T** on your keyboard or click the  **Apply Transformation Scenario** button on the **Transformation** toolbar to open the **Transform With** dialog. In this dialog click the **New** button and select **DITA OT Transformation**.

 **Note:** In case a scenario is already associated with the edited document, selecting **CTRL+Shift+T** or  **Apply Transformation Scenario** runs the associated scenario automatically. You can check whether transformation scenarios are associated with the edited document by hovering your cursor over the  **Apply Transformation Scenario** button.

All three methods open the **DITA transformation type** dialog box. This dialog presents the list of possible outputs that the **DITA OT Transformation** is able to produce. Select the transformation type, click **OK** and move on to configuring the options in the **New Scenario** dialog. This dialog allows you to configure the options that control the transformation.

All three methods open the **DITA transformation type** dialog box. This dialog presents the list of possible outputs that the **DITA OT Transformation** is able to produce.



**Figure 177: Select DITA Transformation type**

Select the transformation type, click **OK** and move on to configuring the options in the **New Scenario** dialog. This dialog allows you to configure the options that control the transformation.

 **Note:** Depending on the type of output you choose, Oxygen XML Editor generates values for the default ANT parameters, so you can execute the scenario right away without further customization.

The upper part of the dialog box contains the **Name** field and the **Storage** options:

- **Global Options** - the scenario is saved in the global options stored in the user home directory;
- **Project Options** - the scenario list is stored in the project file. In case your project is saved on a source versioning/sharing system (CVS, SVN, Source Safe, and so on.), your team can use the scenarios you defined.

The lower part of the dialog box allows you to *further customize the DITA OT Transformation scenario* and contains the following tabs:

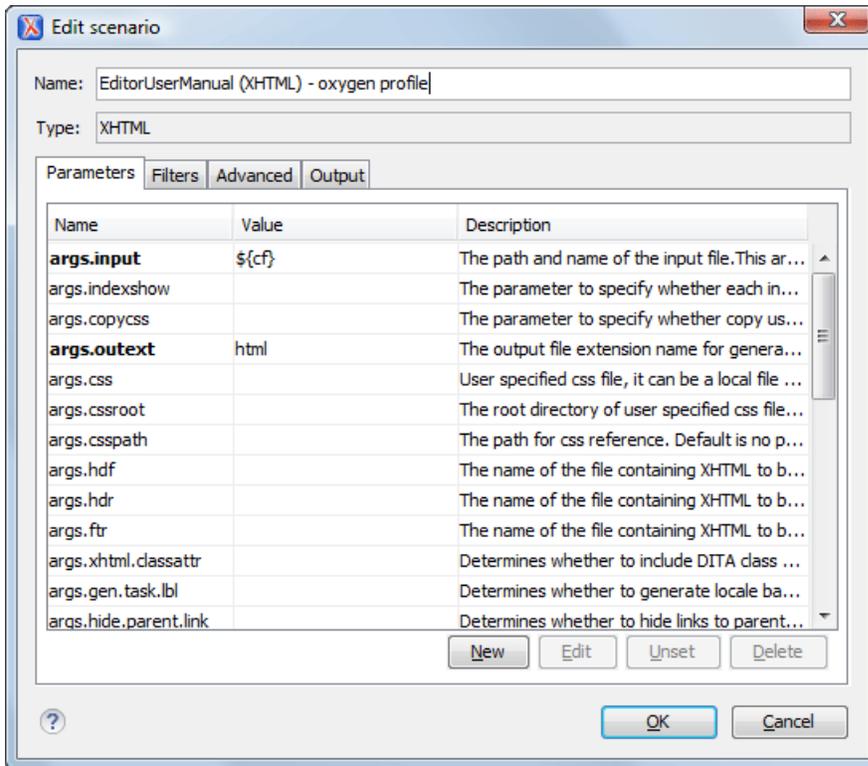
- *Parameters*;
- *Filters*;
- *Advanced*;
- *Output*;
- *FO Processor*.

## Customizing a DITA Scenario

This section explains how to customize the parameters of a DITA transformation scenario.

### The Parameters Tab

In this dialog you can configure the parameters sent to the DITA-OT build file.



**Figure 178: Edit DITA Ant transformation parameters**

All the parameters that the DITA-OT documentation specifies as available for each chosen type of transformation (eg: XHTML) are listed along with their description. The values for some important parameters are already filled in. You can find more information about each parameter in the [DITA OT Documentation](#). You can also add additional parameters to the list.

Using the toolbar buttons you can add, edit or remove a parameter.

Depending on the parameter type the parameter value will be:

- a simple text field for simple parameter values
- a combo box with some predefined values
- a file chooser and an editor variables selector to simplify setting a file path as value to a parameter

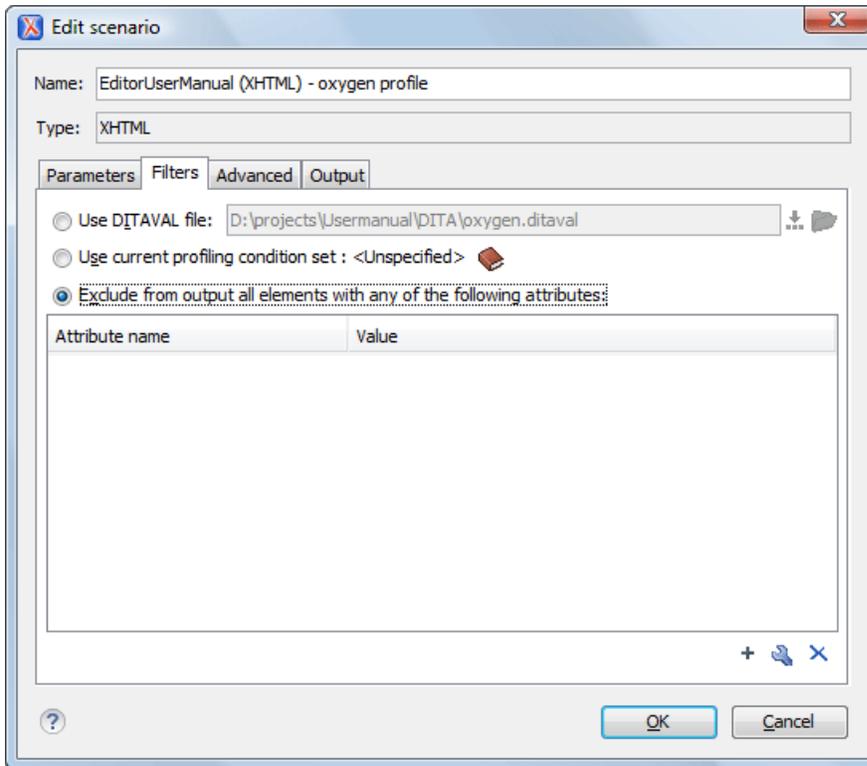
The value of a parameter can be entered at runtime if a value `ask('user-message', param-type, 'default-value' ?)` is used as value of parameter in the Configure parameters dialog.

#### Examples:

- `${ask('message')}` - Only the message displayed for the user is specified.
- `${ask('message', generic, 'default')}` - 'message' is displayed, the type is not specified (the default is string), the default value is 'default'.
- `${ask('message', password)}` - 'message' is displayed, the characters typed are masked with a circle symbol.
- `${ask('message', password, 'default')}` - same as before, the default value is 'default'.
- `${ask('message', url)}` - 'message' is displayed, the parameter type is URL.
- `${ask('message', url, 'default')}` - same as before, the default value is 'default'.

#### The Filters Tab

In the scenario **Filters** tab you can add filters to remove certain content elements from the generated output.



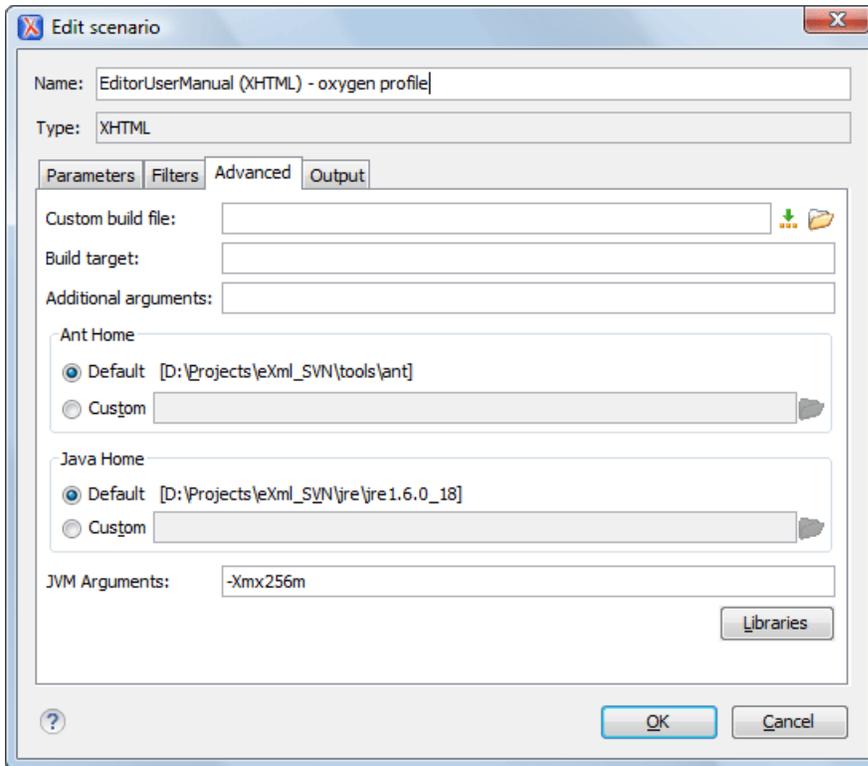
**Figure 179: Edit Filters tab**

There are three ways to define filters:

- **Use DITAVAL file** - If you already have a DITAVAL file associated with the transformed map you can specify the path to it and it will be used when filtering content. You can find out more about constructing a DITAVAL file in the [DITA OT Documentation](#) topic.
- **Use current profiling condition set** - Allows you to use the currently active [profiling condition set](#).
- **Exclude from output all elements with any of the following attributes** - You can configure a simple list of attribute (name, value) pairs which when present on an element in the input will remove it from output.

### The AdvancedTab

In the **Advanced** tab, you can specify advanced options for the transformation.



**Figure 180: Advanced settings tab**

You have several parameters that you can specify here:

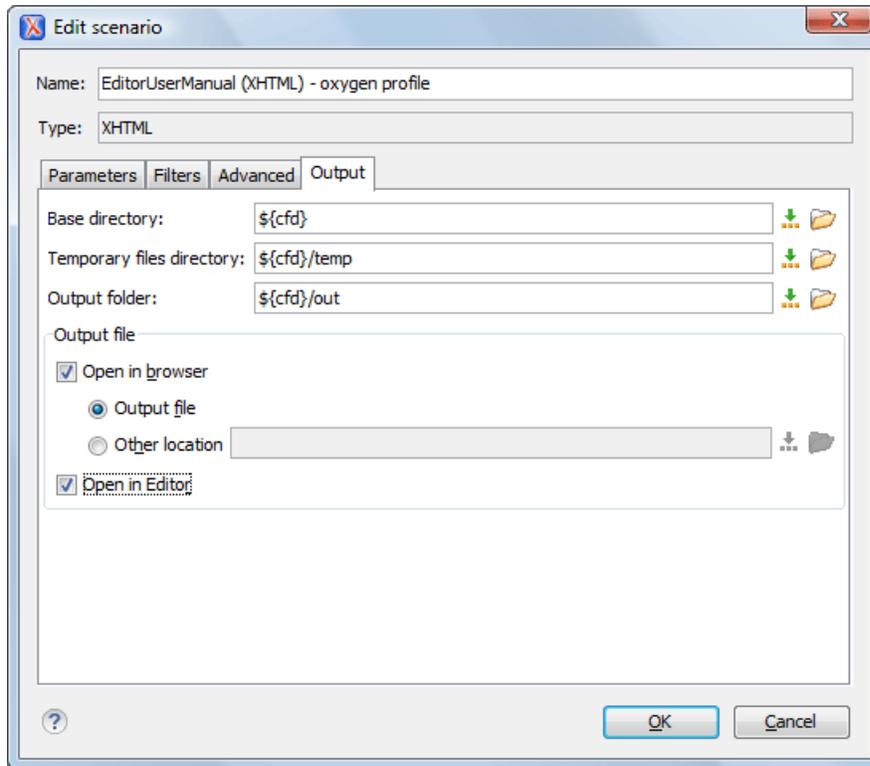
- **Custom build file** - If you use a custom DITA-OT build file you can specify the path to the customized build file. If empty, the `build.xml` file from the `dita.dir` directory configured in the **Parameters** tab is used.
- **Build target** - You can specify a build target to the build file. By default no target is necessary and the default `init` target is used.
- **Additional arguments** - You can specify additional command-line arguments to be passed to the ANT transformation like `-verbose`.
- **Ant Home** - You can specify a custom ANT installation to run the DITA Map transformation. By default it is the ANT installation bundled with Oxygen XML Editor.
- **Java Home** - You can specify a custom Java Virtual Machine to run the ANT transformation. By default it is the Java Virtual Machine used by Oxygen XML Editor.
- **JVM Arguments** - This parameter allows you to set specific parameters to the Java Virtual Machine used by ANT. By default it is set to `-Xmx256m` which means the transformation process is allowed to use 256 megabytes of memory. Sometimes, when performing a large DITA map transformation you may want to increase the memory allocated to the Java Virtual Machine from the default value (256 MB) to a higher value, like 512 MB. In this way, you can avoid the Out of Memory error messages (**OutOfMemoryError**) received from the ANT process.

 **Note:** If you are publishing DITA to PDF and still experience problems, you should also increase the amount of memory allocated to the FO transformer. To do this, open the *Parameters tab* and increase the value of `maxJavaMemory` parameter (default value is 500).

- **Libraries** - Oxygen XML Editor adds by default as high priority libraries which are not transformation-dependent and also patches for certain DITA Open Toolkit bugs. You can specify all the additional libraries (jar files or additional class paths) which are used by the ANT transformer. You can also decide to control all libraries added to the classpath.

### The Output Tab

In the **Output** tab, you can configure options related to the place where the output is generated.



**Figure 181: Output settings tab**

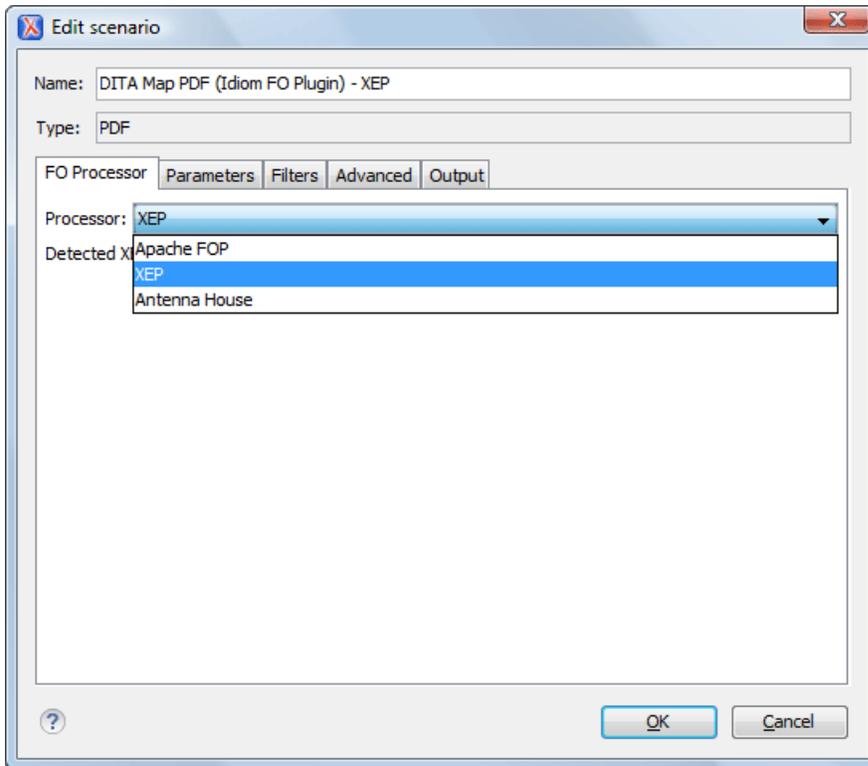
You have several parameters that you can specify here:

- **Base directory** - All the relative paths which appear as values in parameters are considered relative to the base directory. The default value is the directory where the transformed map is located.
- **Temporary files directory** - This directory is used to store pre-processed temporary files until the final output is obtained.
- **Output folder** - The folder where the final output content is copied.
- **Output file options** - The transformation output can then be opened in a browser or even in the editor, if specified.

 **Note:** If the DITA Map or topic is opened from a remote location or from a ZIP file, the scenario must specify absolute output, temporary and base file paths.

### The FO Processor Tab

This tab allows you to set an FO Processor, when you choose to generate PDF output.



**Figure 182: FO Processor configuration tab**

You can choose between:

- **Apache FOP** - Default setting. This processor comes bundled with Oxygen XML Editor.
- **XEP** - The *RenderX* XEP processor.

If you select **XEP** in the combo and XEP was already installed in Oxygen XML Editor you can see the detected installation path appear under the combo box.

XEP is considered as installed if it was detected in one of the following sources:

- XEP was configured as an external FO Processor in the [FO Processors option page](#);
- The system property `com.oxygenxml.xep.location` was set to point to the XEP executable file for the platform (eg: `xep.bat` on Windows);
- XEP was installed in the `frameworks/dita/DITA-OT/plugins/org.dita.pdf2/lib` directory of the Oxygen XML Editor installation directory.
- **Antenna House** - The *Antenna House* AH (v5) or XSL (v4) Formatter processor.

If Antenna House was already installed on your computer and you select **Antenna House** in the combo box, in Oxygen XML Editor you can see the detected installation path appear under the combo.

Antenna House is considered as installed if it was detected in one of the following sources:

- Environment variable set by Antenna House installation (the newest installation version will be used, v5 being preferred over v4).
- Antenna House was added as an external FO Processor in the Oxygen XML Editor preferences pages.

## Running a DITA Map ANT Transformation

The transformation is run as an external ANT process so you can continue using the application as the transformation unfolds. All output from the process appears in the **DITA Transformation** tab.



**Tip:** The HTTP proxy settings are also used for the ANT transformation so if the transformation fails because it cannot connect to an external location you can check the [the Proxy preferences page](#)

## Set a Font for PDF Output Generated with Apache FOP

When a DITA map is transformed to PDF using the Apache FOP processor and it contains some Unicode characters that cannot be rendered by the default PDF fonts then a font that is capable to render these characters must be configured and embedded in the PDF result.

The settings that must be modified for configuring a font for the Apache FOP processor are detailed in [this section](#).

### How does the DITA Open Toolkit PDF font mapping work?

The DITA OT contains a file

`OXYGEN_INSTALL_DIR/frameworks/dita/DITA-OT/plugins/org.dita.pdf2/cfg/fo/font-mappings.xml` which maps logical fonts used in the XSLT stylesheets to physical fonts which will be used by the FO processor to generate the PDF output.

The XSLT stylesheets used to generate the XSL-FO output contain code like:

```
<xsl:attribute name="font-family">monospace</xsl:attribute>
```

The font-family is defined to be *monospace*, but *monospace* is just an alias, it is not a physical font name. So another stage in the PDF generation takes this *monospace* alias and looks in the `font-mappings.xml`.

If it finds a mapping like this:

```
<aliases>
  <alias name="monospace">Monospaced</alias>
</aliases>
```

then it looks to see if the *Monospaced* has a *logical-font* definition and if so it will use the *physical-font* specified there:

```
<logical-font name="Monospaced">
  <physical-font char-set="default">
    <font-face>Courier New, Courier</font-face>
  </physical-font>
  .....
</logical-font>
```



### Important:

If no alias mapping is found for a font-family specified in the XSLs, the processing defaults to **Helvetica**.

## Tips and Tricks

This section contains solutions for common problems encountered when working with the DITA Open Toolkit.

### Publishing DITA content using an automated process

The DITA Open Toolkit can be run as a separate fully automated process using one of the methods documented in the [DITA OT documentation](#).

The DITA Open Toolkit distribution which comes with Oxygen XML Editor is located in the folder `OXYGEN_INSTALL_DIR/frameworks/dita/DITA-OT/`. The differences between the bundled DITA OT distribution and an equivalent distribution downloaded from the DITA OT website are explained in the resource `README_OXYGEN.txt`.



**Important:** If you want to produce WebHelp using our WebHelp plugin in an automated build process, you must read the licensing conditions from `OXYGEN_INSTALL_DIR/frameworks\dita\DITA-OT\plugins\com.oxygenxml.webhelp\license.txt`

## Running the bundled DITA OT from the Command Line Interface

To run a DITA transformation from the command line interface follow the next steps:

1. Download and unzip Saxon Basic from <https://sourceforge.net/projects/saxon/files/Saxon-B/9.1.0.8/saxonb9-1-0-8j.zip/download>.
2. Run the DITA transformation.
3. Copy the command from the second row of the results view in the command line.
4. Delete the .jar files (oxygen.jar, oxygenAuthor.jar, oxygenEclipse.jar and so on) from the command line.
5. Delete the parameter `""-Dorg.apache.xerces.xni.parser.XMLParserConfiguration=org.ditang.relaxng.defaults.RelaxDefaultsParserConfiguration""` from the command line.
6. Add saxon9.jar and saxon9-dom.jar from Saxon Basic as two *lib* parameters in the classpath of the command line.
7. Run the command.

A typical command looks like this:

```
"c:\program files (x86)\oxygen xml editor 13\jre\bin\java" "-Dhttp.proxySet=true"
"-Dhttp.proxyHost=proxy.sync.ro" "-Dhttp.proxyPort=3128" -Xmx384m
-classpath "C:\Program Files (x86)\Oxygen XML Editor 13\tools\ant\lib\ant-launcher.jar"
-Dant.home=C:\Program Files (x86)\Oxygen XML Editor 13\tools\ant"
org.apache.tools.ant.launch.Launcher
-lib "D:\kit\saxon\saxonb9-1-0-8j\saxon9.jar" -lib "D:\kit\saxon\saxonb9-1-0-8j\saxon9-dom.jar"

-lib "C:\Program Files (x86)\Oxygen XML Editor 13\lib\resolver.jar"
-lib "C:\Program Files (x86)\Oxygen XML Editor 13\frameworks\dita\DITA-OT"
-lib "C:\Program Files (x86)\Oxygen XML Editor 13\lib\commons-io-1.3.1.jar"
-lib "C:\Program Files (x86)\Oxygen XML Editor 13\lib\commons-logging-1.0.4.jar"
-lib "C:\Program Files (x86)\Oxygen XML Editor 13\lib\log4j.jar"
-lib "C:\Program Files (x86)\Oxygen XML Editor 13\frameworks\dita\DITA-OT\lib\dost-patches.jar"

-lib "C:\Program Files (x86)\Oxygen XML Editor 13\frameworks\dita\DITA-OT\lib"
-lib "C:\Program Files (x86)\Oxygen XML Editor 13\frameworks\dita\DITA-OT\lib\dost.jar"
-lib "C:\Program Files (x86)\Oxygen XML Editor
13\frameworks\dita\DITA-OT\lib\commons-codec-1.4.jar"
-lib "C:\Program Files (x86)\Oxygen XML Editor 13\lib\xercesImpl.jar"
-lib "C:\Program Files (x86)\Oxygen XML Editor 13\lib\saxon9ee.jar"
-lib "C:\Program Files (x86)\Oxygen XML Editor 13\lib\saxon.jar"
-lib "C:\Program Files (x86)\Oxygen XML Editor 13\lib\xmlgraphics-commons-1.4.jar"
-lib "C:\Program Files (x86)\Oxygen XML Editor 13\lib\fop.jar"
-lib "C:\Program Files (x86)\Oxygen XML Editor 13\lib\batik-all-1.7.jar"
-lib "C:\Program Files (x86)\Oxygen XML Editor 13\lib\xml-apis-xpath.jar"
-lib "C:\Program Files (x86)\Oxygen XML Editor 13\lib\xml-apis-ext.jar"
-lib "C:\Program Files (x86)\Oxygen XML Editor 13\lib\avalon-framework-4.2.0.jar"
-lib "C:\Program Files (x86)\Oxygen XML Editor 13\lib\jcip-annotations.jar"
-lib "C:\Program Files (x86)\Oxygen XML Editor 13\lib\jeuclid-core.jar"
-lib "C:\Program Files (x86)\Oxygen XML Editor 13\lib\jeuclid-fop.jar"
-lib "C:\Program Files (x86)\Oxygen XML Editor 13\lib\jh.jar"
-lib "C:\Program Files (x86)\Oxygen XML Editor 13\frameworks\dita\DITA-OT\lib\jsearch.jar"
-lib "C:\Program Files (x86)\Oxygen XML Editor
13\frameworks\dita\DITA-OT\plugins\webhelp\lib\lucene-analyzers-3.0.0.jar"
-lib "C:\Program Files (x86)\Oxygen XML Editor
13\frameworks\dita\DITA-OT\plugins\webhelp\lib\lucene-core-3.0.0.jar"
-lib "C:\Program Files (x86)\Oxygen XML Editor
13\frameworks\dita\DITA-OT\plugins\webhelp\lib\nw-cms.jar"
-f "C:\Program Files (x86)\Oxygen XML Editor 13\frameworks\dita\DITA-OT/build.xml"
"-Dtranstype=webhelp" "-Ddita.dir=C:\Program Files (x86)\Oxygen XML Editor
13\frameworks\dita\DITA-OT"
"-Dargs.input=S:\projects\eXml-trunk\samples\dita\flowers\flowers.ditamap"
"-Ddita.temp.dir=S:\projects\eXml-trunk\samples\dita\flowers\temp"
"-Dbasedir=S:\projects\eXml-trunk\samples\dita\flowers"
"-Doutput.dir=S:\projects\eXml-trunk\samples\dita\flowers\out" "-DbaseJVMArgLine=-Xmx384m"
```

### Using the startup scripts from the bundled DITA OT

As explained in the DITA OT documentation <http://dita-ot.sourceforge.net/readme/building-output-using-cl-tool.html> the startup scripts startcmd.bat and startcmd.sh from a DITA OT installation are used to properly set up environment variables before a simple command line can be executed. Because of the libraries missing in the bundled DITA OT installation the startup scripts will have to be updated in order to work in the bundled DITA OT folder:

1. The ANT\_HOME will have to be set to OXYGEN\_INSTALL\_DIR\tools\ant

2. Download and unzip Saxon Basic from <https://sourceforge.net/projects/saxon/files/Saxon-B/9.1.0.8/saxonb9-1-0-8j.zip/download>. The Saxon libraries referenced in the startup scripts need to be used from that project.
3. The libraries `xercesImpl.jar` and `xml-apis.jar` can be used from the `OXYGEN_INSTALL_DIR\lib` folder.
4. The library `icu4j.jar` can be downloaded either from the [ICU4J](#) project or from a full DITA OT distribution downloaded directly from the DITA OT web site.

## Debugging PDF Transformations

To debug a DITA PDF transformation scenario using the XSLT Debugger follow these steps:

1. Go to **Options > Preferences > XML > XML Catalog**, click **Add** and select the file located at `[Oxygen Install Directory]\frameworks\dita\DITA-OT\plugins\org.dita.pdf2\cfg\catalog.xml`;
2. Open the map in the **DITA Maps Manager** and create a **DITA Map PDF** transformation scenario;
3. Edit the scenario, go to the **Parameters** tab and change the value of the `clean.temp` parameter to **no**;
4. Run the transformation scenario;
5. Open in Oxygen XML the `stage1.xml` file located in the temporary directory and format and indent it;
6. Create a transformation scenario for this XML file by associating the `topic2fo_shell.xsl` stylesheet located at `OXYGEN_INSTALL_DIR/frameworks/dita/DITA-OT/plugins/org.dita.pdf2/xsl/fo/topic2fo_shell_fop.xsl`;
7. In the transformation scenario edit the **Parameters** list and set the parameter `locale` with the value `en_GB` and the parameter `customizationDir.url` to point either to your customization directory or to the default DITA OT customization directory. Its value should have an URL syntax like `file://c:/path/to/OXYGEN_INSTALL_DIR/frameworks/dita/DITA-OT/plugins/org.dita.pdf2/cfg`.
8. Debug the transformation scenario.

## The PDF Processing Fails to Use the DITA OT and Apache FOP

There are cases when publishing DITA content which you consider perfectly valid fails when creating the PDF file. This topic tries to list some of the more usual situations and has fix-up hints for each of these cases.

- The FO processor cannot save the PDF at the specified target. The console output contains messages like:

```
[fop] [ERROR] Anttask - Error rendering fo file: C:\samples\dita\temp\pdf\oxygen_dita_temp\topic.fo <Failed
to open C:\samples\dita\out\pdf\test.pdf>
Failed to open samples\dita\out\pdf\test.pdf
[fop] at org.apache.fop.tools.anttasks.FOPTaskStarter.renderInputHandler(Fop.java:647)
[fop] at org.apache.fop.tools.anttasks.FOPTaskStarter.render(Fop.java:676)
.....
[fop] at org.apache.tools.ant.launch.Launcher.run(Launcher.java:280)
[fop] at org.apache.tools.ant.launch.Launcher.main(Launcher.java:109)
[fop] Caused by: java.io.FileNotFoundException: C:\Users\radu_coravu\Desktop\bev\out\pdf\test.pdf
(The process cannot access the file because it is being used by another process)
[fop] at java.io.FileOutputStream.open(Native Method)
[fop] at java.io.FileOutputStream.<init>(Unknown Source)
[fop] at java.io.FileOutputStream.<init>(Unknown Source)
[fop] at org.apache.fop.tools.anttasks.FOPTaskStarter.renderInputHandler(Fop.java:644)
[fop] ... 45 more
[fop] C:\samples\dita\temp\pdf\oxygen_dita_temp\topic.fo -> C:\samples\dita\out\pdf\test.pdf
```



**Tip:** Such an error message usually means that the PDF file is already opened in a PDF Reader application. The workaround is simple, always close the external PDF reader application before running the transformation.

- One of the DITA tables contains more cells in a table row than the defined number of `colspec` elements. The console output contains messages like:

```
[fop] [ERROR] Anttask - Error rendering fo file:
D:\projects\eXml\samples\dita\flowers\temp\pdf\oxygen_dita_temp\topic.fo
<net.sf.saxon.trans.XPathException: org.apache.fop.fo.ValidationException:
The column-number or number of cells in the row overflows the number of fo:table-columns specified for the
table. (See position 179:-1)>net.sf.saxon.trans.XPathException: org.apache.fop.fo.ValidationException: The
column-number or number of cells in the row overflows the number of fo:table-columns specified for the table.
(See position 179:-1)
```

```
[fop] at org.apache.fop.tools.anttasks.FOTaskStarter.renderInputHandler(Fop.java:657)
[fop] at net.sf.saxon.event.ContentHandlerProxy.startContent(ContentHandlerProxy.java:375)
.....
[fop] D:\projects\samples\dita\flowers\temp\pdf\oxygen_dita_temp\topic.fo ->
D:\projects\samples\dita\flowers\out\pdf\flowers.pdf
```

### Tip:

- Find the DITA topic that contains a DITA CALS table for which one of the table rows has more cells than the number of *colspecs* defined on the table.
  - Edit the transformation scenario you and set the parameter *clean.temp* to *no*.
  - Run the transformation, open the `topic.fo` file in Oxygen XML Editor, and look in it at the line specified in the error message (See `position 179:-1`).
  - Look around that line in the XSL-FO file to find relevant text content which you can use, for example, with the **Find/Replace in Files** action in the **DITA Maps Manager** view to find the original DITA topic for which the table was generated.
- There is a broken link in the generated XSL-FO file. The PDF is generated but contains a link that is not working. The console output contains messages like:

```
[fop] 1248 WARN [ main ] org.apache.fop.apps.FOUserAgent - Page 6: Unresolved ID reference
"unique_4_Connect_42_wrongID" found.
```

### Tip:

- Use the **Validate and Check for Completeness** action available in the **DITA Maps Manager** view to find such problems.
- In case you publish to PDF using a certain DITAVAL filter, set the same DITAVAL file in the **DITA Map Completeness Check** dialog.
- In case the **Validate and Check for Completeness** action does not discover any issues, edit the transformation scenario and set the *clean.temp* parameter to *no*.
- Run the transformation, open the `topic.fo` file in Oxygen XML Editor, and search in it for the `unique_4_Connect_42_wrongID` id.
- Look around that line in the XSL-FO file to find relevant text content which you can use, for example, with the **Find/Replace in Files** action in the **DITA Maps Manager** view to find the original DITA topic for which the table was generated.

## Topic References outside the main DITA Map folder

Referencing to a DITA topic which is located outside of the folder where the main DITA Map is located usually leads to problems when publishing the content using the DITA Open Toolkit. The DITA OT does not handle well links to topics which are outside the directory where the published DITA Map is found. By default it does not even copy the referenced topics to the output directory.

You have the following options:

1. Create another DITA Map which is located in a folder path above all referenced folders and reference from it the original DITA Map. Then transform this DITA Map instead.
2. Edit the transformation scenario and in the **Parameters** tab edit the `fix.external.refs.com.oxygenxml` parameter. This parameter is used to specify whether the application tries to fix up such references in a temporary files folder before the DITA Open Toolkit is invoked on the fixed references. The fix up has no impact on your edited DITA content. Only "false" and "true" are valid values. The default value is false.

## Available Output Formats

---

You can publish DITA-based documents in any of the following formats:

- **PDF** - DITA to PDF.

- **WebHelp** - DITA to WebHelp: a complete help system with search and tree navigation.
- **XHTML** - DITA to XHTML.
- **Compiled HTML Help (CHM)** - DITA Map to HTML Help.
- **JavaHelp** - DITA Map to JavaHelp.
- **Eclipse Help** - DITA Map to Eclipse Help.
- **Eclipse Content** - DITA Map to Eclipse Content.
- **TocJS** - A JavaScript file that can be included in an HTML file to display in a tree-like manner the table of contents of the transformed DITA map.
- **Open Document Format** - DITA Map to ODF.
- **Docbook** - DITA Map to Docbook.
- **RTF** - DITA Map to Rich Text Format.
- **troff** - DITA Map to Text Processor for Typesetters.
- **Legacy PDF** - DITA Map to PDF using the DITA OT deprecated PDF implementation.

## Compiled HTML Help (CHM) Output Format

To perform a **Compiled HTML Help (CHM)** transformation Oxygen XML Editor needs HTML Help Workshop to be installed on your computer. Oxygen XML Editor automatically detects HTML Help Workshop and uses it. When the transformation fails, the *.hhp* (HTML Help Project) file is already generated and it must be compiled to obtain the *.chm* file. Note that HTML Help Workshop fails when the files used for transformation contain diacritics in their names, due to different encodings used when writing the *.hhp* and *.hhc* files.

### Changing the Output Encoding

Oxygen XML Editor uses the `html.locale` parameter to correctly display specific characters of different languages in the output of the **Compiled HTML Help (CHM)** transformation. The **Compiled HTML Help (CHM)** default scenario that comes bundled with Oxygen XML Editor has the `html.locale` parameter set to `en-US`. The format of the `html.locale` parameter is `LL-CC`, where `LL` represents the language code (`en` for example) and `CC` represents the country code (`US` for example). The language codes are contained in the ISO 639-1 standard and the country codes are contained in the ISO 3166-1 standard. For further details about language tags, go to <http://www.rfc-editor.org/rfc/rfc5646.txt>.

The default value of the `html.locale` is `en-US`. To customize this parameter, go to  **Configure Transformation Scenarios** and click the  **Edit** button. In the parameter tab search for the `html.locale` parameter and change its value to the desired language tag.

## The TocJS Transformation

The *TocJS* transformation of a DITA map does not generate all the files needed to display the tree-like table of contents. To get a complete working set of output files you should follow these steps:

1. Run the *XHTML* transformation on the same DITA map. Make sure the output gets generated in the same output folder as for the *TocJS* transformation.
2. Copy the content of `${frameworks}/dita/DITA-OT/plugins/com.sophos.tocjs/basefiles` folder in the transformation's output folder.
3. Copy the `${frameworks}/dita/DITA-OT/plugins/com.sophos.tocjs/sample/basefiles/frameset.html` file in the transformation's output folder.
4. Edit `frameset.html` file.
5. Locate element `<frame name="contentwin" src="concepts/about.html">`.
6. Replace `"concepts/about.html"` with `"index.html"`.

## DITA-OT Customization

---

This section explains how to customize specific parameters of a DITA transformation scenario like setting a custom DITA Open Toolkit, a custom build file or a separate installation of the Ant tool.

### Support for Transformation Customizations

You can change all DITA transformation parameters to customize your needs. In addition, you can specify a custom build file, parameters to the JVM and many more for the transformation.

### Using Your Custom Build File

You can specify a custom build file to be used in DITA-OT transformations by editing the transformation scenario that you are using. In the *Advanced* tab you should change the **Custom build file** path to point to the custom build file.

### Customizing the Oxygen XML Editor Ant Tool

The Ant 1.7 tool which comes with Oxygen XML Editor is located in the `[Oxygen-install-folder]/tools/ant` directory. Any additional libraries for Ant must be copied to the `Oxygen XML Editor Ant lib` directory.

If you are using Java 1.6 to run Oxygen XML Editor the Ant tool should need no additional libraries to process JavaScript in build files.

### Increasing the Memory for the Ant Process

For details about setting custom JVM arguments to the ANT process please see [this section](#).

### Resolving Topic References Through an XML Catalog

There are situations where you want to resolve URIs with an XML catalog:

- you customized your DITA map to refer topics using URI's instead of local paths
- you have URI content references in your DITA topic files and you want to map them to local files when the map is transformed

In such situations you have to [add the catalog to Oxygen XML Editor](#). The **DITA Maps Manager** view will solve the displayed topic refs through the added XML catalog and also the DITA map transformations (for PDF output, for XHTML output, etc) will solve the URI references through the added XML catalog.

### DITA to PDF Output Customization

In this topic you will see how to do a basic customization of the PDF output by setting up a customization directory.

DITA Open Toolkit PDF output customizations can be made in two major ways:

1. Creating a DITA Open Toolkit plugin which adds extensions to the PDF plugin. More details can be found in the [DITA Open Toolkit user manual](#).
2. Creating a customization directory and using it from the PDF transformation scenario. A small example of this procedure can be found below.

Let us take for example the common case of embedding a company logo image in the front matter of the book. You can later extend this example to create more complex customizations.

1. Copy the entire directory:  
`OXYGEN_INSTALL_DIR/frameworks/dita/DITA-OT/plugins/org.dita.pdf2/Customization`  
to some other place, for instance: `C:\Customization`.
2. Copy your logo image to: `C:\Customization\common\artwork\logo.png`.
3. Rename `C:\Customization\catalog.xml.orig` to: `C:\Customization\catalog.xml`

4. Open the `catalog.xml` in Oxygen XML Editor and uncomment this line:

```
<!--uri name="cfg:fo/xsl/custom.xsl" uri="fo/xsl/custom.xsl"/-->
```

So now it looks like this:

```
<uri name="cfg:fo/xsl/custom.xsl" uri="fo/xsl/custom.xsl"/>
```

5. Rename the file: `C:\Customization\fo\xsl\custom.xsl.orig` to:  
`C:\Customization\fo\xsl\custom.xsl`
6. Open the `custom.xsl` file in Oxygen XML Editor and create the template called `createFrontMatter_1.0`. This will override the same template from the  
`OXYGEN_INSTALL_DIR/frameworks/dita/DITA-OT/plugins/org.dita.pdf2/xsl/fo/front-matter.xsl`.  
Now, `custom.xsl` has the content:

```
<?xml version='1.0'?>
<xsl:stylesheet xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
  xmlns:fo="http://www.w3.org/1999/XSL/Format"
  version="1.1">

<xsl:template name="createFrontMatter_1.0">
  <fo:page-sequence master-reference="front-matter" xsl:use-attribute-sets="__force__page__count">
    <xsl:call-template name="insertFrontMatterStaticContents"/>
    <fo:flow flow-name="xsl-region-body">
      <fo:block xsl:use-attribute-sets="__frontmatter">
        <!-- set the title -->
        <fo:block xsl:use-attribute-sets="__frontmatter__title">
          <xsl:choose>
            <xsl:when test="$map/*[contains(@class,' topic/title ')]][1]">
              <xsl:apply-templates select="$map/*[contains(@class,' topic/title ')]][1]"/>
            </xsl:when>
            <xsl:when test="$map/*[contains(@class,' bookmap/mainbooktitle ')]][1]">
              <xsl:apply-templates select="$map/*[contains(@class,' bookmap/mainbooktitle
                ')]][1]"/>
            </xsl:when>
            <xsl:when test="//*[contains(@class, ' map/map ')]/@title">
              <xsl:value-of select="//*[contains(@class, ' map/map ')]/@title"/>
            </xsl:when>
            <xsl:otherwise>
              <xsl:value-of select="/descendant::*[contains(@class, ' topic/topic
                ')]][1]/*[contains(@class, ' topic/title ')]"/>
            </xsl:otherwise>
          </xsl:choose>
        </fo:block>

        <!-- set the subtitle -->
        <xsl:apply-templates select="$map/*[contains(@class,' bookmap/booktitlealt ')]"/>

        <fo:block xsl:use-attribute-sets="__frontmatter__owner">
          <xsl:apply-templates select="$map/*[contains(@class,' bookmap/bookmeta ')]"/>
        </fo:block>

        <fo:block text-align="center" width="100%">
          <fo:external-graphic src="url({concat($artworkPrefix,
            '/Customization/OpenTopic/common/artwork/logo.png')})"/>
        </fo:block>

      </fo:block>

      <!--<xsl:call-template name="createPreface"/>-->

    </fo:flow>
  </fo:page-sequence>
</xsl:template>
</xsl:stylesheet>
```

7. Edit (or duplicate, then edit) the DITA Map to PDF transformation scenario and add in the Parameters tab a new entry with the name `customization.dir` with the value `C:\Customization`.

There are other ways in which you could directly modify the XSL stylesheets from the DITA OT but this customization gives you flexibility to future DITA OT upgrades in Oxygen XML Editor.

## Header and Footer Customization

The XSLT stylesheet

`OXYGEN_INSTALL_DIR/frameworks/dita/DITA-OT/plugins/org.dita.pdf2/xsl/fo/static-content.xsl`

contains templates which output the static header and footers for various parts of the PDF like the prolog, table of contents, front matter or body.

The templates for generating a footer for pages in the body are called `insertBodyOddFooter` or `insertBodyEvenFooter`.

These templates get the static content from resource files which depend on the language used for generating the PDF. The default resource file is `frameworks/dita/DITA-OT/plugins/org.dita.pdf2/cfg/common/vars/en.xml`. These resource files contain variables like `Body odd footer` which can be set to specific user values.

Instead of modifying these resource files directly, they can be overwritten with modified versions of the resources in a PDF customization directory as explained in [DITA to PDF Output Customization](#) on page 300.

## Installing a plugin in the DITA Open Toolkit

The architecture of the DITA Open Toolkit allows additional plugins to be installed.

1. The additional plugin(s) should be copied to the `plugins` directory from the used DITA Open Toolkit installation (by default `OXYGEN_INSTALL_DIR\frameworks\dita\DITA-OT\plugins`).
2. The DITA OT ANT integrator build file needs to be run. In the **Transformation Scenarios** view there is a predefined transformation scenario called **Run DITA OT Integrator** which can be used for this.

 **Important:** The folder where the DITA OT is located needs to have full write access permissions set to it.

3. If the plugin contributed with a new **transtype** to the publishing stage, the application will not detect it by default. You have to create a new **DITA OT** transformation scenario with a predefined type which is close to the newly added **transtype**, then edit the transformation scenario and in the **Parameters** tab add a parameter called **transtype** with the value of the newly added transformation type.

## DITA Specialization Support

---

This section explains how you can integrate and edit a DITA specialization in Oxygen XML Editor.

### Integration of a DITA Specialization

A DITA specialization usually includes:

- DTD definitions for new elements as extensions of existing DITA elements
- optionally specialized processing, that is new XSLT template rules that match the extension part of the `class` attribute values of the new elements and thus extend the default processing available in DITA Open Toolkit

A specialization can be integrated in the application with minimum effort:

1. If the DITA specialization is available as a DITA Open Toolkit plugin, you should copy the plugin to the place where the DITA OT that you are using is located (by default `OXYGEN_INSTALL_DIR\frameworks\dita\DITA-OT\plugins`). Then you should run the DITA OT integrator to integrate the plugin. In the **Transformation Scenarios** view there is a predefined scenario called **Run DITA OT Integrator** which can be used for this.

 **Important:** The folder where the DITA OT is located needs to have full write access permissions set to it.

2. If the specialization is not available as a plugin:

If the DTD's that define the extension elements are located in a folder outside the DITA Open Toolkit folder you should add new rules to the DITA OT catalog file for resolving the DTD references from the DITA files that use the specialized elements to that folder. This allows correct resolution of DTD references to your local DTD files and is

needed for both validation and transformation of the DITA maps or topics. The DITA OT catalog file is called `catalog-dita.xml` and is located in the root folder of the DITA Open Toolkit.

If there is specialized processing provided by XSLT stylesheets that override the default stylesheets from DITA OT these new stylesheets must be called from the Ant build scripts of DITA OT.



**Important:** If you are using DITA specialization elements in your DITA files it is recommended that you activate the **Enable DTD processing in document type detection** checkbox in the [Document Type Association page](#).

## Editing DITA Map Specializations

In addition to recognizing the default DITA map formats: `map` and `bookmap` the **DITA Maps Manager** view can also be used to open and edit specializations of DITA Maps.

All advanced edit actions available for the map like insertion of topic refs, heads, properties editing, allow the user to specify the element in an editable combo box. Moreover the elements which appear initially in the combo are all the elements which are allowed to appear at the insert position for the given specialization.

The topic titles rendered in the **DITA Maps Manager** view are collected from the target files by matching the `class` attribute and not a specific element name.

When editing DITA specializations of maps in the main editor the insertions of topic reference, topic heading, topic group and conref actions should work without modification. For the table actions you have to modify each action by hand to insert the correct element name at caret position. You can go to the **DITA Map** document type from the [Document Type Association page](#) and edit the table actions to insert the element names as specified in your specialization. See [this section](#) for more details.

## Editing DITA Topic Specializations

In addition to recognizing the default DITA topic formats: `topic`, `task`, `concept`, `reference` and `composite`, topic specializations can also be edited in the Author page.

The content completion should work without additional modifications and you can choose the tags which are allowed at the caret position.

The CSS styles in which the elements are rendered should also work on the specialized topics without additional modifications.

The toolbar/menu actions should be customized to insert the correct element names if this is the case. You can go to the DITA document type from the [Document Type Association page](#) and edit the actions to insert the element names as specified in your specialization. See [this section](#) for more details.

## Use a New DITA Open Toolkit in Oxygen XML Editor

---

Oxygen XML Editor comes bundled with a DITA Open Toolkit, located in the `[Oxygen-install-folder]/frameworks/dita/DITA-OT` directory. To use a new DITA Open Toolkit, follow these steps:

1. Edit your transformation scenarios and in the **Parameters** tab change the value for the `dita.dir` directory to point to the new directory.
2. If you want to make changes in the libraries that come with the new DITA Open Toolkit and are used by the ANT process you can go to the **Advanced** tab, click the **Libraries** button, uncheck the checkbox **Allow Oxygen to add high priority libraries to classpath**.
3. If there are also changes in the DTD's and you want to use the new versions for content completion and validation, go to the Oxygen XML Editor preferences in the **Document Type Association** page, edit the **DITA** and **DITA Map** document types and modify the catalog entry in the **Catalogs** tab to point to the custom catalog file `catalog-dita.xml`.

## Reusing Content

---

The DITA framework allows reusing content from other DITA files with a content reference in the following ways:

- You can select content in a topic, create a reusable component from it and reference the component in other locations using the actions **Create Reusable Component** and **Insert Reusable Component**. A reusable component is a file, usually shorter than a topic. You also have the option of replacing the selection with the component that you are in the process of creating. The created reusable component file is usually self-contained and its automatically generated content can be fine tuned by modifying the resources located in the folder `OXYGEN_INSTALL_DIR\frameworks\dita\reuse`.
- You can add, edit, and remove a content reference (`conref`) attribute to/from an existing element. The actions **Add/Edit Content Reference** and **Remove Content Reference** are available on the contextual menu of the Author editor and on the DITA menu. When a content reference is added or an existing content reference is edited, you can select any topic ID or interval of topic IDs (set also the `conrefend` field in the dialog for adding/editing the content reference) from a target DITA topic file.
- You can insert an element with a content reference (`conref` or `conkeyref`) attribute using one of the actions **Insert Content Reference** and **Insert Content Key Reference** that are available on the DITA menu, the Author custom actions toolbar and the contextual menu of the Author editor.

DITA makes the distinction between local content, that is the text and graphics that are actually present in the element, and referenced content that is referred by the element but is located in a different file. You have the option of displaying referenced content by setting the option **Display referred content** that is available from menu **Options > Preferences > Editor > Edit modes > Author**.

### Working with Content References

The DITA feature called `conref` (short for *content reference*) enables a piece of content to be included by reference in multiple contexts. When you need to update that content, you do it in only one place. Typical uses of content references are for product names, warnings, definitions or process steps.

You can use either or both of the following strategies for managing content references:

- *Reusable components* - With this strategy, you create a new file for each piece of content that you want to reuse.
- *Arbitrary content references* - You may prefer to keep many pieces of reusable content in one file. For example, you might want one file to consist of a list of product names, with each product name in a `phrase` (`<ph>` element) within the file. Then, wherever you need to display a product name, you can insert a content reference that points to the appropriate `<ph>` element in this file.

This strategy requires more setup than reusable components, but makes easier centrally managing the reused content.

Oxygen XML Editor creates a reference to the external content by adding a `conref` attribute to an element in the local document. The `conref` attribute defines a link to the referenced content, made up of a path to the file and the topic ID within the file. The path may also reference a specific element ID within the topic. Referenced content is not physically copied to the referencing file, but Oxygen XML Editor displays it as if it is there in the referencing file. You can also choose to view local content instead of referenced content, to edit the attributes or contents of the referencing element.

### How to Work with Reusable Components

When you need to reuse a part of a DITA topic in different places (in the same topic or in different topics) it is recommended to create a separate component and insert only a reference to the new component in all places. Below are the steps for extracting a reusable component, inserting a reference to the component and quickly editing the content inside the component.

1. Select with the mouse the content that you want to reuse in the DITA file opened in Author mode.
2. Start the action **Create Reusable Component** that is available on the DITA menu, the Author framework actions toolbar and the contextual menu of the Author editor.
3. In the combo box **Reuse Content** select the DITA element with the content that you want to extract in a separate component. The combo box contains the current DITA element where the cursor is located (for example a `p` element

- a paragraph - or a step or a taskbody or a conbody etc.) and also all the ancestor elements of the current element.

4. In the **Description** area enter a textual description for quick identification by other users of the component.
5. If you want to replace the extracted content with a reference to the new component you should leave the checkbox **Replace selection with content reference** with the default value (selected).
6. Press the **Save** button which will open a file system dialog where you have to select the folder and enter the name of the file that will store the reusable component.
7. Press the **Save** button in the file system dialog to save the reusable component in a file. If the checkbox was selected in the **Create Reusable Component** dialog the `conref` attribute will be added to the element that was extracted as a separate component. In Author mode the content that is referenced by the `conref` attribute is displayed with grey background and is read-only because it is stored in other file.
8. Optionally, to insert a reference to the same component in other location just place the cursor at the insert location and run the action **Insert Reusable Component** that is available on the DITA menu, the Author framework actions toolbar and the contextual menu of the Author editor. Just select in the file system dialog the file that stores the component and press the **OK** button. The action will add a `conref` attribute to the DITA element at the insert location. The referenced content will be displayed in Author mode with grey background to indicate that it is not editable.
9. Optionally, to edit the content inside the component just click on the open icon  at the start of the grey background area which will open the component in a separate editor.

## Insert a Direct Content Reference

You should follow these steps for inserting an element with a content reference (`conref`) attribute:

1. Start one of the actions **Insert a DITA Content Reference** and **Insert a DITA Content Key Reference**.
2. In the dialog **Insert Content Reference** select the file with the referenced content in the **URL** field.
3. In the tree that presents the DITA elements of the specified file that have an `id` attribute you have to select the element or the interval of elements that you want to reference. The `conref` field will be filled automatically with the `id` value of the selected element. If you select an interval of elements the `conrefend` field will be filled with the `id` value of the element that ends the selected interval.
4. Press the **OK** button to insert in the current DITA file an element with the same name and with the same `conref` attribute value (and optionally with the same `conrefend` attribute value) as the element(s) selected in the dialog.

## Moving and Renaming Resources

---

You can move or rename resources on disk directly from Oxygen XML Editor. To do this, use one of the following actions available in the contextual menu of the **DITA Maps Manager** view:

- **Rename resource**

This action allows you to change the name of a resource linked in the edited DITA Map, using the **Rename resource** dialog. This dialog contains the following options:

- **Update references** - enable this checkbox to update all references of the file in the edited DITA Map and in the files referred from the DITA Map. This way, the completeness of the DITA Map is preserved;
- **Preview** - select this button to display a preview of the changes Oxygen XML Editor is about to make;
- **Rename** - executes the **Rename resource** operation;
- **Cancel** - cancels the **Rename resource** operation. No changes are applied.

- **Move resource**

This action allows you to change the location of a resource linked in the edited DITA Map, using the **Move resource** dialog. This dialog contains the following options:

- **Destination** - specifies the target location on disk of the edited resource;
- **File name** - allows you to change the name of the edited resource;

- **Update references** - enable this checkbox to update all references of the file in the edited DITA Map and in the files referred from the DITA Map. This way, the completeness of the DITA Map is preserved;
- **Preview** - select this button to display a preview of the changes Oxygen XML Editor is about to make;
- **Move** - moves the edited resource in the target location on disk;
- **Cancel** - cancels the **Move resource** operation. No changes are applied.

## DITA Profiling / Conditional Text

Conditional text is a way to mark blocks of text meant to appear in some renditions of the document, but not in others. It differs from one variant of the document to another, while unconditional text appear in all document versions.

For instance you can mark a section of a document to be included in the manual designated for the *expert* users, other for the *novice* users manual while unmarked sections are included in any rendition.

You can use conditional text when you develop documentation for:

- a series of similar products
- different releases of a product
- various audiences

The benefits of using conditional text include reduced effort for updating and translating your content and an easy way to customize the output for various audiences.

Oxygen XML Editor offers full support for DITA conditional text processing: profiling attributes can be easily managed to filter content in the published output. You can toggle between different profile sets to see how the edited content looks like before publishing.

DITA offers support for profiling/conditional text by using profiling attributes. With Oxygen XML Editor you can define values for the DITA profiling attributes. The profiling configuration can be shared between content authors through the project file. There is no need for coding or editing configuration files.

Several profiling attributes can be aggregated into a profiling condition set that allow you to apply more complex filters on the document content. A Profiling Condition Set is a very powerful and convenient tool used to preview the content that goes into the published output. For example, an installation manual available both in Windows and Linux variants can be profiled to highlight only the Linux procedures for more advanced users.

## Profiling / Conditional Text Markers

If **Show Profiling Attributes** option (available in the  **Profiling / Conditional Text toolbar menu**) is set all profiling attributes set on the current element are listed at the end of the highlighted block. Profiled text is marked in the **Author** mode with a light green border.

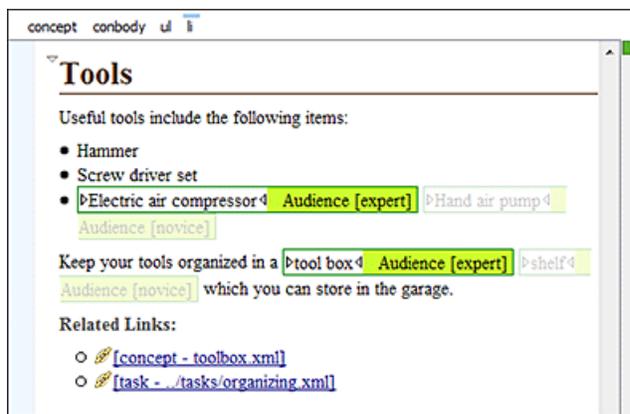
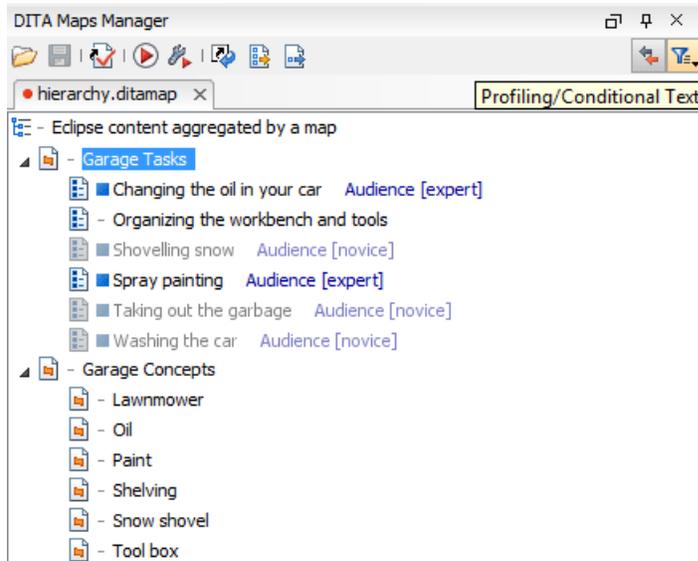


Figure 183: Profiling in Author

In the *DITA Maps Manager View* different decorators are used to mark profiled and non-profiled topics:

- ■ - the topic contains profiling attributes;
- □ - the topic inherits profiling attribute from its ancestors;
- ■ (with checkmark) - the topic contains and inherits profiling attributes;
- - (dash) - the topic neither contains, nor inherits profiling attributes.



**Figure 184: Profiling in DITA Maps Manager**

The profiled content that does not match the rules imposed by the current condition sets is grayed-out, meaning that it will not be included in the published output.

## Profiling with a Subject Scheme Map

A subject scheme map enables DITA users to create custom profiling values and to manage the profiling attribute values used in the DITA topics without having to write a DITA specialization.

Subject scheme maps use key definitions to define a collection of profiling values instead of a collection of topics. The highest level of map that uses the set of profiling values must reference the subject scheme map in which the profiling values are defined, for example:

```
<topicref href="test.ditamap" format="ditamap" type="subjectScheme"/>
```

A profiled value is a short and readable keyword that identifies a metadata attribute. For example, the audience metadata attribute may take a value that identifies the user group associated with a particular content unit. Typical user values for a medical-equipment product line might include *therapist*, *oncologist*, *physicist*, *radiologist*, *surgeon* and so on. A subject scheme map can define a list of these audience values:

```
<subjectScheme>
  <!-- Pull in a scheme that defines audience user values -->
  <subjectdef keys="users">
    <subjectdef keys="therapist">
    <subjectdef keys="oncologist">
    <subjectdef keys="physicist">
    <subjectdef keys="radiologist">
    <subjectdef keys="surgeon">
      <subjectdef keys="neuro-surgeon">
      <subjectdef keys="plastic-surgeon">
    </subjectdef>
  </subjectdef>
</subjectdef>

  <!-- Define an enumeration of the audience attribute, equal to
  each value in the users subject. This makes the following values
  valid for the audience attribute: therapist, oncologist, physicist, radiologist -->
  <enumerationdef>
    <attributedef name="audience"/>
  </enumerationdef>
</subjectScheme>
```

```
<subjectdef keyref="users"/>
</enumerationdef>
</subjectScheme>
```

When editing a DITA Topic in Text mode or in Author mode, Oxygen XML Editor collects all the profiling values from the Subject Scheme Map that is referenced in the map currently opened in the *DITA Maps Manager*.

In our example the values `therapist`, `oncologist` up to `plastic-surgeon` are displayed in *the content completion window* as values for the audience attribute.

Now let us consider we have the following fragment in a topic:

```
<p audience="neuro-surgeon">Some text.. </p>
```

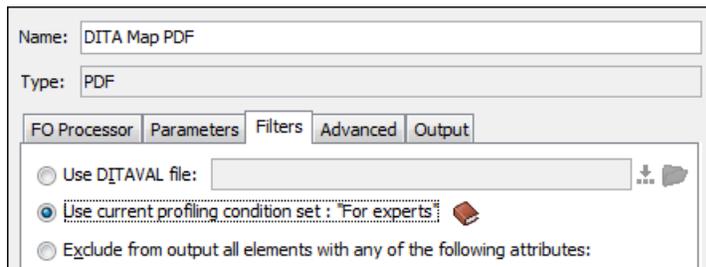
When you define a DITAVAL filter you can exclude for instance anything which is surgeon:

```
<val>
  <prop action="exclude" att="audience" val="surgeon"/>
</val>
```

Then if you transform the main DITA Map specifying the DITAVAL filter file in the transformation scenario the `p` element should be excluded from the output. So excluding the "surgeon" audience excludes also the "neuro-surgeon" and "plastic-surgeon" from the output.

## Publish Profiled Text

Oxygen XML Editor comes with preconfigured transformation scenarios for DITA. All these scenarios take into account the current profiling condition set.



## How to Profile DITA Content

1. Go to **Preferences > Editor > Edit modes > Author > Profiling / Conditional Text** page and edit the **Profiling Attributes** table.
2. For DITA there are already default entries for `audience`, `platform`, `product` and `otherprops`. You can customize the attributes and their values.  
This is a one-time operation. Once you save the customized attributes and values, you can use them to profile any DITA project.
3. To use the profiling attributes set in the previous step, do one of the following:
  - a) Right-click (Ctrl + click on MacOS) a topic reference in **DITA Maps Manager** and choose **Edit Profiling Attributes** from the contextual menu.
  - b) In the **Author** editing mode, right-click (Ctrl + click on MacOS) an XML element and choose **Edit Profiling Attributes** from the contextual menu.
  - c) Use the **Attributes** view to set profiling attributes.

Turn on the **Show Profiling Attributes** option to display the profiling markup in the **Author** editing mode.

## Working with MathML

---

You can add MathML equations in a DITA document using one of the following methods:

- embed MathML directly into a DITA topic. You can start with the **Framework templates / DITA / topic / Composite with MathML** document template, available in the **New** file action wizard.
- reference an external MathML file as an image, using the  **Insert Image Reference** toolbar action.

Note that MathML equations contained in DITA topics can only be published out-of-the-box in PDF using the **DITA PDF** transformation scenario. For other publishing formats users must employ additional customizations for handling MathML content.



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# Chapter 7

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## Predefined Document Types

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### Topics:

- [Document Type](#)
- [The DocBook 4 Document Type](#)
- [The DocBook 5 Document Type](#)
- [The DocBook Targetset Document Type](#)
- [The DITA Topics Document Type](#)
- [The DITA Map Document Type](#)
- [The XHTML Document Type](#)
- [The TEI ODD Document Type](#)
- [The TEI P4 Document Type](#)
- [The TEI P5 Document Type](#)
- [The EPUB Document Type](#)

The following are the short presentations of some document types that come bundled with Oxygen XML Editor. For each document type there are presented built-in transformation scenarios, document templates and Author extension actions.

## Document Type

---

A *document type* or *framework* is associated to an XML file according to a set of rules. It includes also many settings that improve editing in the Author mode for the category of XML files it applies for. These settings include:

- a default grammar used for validation and content completion in both Author mode and Text mode;
- CSS stylesheet(s) for rendering XML documents in Author mode;
- user actions invoked from toolbar or menu in Author mode;
- predefined scenarios used for transformation of the class of XML documents defined by the document type;
- XML catalogs;
- directories with file templates;
- user-defined extensions for customizing the interaction with the content author in Author mode.

The tagless editor comes with some predefined document types already configured when the application is installed on the computer. These document types describe well-known XML frameworks largely used today for authoring XML documents. Editing a document which conforms to one of these types is as easy as opening it or creating it from one of the predefined document templates which also come with Oxygen XML Editor.

## The DocBook 4 Document Type

---

*DocBook* is a very popular set of tags for describing books, articles, and other prose documents, particularly technical documentation.

A file is considered to be a *DocBook 4* document when one of the following conditions are true:

- root element name is `book` or `article`
- the PUBLIC ID of the document contains the string `-//OASIS//DTD DocBook XML`

The schema of *DocBook 4* documents is `${frameworks}/docbook/dtd/docbookx.dtd`, where `${frameworks}` is a subdirectory of the Oxygen XML Editor install directory.

The CSS file used for rendering DocBook content is located in `${frameworks}/docbook/css/docbook.css`.

The XML catalog is stored in `${frameworks}/docbook/catalog.xml`.

## DocBook 4 Author Extensions

Specific actions for DocBook documents are:

- **B Bold emphasized text** - emphasizes the selected text by surrounding it with `<emphasis role="bold"/>` tag;
- ***I Italic emphasized text*** - emphasizes the selected text by surrounding it with `<emphasis role="italic"/>` tag;
- **U Underline emphasized text** - emphasizes the selected text by surrounding it with `<emphasis role="italic"/>` tag.



### Note:

**Bold**, **Italic**, and **Underline** are toggle actions.

For all of the above actions, if there is no selection, then a new `emphasis` tag with specific role is inserted. These actions are available in any document context and are grouped under the **Emphasize** toolbar actions group.

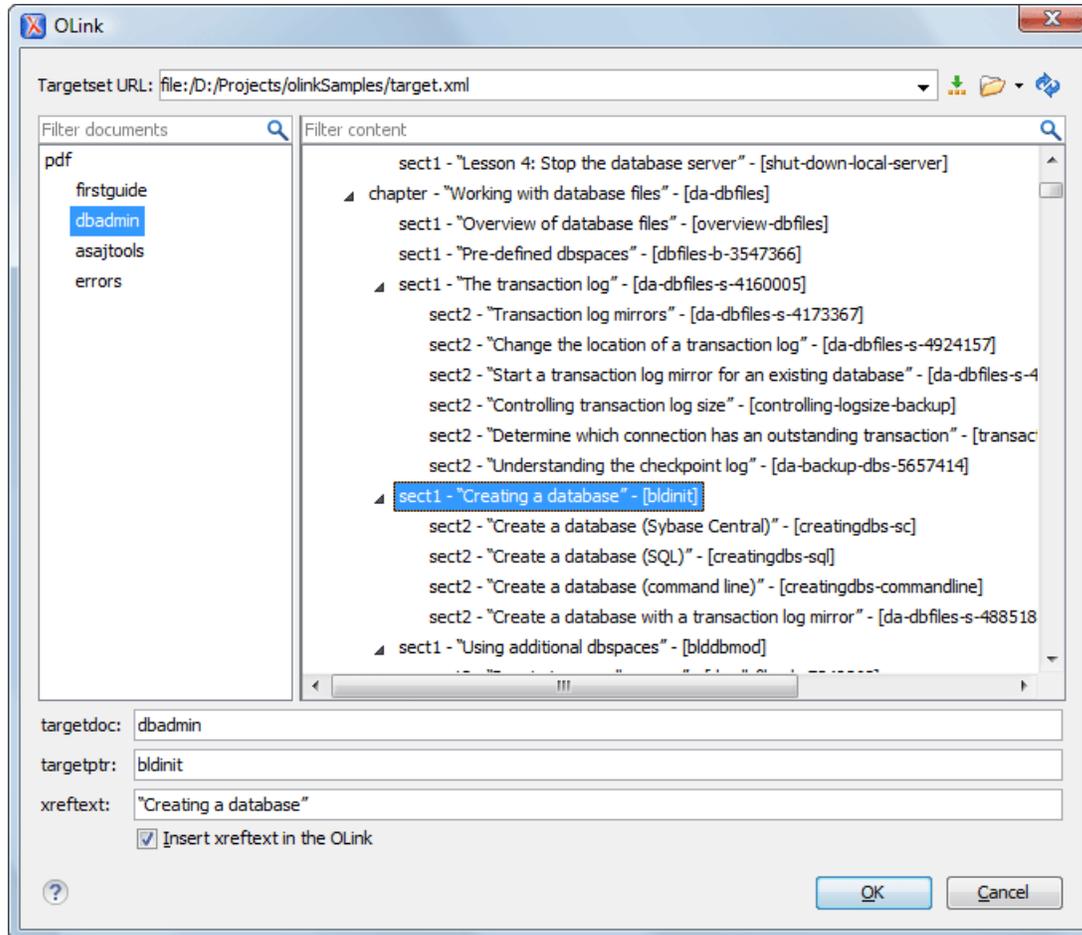
- **Browse reference manual** - opens in your web browser of choice a reference to the documentation of the XML element closest to the caret position.
- **Cross reference (link)** - inserts a hypertext link;

- **Cross reference (xref)** - inserts a cross reference to another part of the document;



**Note:** These actions are grouped under the **Link** toolbar actions group.

- **Web Link (ulink)** - inserts a link that addresses its target with an URL (Universal Resource Locator);
- **Insert olink** - inserts a link that addresses its target indirectly, using the `targetdoc` and `targetptr` values which are present in a *Targetset* file;



**Figure 185: Insert OLink Dialog**

After you choose the **Targetsset** URL, the structure of the target documents is presented. For each target document (`targetdoc`), the content is displayed allowing for easy identification of the `targetptr` for the `olink` element which will be inserted. You can use the search fields to quickly identify a target. If you already know the values for the `targetdoc` and `targetptr`, you can insert them directly in the corresponding fields. You also have the possibility to edit an `olink` using the action **Edit OLink** available on the contextual menu. The last used **Targetsset** URL will be used to identify the edited target.

- **Insert URI** - inserts an URI element. The URI identifies a Uniform Resource Identifier (URI) in content;
- **§ Insert Section** - inserts a new section / subsection in the document, depending on the current context. For example if the current context is `sect1` then a `sect2` is inserted, and so on;
- **Insert image reference** - inserts a graphic object at the caret position. This is done by inserting either `<figure>` or `<inlinegraphic>` element depending on the current context. The following graphical formats are supported: GIF, JPG, JPEG, BMP, PNG, SVG;
- **Insert an ordered list at the caret position** - inserts an ordered list. A child list item is also inserted automatically by default;

-  **Insert an unordered list at the caret position** - inserts an itemized list. A child list item is also inserted automatically by default;
-  **Insert a step or list Item** - inserts a new list item in any of the above list types.
-  **Insert a variable list at the caret position** - inserts a DocBook variable list. A child list item is also inserted automatically by default;
-  **Insert a procedure** - inserts a DocBook procedure element. A step child item is also inserted automatically;
  -  **Insert Table** - opens a dialog that allows you to configure and insert a table. You can generate a header and footer, set the number of rows and columns of the table and decide how the table is framed;
  -  **Insert Row** - inserts a new table row with empty cells. This action is available when the caret is positioned inside a table;
  -  **Insert Column** - inserts a new table column with empty cells after the current column. This action is available when the caret is positioned inside a table;
  -  **Insert Cell** - inserts a new empty cell depending on the current context. If the caret is positioned between two cells, Oxygen XML Editor a new cell at caret position. If the caret is inside a cell, the new cell is created after the current cell;
  -  **Delete Column** - deletes the table column located at caret position;
  -  **Delete Row** - deletes the table row located at caret position;
  -  **Join Row Cells** - joins the content of the selected cells. The operation is available if the selected cells are from the same row and they have the same row span. The action is also available when the selection is missing, but the caret is positioned between two cells;
  -  **Join Cell Above** - joins the content of the cell from the current caret position with the content of the cell above it. This action works only if both cells have the same column span;
  -  **Join Cell Below** - joins the content of the cell from the current caret position with the content of the cell below it. This action works only if both cells have the same column span;
-  **Note:** When you use  **Join Cell Above** and  **Join Cell Below**, Oxygen XML Editor deletes the source row is case it remains empty. The cells that span over multiple rows are also updated.
-  **Split Cell To The Left** - splits the cell from the current caret position in two cells, inserting a new empty table cell to the left. This action works only if the current cell spans over more than one column. Oxygen XML Editor decreases the column span of the source cell with one;
-  **Split Cell To The Right** - splits the cell from the current caret position in two cells, inserting a new empty table cell to the right. This action works only if the current cell spans over more than one column. Oxygen XML Editor decreases the column span of the source cell with one;
-  **Split Cell Above** - splits the cell from current caret position in two cells, inserting a new empty table cell above. This action works only if the current cell spans over more than one row. Oxygen XML Editor decreases the column span of the source cell with one;
-  **Split Cell Below** - splits the cell from current caret position in two, inserting a new empty table cell below. This action works only if the current cell spans over more than one row. Oxygen XML Editor decreases the column span of the source cell with one.



**Caution:** Column specifications are required for table actions to work properly.

- **Generate IDs** - Available in the contextual menu, this action allows you to generate an unique ID for the element at caret position. If the element already has an ID set, it is preserved.

Further options are offered in the **ID Options** dialog, available in the document type specific main menu. The configurable ID value pattern can accept most of the application supported *editor variables*. You can also specify the elements for which Oxygen XML Editor generates an ID if the **Auto generate ID's for elements** is enabled.

If you want to keep an already set element ID's when copying content in the same document, make sure the **Remove ID's when copying content in the same document** option is not checked.

All actions described above are available in the contextual menu, the **DocBook4** submenu of the main menu or in the **Author custom actions** toolbar.

Dragging a file from *the Project view* or from *the DITA Maps Manager view* and dropping it into a DocBook 4 document that is edited in Author mode creates a link to the dragged file (the `ulink` DocBook element) at the drop location. Dragging an image file from the default file system application (Windows Explorer on Windows or Finder on Mac OS X, for example) and dropping it into a DocBook 4 document inserts an image element (the `inlinegraphic` DocBook element with the `fileref` attribute) with the location of the dragged file at the drop location (similar with the **Insert Graphic** toolbar action).

## DocBook 4 Transformation Scenarios

Default transformation scenarios allow you to convert DocBook 4 to DocBook 5 documents and transform DocBook documents to HTML, HTML Chunk, PDF, XHTML, XHTML Chunk, WebHelp (experimental) and EPUB.

### WebHelp Output Format

WebHelp is a form of online help consisting of a series of web pages (XHTML format). Its advantages include platform independence and continuous content update, since it can be viewed using a regular web browser.

Oxygen XML Editor allows you to publish DocBook 4 documents into a WebHelp format which provides both table of contents and advanced search capabilities.

The layout is composed of two frames:

- the left frame, containing separate tabs for **Content**, **Search**, and **Index**;
  - 👉 **Note:** In case your documents contain no *indexterm* elements, the **Index** tab is not generated.
  - 👉 **Note:** You can choose to enhance the appearance of the selected item in the table of contents. To highlight the background of the selected item, go to the output folder of the WebHelp, and locate the `toc.css` and `tocWDiv.css` files. You can find these files in the **oxygen-webhelp > resources > css** folder. Open the files, find the `menuItemSelected` class and change the value of the `background` property.
- the right frame where help pages are displayed.

You can navigate through the content of your output using the arrows in the upper right part of the page. These arrows allow you to move to the parent, previous, and next topic. The parents of the currently opened topic are also presented at the top of the page.

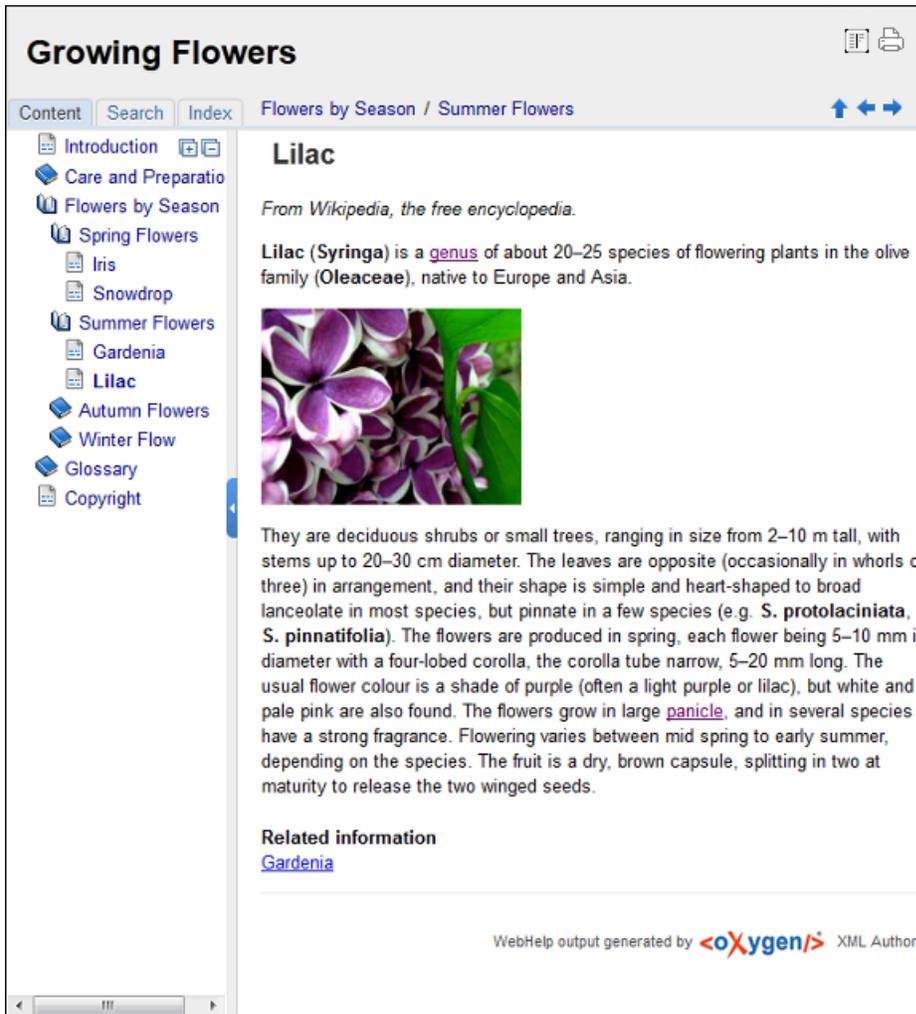
👉 **Note:** You can edit the `args.hide.parent.link` parameter to hide the **Parent**, **Next**, and **Previous** links.

You can use these two buttons  , displayed in the **Content** tab, to expand and collapse all the topics presented the table of contents.

The top right corner of the page contains the following options:

- **With frames** - displays the output using HTML frames to render two separate sections: a section that presents the table of contents in the left side and a section that presents the content of a topic in the right side;
- **Print** - prints the content of the displayed page. The table of contents area is not printed;
- **Link to this page** - opens a new browser tab that displays the link to the currently rendered frame.

👉 **Note:** This option is available only in the HTML frames enabled version of the output.



**Figure 186: WebHelp Output**

To publish DocBook 4 to WebHelp, use the **DocBook WebHelp** transformation. To further customize the out-of-the-box transformation, you can edit some of its parameters:

- `use.stemming` - controls whether you want to include stemming search algorithms into the published output. Stemming is the process for reducing inflected (or sometimes derived) words to their stem, base or root form – generally a written word form. Default setting is `false`;
- `root.filename` - identifies the root of the HTML file when chunking. The `root.filename` is the base filename for the chunk created for the root of each processed document;
- `webhelp.copyright` - this parameter specifies the copyright note that is added in the footer of the Table of Contents frame (the left side frame of the WebHelp output);
- `webhelp.indexer.language` - this parameter is used to identify the correct stemmer, and punctuation that differs from language to language. For example, for English the value of this parameter is `en`, for French it is `fr`, and so on;
- `xml.file` - this parameter specifies the path to the DocBook XML file.

The **Search** tab is enhanced with a rating mechanism that computes scores for every page that matches the search criteria. These scores are then translated into a 5-star rating scheme. The search results are sorted depending on:

- number of keywords found in a single page. The higher the number, the better;
- context - if a word is found in a title or emphasized section of text it scores better than a word found in an unformatted text.

Rules applied during search:

- the space character separates keywords. An expression like *grow flowers* counts as two separate keywords: *grow* and *flowers*;
- do not use quotes to perform exact search for multiple-word expressions. An expression like "*grow flowers*", returns no results in our case, because it searches for two separate words: "*grow* and *flowers*" (note the quote signs attached to each word);
- *indexterm* and *keywords* DITA elements are an effective way to increase the ranking of a page. For example, content inside *keywords* elements weighs twice as much as content inside a *H1* HTML element;
- words composed by merging two or more words with colon (":"), minus ("-"), underline ("\_"), or dot (".") characters, count as a single word;
- search for words containing three or more characters. Shorter words, like *to*, or *of* are ignored. This rule does not apply to CJK (Chinese, Japanese, Korean) languages.

## WebHelp with Feedback Output Format

This section presents the Feedback-Enabled WebHelp systems support.

Oxygen XML Editor has the ability to transform DocBook documents into Feedback-Enabled WebHelp systems.

WebHelp is a form of online help consisting of a series of web pages (XHTML format). Its advantages include platform independence and continuous content update, since it can be viewed using a regular web browser. The Feedback system allows you to view discussion threads in a tree-like representation, reply to already posted comments and use stylized comments.

Oxygen XML Editor allows you to publish DocBook 4 documents into a WebHelp with Feedback format which provides both Table of Contents and advanced search capabilities.

The layout is composed of two frames:

- the left frame, containing separate tabs for **Content**, **Search**, and **Index**;



**Note:** In case your documents contain no *indexterm* elements, the **Index** tab is not generated.



**Note:** You can choose to enhance the appearance of the selected item in the table of contents. To highlight the background of the selected item, go to the output folder of the WebHelp, and locate the `toc.css` and `tocWDiv.css` files. You can find these files in the **oxygen-webhelp > resources > css** folder. Open the files, find the `menuItemSelected` class and change the value of the `background` property.

- the right frame where help pages are displayed.

You can navigate through the content of your output using the arrows in the upper right part of the page. These arrows allow you to move to the parent, previous, and next topic. The parents of the currently opened topic are also presented at the top of the page.



**Note:** You can edit the `args.hide.parent.link` parameter to hide the **Parent**, **Next**, and **Previous** links.

To publish DocBook 4 to WebHelp with Feedback, use the **DocBook WebHelp with Feedback** transformation. To further customize the out-of-the-box transformation, you can edit some of its parameters:

- `root.filename` - identifies the root of the HTML file when chunking. The `root.filename` is the base filename for the chunk created for the root of each processed document;
- `use.stemming` - controls whether you want to include stemming search algorithms into the published output. Stemming is the process for reducing inflected (or sometimes derived) words to their stem, base or root form – generally a written word form. Default setting is `false`;
- `webhelp.copyright` - this parameter specifies the copyright note that is added in the footer of the Table of Contents frame (the left side frame of the WebHelp output);
- `webhelp.indexer.language` - this parameter is used to identify the correct stemmer, and punctuation that differs from language to language. For example, for English the value of this parameter is `en`, for French it is `fr`, and so on;

- `webhelp.product.id` - this parameter specifies a short name for the documentation target (product), for example `mobile-phone-user-guide`, `hvac-installation-guide`. You can deploy documentation for multiple products on the same server.

The **Search** tab is enhanced with a rating mechanism that computes scores for every page that matches the search criteria. These scores are then translated into a 5-star rating scheme. The search results are sorted depending on:

- number of keywords found in a single page. The higher the number, the better;
- context - if a word is found in a title or emphasized section of text it scores better than a word found in an unformatted text.

Rules applied during search:

- the space character separates keywords. An expression like *grow flowers* counts as two separate keywords: *grow* and *flowers*;
- do not use quotes to perform exact search for multiple-word expressions. An expression like *"grow flowers"*, returns no results in our case, because it searches for two separate words: *"grow* and *flowers"* (note the quote signs attached to each word);
- *indexterm* and *keywords* DITA elements are an effective way to increase the ranking of a page. For example, content inside *keywords* elements weighs twice as much as content inside a *H1* HTML element;
- words composed by merging two or more words with colon (":"), minus ("-"), underline ("\_"), or dot (".") characters, count as a single word;
- search for words containing three or more characters. Shorter words, like *to*, or *of* are ignored. This rule does not apply to CJK (Chinese, Japanese, Korean) languages.

## Introduction

Oxygen XML Editor has the ability to transform DocBook 4 documents into feedback-enabled WebHelp systems.

WebHelp is a form of online help consisting of a series of web pages (XHTML format). Its advantages include platform independence and continuous content update, since it can be viewed using a regular web browser. It also provides table of contents and advanced search capabilities. The feedback system allows you to view discussion threads in a tree-like representation, post comments, reply to already posted comments, use stylized comments, and define administrators and moderators.

## The DocBook 4 WebHelp with Feedback transformation

To publish DocBook 4 documents to WebHelp with Feedback, use the **DocBook WebHelp with Feedback** transformation. You can customize the out-of-the-box transformation by editing some of its parameters:

- `root.filename` - identifies the root of the HTML file when chunking. The `root.filename` is the base filename for the chunk created for the root of each processed document;
- `use.stemming` - controls whether you want to include stemming search algorithms into the published output. Stemming is the process for reducing inflected (or sometimes derived) words to their *stem*, *base* or *root* form – generally a written word form. Default setting is `false`;
- `webhelp.copyright` - this parameter specifies the copyright note that is added in the footer of the Table of Contents frame (the left side frame of the WebHelp output);
- `webhelp.indexer.language` - this parameter is used to identify the correct stemmer, and punctuation that differs from language to language. For example, for English the value of this parameter is `en`, for French it is `fr`, and so on;
- `webhelp.product.id` - this parameter specifies a short name for the documentation target (product), for example `mobile-phone-user-guide`, `hvac-installation-guide`. You can deploy documentation for multiple products on the same server.

Before the transformation starts, enter the documentation product ID and the documentation version. After you run a **DocBook WebHelp with Feedback** transformation, your default browser opens the `instalation.html` file. This file contains information about the output location, system requirements, installation instructions and deployment of the output.



- Under *localhost* in the right frame click *Privileges* and then at the bottom of the page click the *reload the privileges* link.

## Deploying the WebHelp output

To deploy the WebHelp output, follow these steps:

- Locate the directory of the HTML documents. Open <http://localhost/xampp/phpinfo.php> in your browser and see the value of the DOCUMENT\_ROOT variable. In case you installed XAMPP in C:\xampp, the value of DOCUMENT\_ROOT is C:/xampp/htdocs;
- Copy the transformation output folder in the DOCUMENT\_ROOT;
- Rename it to a relevant name, for example, webhelp\_1;
- Open [http://localhost/webhelp\\_1/](http://localhost/webhelp_1/). You are redirected to [http://localhost/webhelp\\_1/install/](http://localhost/webhelp_1/install/);
  - Verify that the prerequisites are fulfilled;
  - Press **Start Installation**;
  - Configure the e-mail addresses, username, and password. Enter the WebHelp system administrator password. This special user is able to moderate new posts and manage WebHelp users;

The address and port of the SMTP mail server that will send the email notifications for the user registration and for the user comments are displayed in the WebHelp installation wizard. They can be modified later in the PHP Runtime Configuration which is usually stored in the `php.ini` file in the XAMPP installation.

You can choose to share comments with other products using the same database. After configuring the database connection, enable the **Display comments from other products** option. In the **Display comments from** section a list with the products sharing the same database is displayed. You can choose one or more products from this list to share comments with.

 **Note:** You can restrict the displayed comments of a product depending on its version. In case you have two products that use the same database and you restrict one of them to display comments starting from a certain version, the comments of the other product are also displayed from the specified version onwards.

- Press Next Step;
- Remove the installation folder from your web server;
- Click the link pointing to the index of the documentation, or visit: [http://localhost/webhelp\\_1/](http://localhost/webhelp_1/).

To test your system, create a user or post as anonymous. Check that the notification emails are delivered to your inbox.

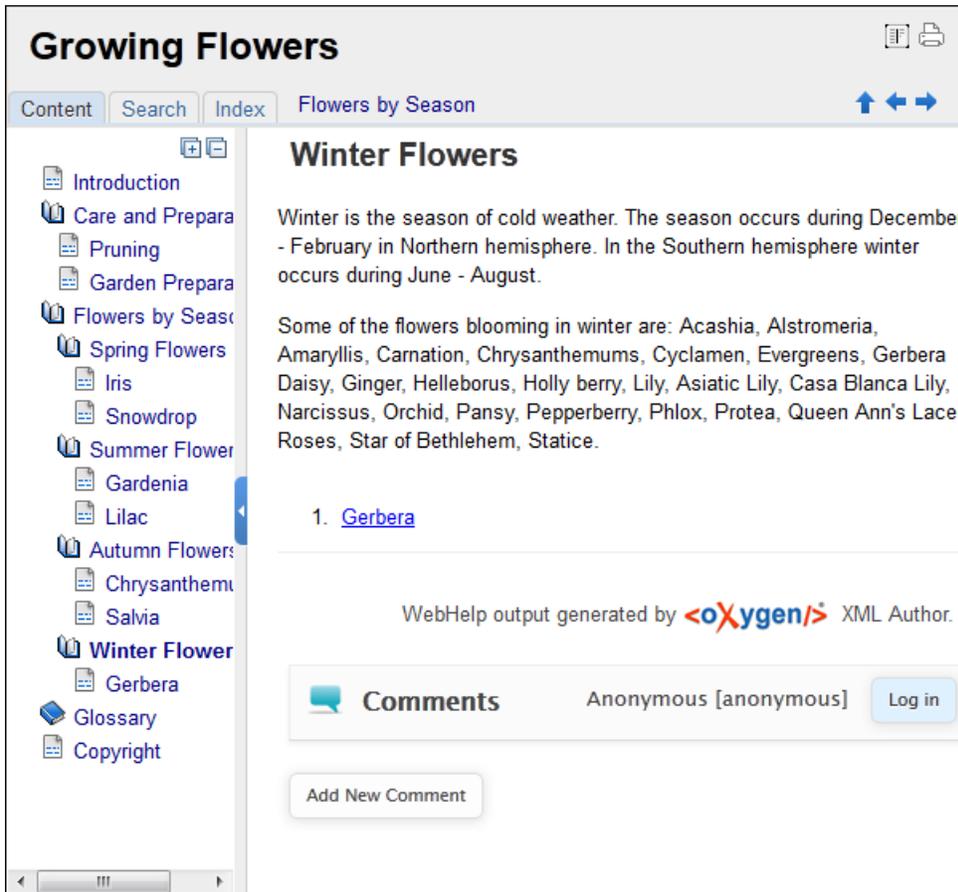
 **Note:** To read debug messages, do one of the following:

- open the `log.js` file, locate the `var log= new Log(Level.NONE);` line, and change the logging level to: `Level.INFO`, `Level.DEBUG`, `Level.WARN`, or `Level.ERROR`;
- append `?log=true` to the WebHelp URL.

## Layout of the Feedback-Enabled WebHelp System

The layout of the feedback-enabled WebHelp system resembles the layout of the basic WebHelp, the left frame remaining the same. However, the bottom of the right frame contains a **comments** bar. Select **Log in** from this bar to authenticate as a user of the WebHelp system. In case you do not have a user name, complete the fields in the dialog box that opens to create a user. Under the **comments** bar, you can click the **Add New Comment** button to add a comment whether you are logged in or not. The tabs in the left frame have the same functionality as the Content, Search, and Index tab of the basic WebHelp.

 **Note:** You can choose to enhance the appearance of the selected item in the table of contents. To highlight the background of the selected item, go to the output folder of the WebHelp, and locate the `toc.css` and `tocWDiv.css` files. You can find these files in the **oxygen-webhelp > resources > css** folder. Open the files, find the `menuItemSelected` class and change the value of the background property.



**Figure 187: The layout of the Feedback-Enabled WebHelp System**

After you log in, your name and user name are displayed in the **Comments** bar together with the **Log of** and **Edit** buttons. Click the **Edit** button to open the **User Profile** dialog. In this dialog you can customize the following options:

- **Your Name** - you can use this field to edit the initial name that you used to create your user profile;
- **Your e-mail address** - you can use this field to edit the initial e-mail address that you used to create your profile;
- When to receive an e-mail:
  - when a comment is left on a page that you commented on,
  - when a comment is left on any topic in the Help system ;
  - when a reply is left to one of my comments.
- **New Password** - allows you to enter a new password for your user account.

 **Note:** The **Current Password** field from the top of the **User Profile** is mandatory in case you want to save the changes you make.

### Advanced Customization and Management

As an administrator, you have full access to all the features of the feedback-enabled WebHelp system. Apart from the options available for a regular user, you can also use the administrative page for advanced customization and management. To access the administrative page, select **Admin Panel** from the **Comments** bar.

User Name	Name	Level	Company	E-Mail	Date	Web Help Notification	Reply Notification	Page Notification	Status
admin	Administrator	admin	NA	john@oxygenxml.com	2012-06-25 07:04:13	yes	yes	yes	validated
oXygen		moderator	noCompany	chris@oxygenxml.com	2012-06-26 01:37:07	yes	no	no	validated

**Figure 188: The Administrative Page**

This page allows you to view all posts, export comments and set the version of the WebHelp. You can also view the details of each user and search through these details using the **Search User Information** filter.

 **Note:** When you delete a comment, all the replies to that comment are deleted.

To edit the details of a user, click its row and use the **Edit User admin** dialog. In this dialog, you can customize all the information of an user, including is **Status** and **Level**. The following options are available:

- **User Name** - specifies the User Name of the currently edited user;
- **Name** - specifies the name of the currently edited user;
- **Level** - use this field to modify the level of the currently edited user. You can choose from **Admin**, **User**, and **Moderator**;
- **Company** - specifies the company of the selected user;
- **E-mail** - specifies the e-mail address that the currently edited user used to create his account. This is also the address where notifications are sent;
- **Date** - specifies the date when the currently edited user created his account;
- **Web Help Notification** - specifies whether the currently edited user receives notifications when comments are posted anywhere in the feedback-enabled WebHelp system;
- **Reply Notification** - specifies whether the currently edited user receives notifications when comments are posted as a reply to a comment left by the user itself;
- **Page Notification** - specifies whether the currently edited user receives notifications when comments are posted on a page where the user posted a comment.;
- **Status** - specifies the status of an user:
  - **created** - the currently edited user is created but does not have any rights over the feedback-enabled WebHelp system;
  - **validated** - the currently edited user is able to use the feedback-enabled WebHelp system;
  - **suspended** - the currently edited user has no rights over the feedback-enabled WebHelp system.

The rights of the users depend on their level as follows:

- **user** - this type of user is able to post comments and receive e-mails when comments are posted anywhere in the documentation, on a single page where he posted a comment, or when a reply to one of his comments is posted;
- **moderator** - apart from the rights of a normal user, this type of user has access to the **Admin Panel**. On the administrative page a moderator can view, delete, export comments and set the version of the feedback-enabled WebHelp system;

 **Note:** Comments of version newer than the current version are not displayed.

- **admin** - the administrator has full access to all features of the feedback enabled WebHelp system.

## DocBook 4 Templates

Default templates are available in the *New File wizard* and can be used for easily creating a skeletal form of a DocBook 4 book or article. These templates are stored in the `${frameworks}/docbook/templates/DocBook_4` folder.

Here are some of the DocBook 4 templates available when creating *new documents from templates*.

- **Article;**
- **Article with MathML;**
- **Article with SVG;**
- **Article with XInclude;**
- **Book;**
- **Book with XInclude;**
- **Chapter;**
- **Section.**

## Inserting olink Links in DocBook 5 Documents

An `olink` is a type of link between two DocBook XML documents.

The `olink` element is the equivalent for linking outside the current DocBook document. It has the attribute `targetdoc` for the document ID that contains the target element and the attribute `targetptr` for the ID (the value of an `id` or `xml:id` attribute) of the target element. The combination of those two attributes provides a unique identifier to locate cross references.

For example, the *Administrator Guide* is a book with the document ID `MailAdminGuide` and it contains a chapter about user accounts like the following:

```
<chapter id="user_accounts">
<title>Administering User Accounts</title>
<para>blah blah</para>
...
```

You can form a cross reference to that chapter by adding an `olink` in the *User Guide* like the following:

```
You may need to update your
<olink targetdoc="MailAdminGuide" targetptr="user_accounts">user accounts
</olink>
when you get a new machine.
```

1. Decide what documents are included in the domain for cross referencing.

An ID should be assigned to each document that will be referenced with an `olink`. Usually it is added as an `id` or `xml:id` attribute to the root element of the document. A document ID is a string that is unique for each document in your collection. For example the documentation may include a user's guide, an administrator's guide, and a reference document. These could have simple IDs like `ug`, `ag`, and `ref` or more specific IDs like `MailUserGuide`, `MailAdminGuide`, and `MailReference`.

2. Decide the output hierarchy.

For creating links between documents, the relative locations of the output documents must be known. Generally the HTML files for multiple documents are output to different directories if chunking is used. Before going further you must decide the names and locations of the HTML output directories for all the documents from the domain. Each directory will be represented by an element `<dir name="directory_name">` in the target database document. In the example from the next step the hierarchy is `documentation/guides/mailuser`, `documentation/guides/mailadmin`, `documentation/guides/reference`.

3. Create the target database document.

Each collection of documents has a master target database document that is used to resolve all `olinks` from that collection. The target database document is an XML file that is created once. It provides a framework that pulls in

the target data for each document. The database document is static and all the document data is pulled in dynamically. An example is the following:

```
<?xml version="1.0" encoding="utf-8"?>
<!DOCTYPE targetset
  SYSTEM "file:///tools/docbook-xsl/common/targetdatabase.dtd" [
  <!ENTITY ugtargets SYSTEM "file:///doc/userguide/target.db">
  <!ENTITY agttargets SYSTEM "file:///doc/adminguide/target.db">
  <!ENTITY reftargets SYSTEM "file:///doc/man/target.db">
  ]>
<targetset>
  <targetsetinfo>
    Description of this target database document,
    which is for the examples in olink doc.
  </targetsetinfo>

  <!-- Site map for generating relative paths between documents -->
  <sitemap>
    <dir name="documentation">
      <dir name="guides">
        <dir name="mailuser">
          <document targetdoc="MailUserGuide"
            baseuri="userguide.html">
            &ugtargets;
          </document>
        </dir>
        <dir name="mailadmin">
          <document targetdoc="MailAdminGuide">
            &agttargets;
          </document>
        </dir>
      </dir>
      <dir name="reference">
        <dir name="mailref">
          <document targetdoc="MailReference">
            &reftargets;
          </document>
        </dir>
      </dir>
    </sitemap>
  </targetset>
```

An example of a target .db file:

```
<!DOCTYPE div
  PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
  "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<div element="book" href="#MailAdminGuide" number="1" targetptr="user_accounts">

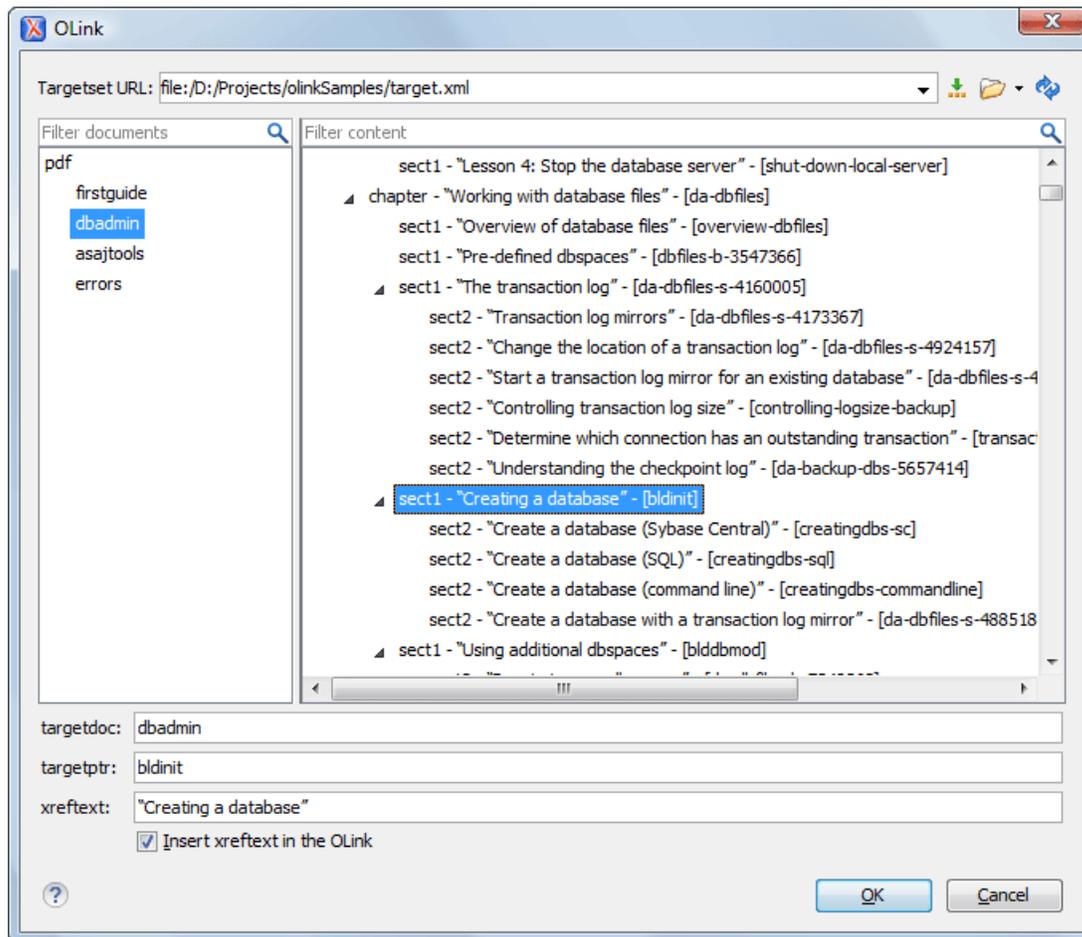
  <ttml>Administering User Accounts</ttml>
  <xref>How to administer user accounts</xref>
  <div element="part" href="#d5e4" number="I">
    <ttml>First Part</ttml>
    <xref>Part I, "First Part"</xref>
    <div element="chapter" href="#d5e6" number="1">
      <ttml>Chapter Title</ttml>
      <xref>Chapter 1, Chapter Title</xref>
      <div element="sect1" href="#src_chapter" number="1"
targetptr="src_chapter">
        <ttml>Section1 Title</ttml>
        <xref>xreflabel_here</xref>
      </div>
    </div>
  </div>
</div>
```

#### 4. Generate the target data files.

These files are the `target.db` files from the above example of target database document. They are created with the same DocBook transformation scenario as the HTML or XHTML output. The XSLT parameter called `collect.xref.targets` must be set to the value `yes`. The default name of a target data file is `target.db` but it can be changed by setting an absolute file path in the XSLT parameter `targets.filename`.

#### 5. Insert olink elements in the DocBook XML documents.

When a DocBook XML document is edited in Author mode Oxygen provides the **Insert OLink** action on the toolbar. This action allows selecting the target of an `o:link` from the list of all possible targets from a specified target database document. In the following image the target database document is called `target.xml`.



**Figure 189: Insert OLink Dialog**

#### 6. Process each document for output.

That is done using a DocBook transformation scenario in which the URL of the target database document is set in the `target.database.document` parameter. The DocBook XSL stylesheets know how to resolve `o:links` in the output files using the value of this parameter.

## The DocBook 5 Document Type

A file is considered to be a DocBook 5 document when the namespace is `http://docbook.org/ns/docbook`.

DocBook 5 documents use a Relax NG and Schematron schema located in ``${frameworks}/docbook/5.0/rng/docbookxi.rng`, where ``${frameworks}` is a subdirectory of the Oxygen XML Editor install directory.

The CSS file used for rendering DocBook content is located in ``${frameworks}/docbook/css/docbook.css`.

The XML catalog is stored in ``${frameworks}/docbook/5.0/catalog.xml`.

## DocBook 5 Author Extensions

The DocBook 5 extensions are the same as the *DocBook 4 extensions*.

A drag and drop with a file from *the Project view* or from *the DITA Maps Manager view* to a DocBook 5 document that is edited in Author mode will create a link to the dragged file (the `link` DocBook element) at the drop location. A drag and drop with an image file from the default file system application (Windows Explorer on Windows, Finder on Mac OS X, etc) will insert an image element (the `inlinemediaobject` DocBook element with an `imagedata` child element) with the location of the dragged file at the drop location, like the **Insert Graphic** toolbar action.

## DocBook 5 Transformation Scenarios

Default transformation scenarios allow you to transform DocBook 5 documents to HTML, HTML Chunk, PDF, XHTML, XHTML Chunk, WebHelp (experimental) and EPUB.

### DocBook to EPUB Transformation

The EPUB specification recommends the use of *OpenType* fonts (recognized by their `.otf` file extension) when possible. To use a specific font:

- first you need to declare it in your CSS file, like:

```
@font-face {
font-family: "MyFont";
font-weight: bold;
font-style: normal;
src: url(fonts/MyFont.otf);
}
```

- tell the CSS where this font is used. To set it as default for `h1` elements, use the `font-family` rule as in the following example:

```
h1 {
font-size:20pt;
margin-bottom:20px;
font-weight: bold;
font-family: "MyFont";
text-align: center;
}
```

- in your DocBook to EPUB transformation, set the `epub.embedded.fonts` parameter to `fonts/MyFont.otf`. If you need to provide more files, use comma to separate their file paths.

 **Note:** The `html.stylesheet` parameter allows you to include a custom CSS in the output EPUB.

### WebHelp Output Format

WebHelp is a form of online help consisting of a series of web pages (XHTML format). Its advantages include platform independence and continuous content update, since it can be viewed using a regular web browser.

Oxygen XML Editor allows you to publish DocBook5 documents into a WebHelp format which provides both Table of Contents and advanced search capabilities.

The layout is composed of two frames:

- the left frame, containing separate tabs for **Content**, **Search**, and **Index**;

 **Note:** In case your documents contain no `indexterm` elements, the **Index** tab is not generated.

 **Note:** You can choose to enhance the appearance of the selected item in the table of contents. To highlight the background of the selected item, go to the output folder of the WebHelp, and locate the `toc.css` and `tocWDiv.css` files. You can find these files in the **oxygen-webhelp > resources > css** folder. Open the files, find the `menuItemSelected` class and change the value of the `background` property.

- the right frame where help pages are displayed.

You can navigate through the content of your output using the arrows in the upper right part of the page. These arrows allow you to move to the parent, previous, and next topic. The parents of the currently opened topic are also presented at the top of the page.

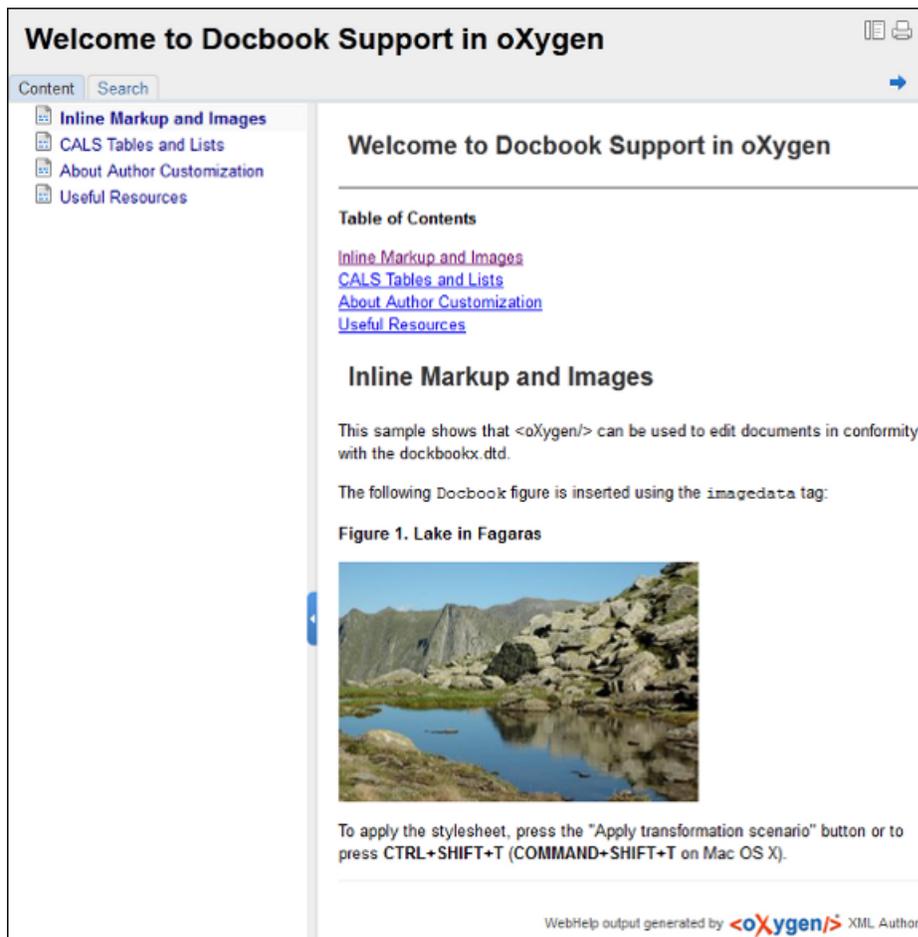
 **Note:** You can edit the `args.hide.parent.link` parameter to hide the **Parent**, **Next**, and **Previous** links.

You can use these two buttons  , displayed in the **Content** tab, to expand and collapse all the topics presented the table of contents.

The top right corner of the page contains the following options:

- **With frames** - displays the output using HTML frames to render two separate sections: a section that presents the table of contents in the left side and a section that presents the content of a topic in the right side;
- **Print** - prints the content of the displayed page. The table of contents area is not printed;
- **Link to this page** - opens a new browser tab that displays the link to the currently rendered frame.

 **Note:** This option is available only in the HTML frames enabled version of the output.



**Figure 190: DocBook WebHelp**

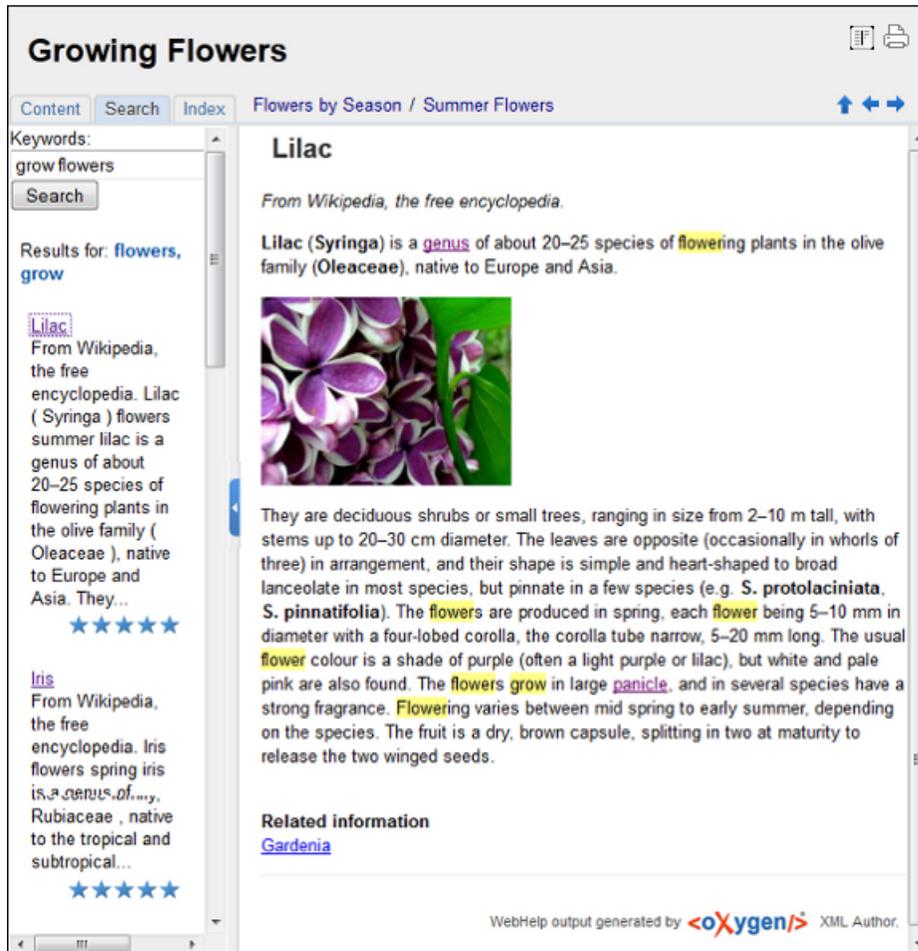
To publish DocBook 5 to WebHelp, use the **DocBook WebHelp** transformation. To further customize the out-of-the-box transformation, you can edit some of its parameters:

- `root.filename` - identifies the root of the HTML file when chunking. The `root.filename` is the base filename for the chunk created for the root of each processed document;
- `use.stemming` - controls whether you want to include stemming search algorithms into the published output. Stemming is the process for reducing inflected (or sometimes derived) words to their stem, base or root form – generally a written word form. Default setting is `false`;
- `webhelp.copyright` - this parameter specifies the copyright note that is added in the footer of the Table of Contents frame (the left side frame of the WebHelp output);

- `webhelp.indexer.language` - this parameter is used to identify the correct stemmer, and punctuation that differs from language to language. For example, for English the value of this parameter is `en`, for French it is `fr`, and so on
- `xml.file` - this parameter specifies the path to the DocBook XML file.

The **Search** tab is enhanced with a rating mechanism that computes scores for every page that matches the search criteria. These scores are then translated into a 5-star rating scheme. The search results are sorted depending on:

- number of keywords found in a single page. The higher the number, the better;
- context - if a word is found in a title or emphasized section of text it scores better than a word found in an unformatted text.



Rules applied during search:

- the space character separates keywords. An expression like *grow flowers* counts as two separate keywords: *grow* and *flowers*;
- do not use quotes to perform exact search for multiple-word expressions. An expression like "*grow flowers*", returns no results in our case, because it searches for two separate words: "*grow* and *flowers*" (note the quote signs attached to each word);
- *indexterm* and *keywords* DITA elements are an effective way to increase the ranking of a page. For example, content inside *keywords* elements weighs twice as much as content inside a *H1* HTML element;
- words composed by merging two or more words with colon (":"), minus ("-"), underline ("\_"), or dot (".") characters, count as a single word;
- search for words containing three or more characters. Shorter words, like *to*, or *of* are ignored. This rule does not apply to CJK (Chinese, Japanese, Korean) languages.

**Figure 191: WebHelp Search with Stemming Enabled**

## WebHelp with Feedback Output Format

WebHelp is a form of online help consisting of a series of web pages (XHTML format). Its advantages include platform independence and continuous content update, since it can be viewed using a regular web browser.

Oxygen XML Editor allows you to publish DocBook5 with Feedback documents into a WebHelp format which provides both Table of Contents and advanced search capabilities.

The layout is composed of two frames:

- the left frame, containing separate tabs for **Content**, **Search**, and **Index**;

 **Note:** In case your documents contain no *indexterm* elements, the **Index** tab is not generated.

 **Note:** You can choose to enhance the appearance of the selected item in the table of contents. To highlight the background of the selected item, go to the output folder of the WebHelp, and locate the `toc.css` and `tocWDiv.css` files. You can find these files in the **oxygen-webhelp > resources > css** folder. Open the files, find the `menuItemSelected` class and change the value of the `background` property.

- the right frame where help pages are displayed.

You can navigate through the content of your output using the arrows in the upper right part of the page. These arrows allow you to move to the parent, previous, and next topic. The parents of the currently opened topic are also presented at the top of the page.

 **Note:** You can edit the `args.hide.parent.link` parameter to hide the **Parent**, **Next**, and **Previous** links.

To publish DocBook 5 to WebHelp with Feedback, use the **DocBook WebHelp with Feedback** transformation. To further customize the out-of-the-box transformation, you can edit some of its parameters:

- `root.filename` - identifies the root of the HTML file when chunking. The `root.filename` is the base filename for the chunk created for the root of each processed document;
- `use.stemming` - controls whether you want to include stemming search algorithms into the published output. Stemming is the process for reducing inflected (or sometimes derived) words to their stem, base or root form – generally a written word form. Default setting is `false`;
- `webhelp.copyright` - this parameter specifies the copyright note that is added in the footer of the Table of Contents frame (the left side frame of the WebHelp output);
- `webhelp.indexer.language` - this parameter is used to identify the correct stemmer, and punctuation that differs from language to language. For example, for English the value of this parameter is `en`, for French it is `fr`, and so on
- `webhelp.product.id` - this parameter specifies a short name for the documentation target (product), for example `mobile-phone-user-guide`, `hvac-installation-guide`. You can deploy documentation for multiple products on the same server;
- `webhelp.product.version` - this parameter specifies the documentation version. New comments are bound to this version. Multiple documentation versions can be deployed on the same server;
- `xml.file` - this parameter specifies the path to the DocBook XML file.

The **Search** tab is enhanced with a rating mechanism that computes scores for every page that matches the search criteria. These scores are then translated into a 5-star rating scheme. The search results are sorted depending on:

- number of keywords found in a single page. The higher the number, the better;
- context - if a word is found in a title or emphasized section of text it scores better than a word found in an unformatted text.

Rules applied during search:

- the space character separates keywords. An expression like *grow flowers* counts as two separate keywords: *grow* and *flowers*;
- do not use quotes to perform exact search for multiple-word expressions. An expression like *"grow flowers"*, returns no results in our case, because it searches for two separate words: *"grow and flowers"* (note the quote signs attached to each word);

- *indexterm* and *keywords* DITA elements are an effective way to increase the ranking of a page. For example, content inside *keywords* elements weighs twice as much as content inside a *HI* HTML element;
- words composed by merging two or more words with colon (":"), minus ("-"), underline ("\_"), or dot (".") characters, count as a single word;
- search for words containing three or more characters. Shorter words, like *to*, or *of* are ignored. This rule does not apply to CJK (Chinese, Japanese, Korean) languages.

## Introduction

Oxygen XML Editor has the ability to transform DocBook 5 documents into feedback-enabled WebHelp systems.

WebHelp is a form of online help consisting of a series of web pages (XHTML format). Its advantages include platform independence and continuous content update, since it can be viewed using a regular web browser. It also provides table of contents and advanced search capabilities. The feedback system allows you to view discussion threads in a tree-like representation, post comments, reply to already posted comments, use stylized comments, and define administrators and moderators.

## The DocBook 5 WebHelp with Feedback transformation

To publish DocBook 5 documents to WebHelp with Feedback, use the **DocBook WebHelp with Feedback** transformation. You can customize the out-of-the-box transformation by editing some of its parameters:

- `root.filename` - identifies the root of the HTML file when chunking. The `root.filename` is the base filename for the chunk created for the root of each processed document;
- `use.stemming` - controls whether you want to include stemming search algorithms into the published output. Stemming is the process for reducing inflected (or sometimes derived) words to their stem, base or root form – generally a written word form. Default setting is `false`;
- `webhelp.copyright` - this parameter specifies the copyright note that is added in the footer of the Table of Contents frame (the left side frame of the WebHelp output);
- `webhelp.indexer.language` - this parameter is used to identify the correct stemmer, and punctuation that differs from language to language. For example, for English the value of this parameter is `en`, for French it is `fr`, and so on
- `webhelp.product.id` - this parameter specifies a short name for the documentation target (product), for example `mobile-phone-user-guide`, `hvac-installation-guide`. You can deploy documentation for multiple products on the same server;
- `webhelp.product.version` - this parameter specifies the documentation version. New comments are bound to this version. Multiple documentation versions can be deployed on the same server;
- `xml.file` - this parameter specifies the path to the DocBook XML file.

Before the transformation starts, enter the documentation product ID and the documentation version. After you run a **DocBook WebHelp with Feedback** transformation, your default browser opens the `instalation.html` file. This file contains information about the output location, system requirements, installation instructions, and deployment of the output.

## Installation

### System Requirements

The feedback-enabled WebHelp system of Oxygen XML Editor demands the following system requirements:

- Apache Web Server running;
- MySQL server running;
- PHP Version >= 5.1.6;
- PHP MySQL Support;
- oXygen WebHelp system supports the following browsers: IE7+, Chrome 19+, Firefox 11+, Safari 5+, Opera 11+.

## Installation Instructions



**Note:** These instructions were written for XAMPP 1.7.7 with PHP 5.3.8 and for *phpMyAdmin* 3.4.5. Later versions of these packages may change the location or name of some options, however the following installation steps should remain valid and basically the same.

In case you have a web server configured with PHP, MySQL, you can deploy the WebHelp output directly. Otherwise, install XAMPP. XAMPP is a free and open source cross-platform web server solution stack package. It consists mainly of the Apache HTTP Server, MySQL database, and interpreters for scripts written in the PHP.

Install XAMPP:

- Go to <http://www.apachefriends.org/en/xampp-windows.html> and download XAMPP, for instance for a Windows system;
- Install it in C:\xampp;
- From the XAMPP control panel, start "MySQL", and then "Apache";
- Open <http://localhost/xampp/index.php> in your browser to check whether the HTTP server is working.

Create a database for the feedback system and a MySQL user with privileges on that database. The feedback system uses the MySQL user to connect to the database. The username and password for the database administrator are pre-required. For XAMPP, the defaults are `root` for the username and the password is empty.

Use *phpMyAdmin* to create a database:

- Type `localhost` in your browser;
- In the left area, select: *phpMyAdmin*;
- Click *Databases* (in the right frame) and then create a *database*. You can give any name you want to your database, for example *comments*;
- Create a user with connection privileges for this database. In the **SQL** tab, paste the following text:

```
INSERT INTO `mysql`.`user`
(`Host`,`User`,`Password`,`Select_priv`,`Insert_priv`,`Update_priv`,`Delete_priv`,`Create_priv`,
`Drop_priv`,`Reload_priv`,`Shutdown_priv`,`Process_priv`,`File_priv`,`Grant_priv`,`References_priv`,`Index_priv`,`Alter_priv`,
`Show_db_priv`,`Super_priv`,`Create_tmp_table_priv`,`Lock_tables_priv`,`Execute_priv`,`Repl_slave_priv`,`Repl_client_priv`,
`Create_view_priv`,
`Show_view_priv`,`Create_routine_priv`,`Alter_routine_priv`,`Create_user_priv`,`Event_priv`,`Trigger_priv`,
`Create_tablespace_priv`,`ssl_type`,`max_questions`,`max_updates`,`max_connections`,`max_user_connections`,`plugin`,
`authentication_string`) VALUES ('localhost', 'user_name', PASSWORD('user_password'),
'Y','Y','Y','Y','Y','Y','Y','N','N','N',
'N','Y','Y','Y','Y','N','Y','Y','Y','Y','Y','Y','N','Y','Y','Y','', '0', '0',
'0', '0', '', '');
```

- Change the `user_name` and the `user_password` values;
- Under `localhost` in the right frame click *Privileges* and then at the bottom of the page click the *reload the privileges* link.

## Deploying the WebHelp output

To deploy the WebHelp output, follow these steps:

- Locate the directory of the HTML documents. Open <http://localhost/xampp/phpinfo.php> in your browser and see the value of the `DOCUMENT_ROOT` variable. In case you installed XAMPP in C:\xampp, the value of `DOCUMENT_ROOT` is `C:/xampp/htdocs`;
- Copy the transformation output folder in the `DOCUMENT_ROOT`;
- Rename it to a relevant name, for example, `webhelp_1`;
- Open [http://localhost/webhelp\\_1/](http://localhost/webhelp_1/). You are redirected to [http://localhost/webhelp\\_1/install/](http://localhost/webhelp_1/install/);
  - Verify that the prerequisites are fulfilled;
  - Press **Start Installation**;

- Configure the e-mail addresses, username, and password. Enter the WebHelp system administrator password. This special user is able to moderate new posts and manage WebHelp users;

The address and port of the SMTP mail server that will send the email notifications for the user registration and for the user comments are displayed in the WebHelp installation wizard. They can be modified later in the PHP Runtime Configuration which is usually stored in the `php.ini` file in the XAMPP installation.

You can choose to share comments with other products using the same database. After configuring the database connection, enable the **Display comments from other products** option. In the **Display comments from** section a list with the products sharing the same database is displayed. You can choose one or more products from this list to share comments with.

 **Note:** You can restrict the displayed comments of a product depending on its version. In case you have two products that use the same database and you restrict one of them to display comments starting from a certain version, the comments of the other product are also displayed from the specified version onwards.

- Press Next Step;
- Remove the installation folder from your web server;
- Click the link pointing to the index of the documentation, or visit: [http://localhost/webhelp\\_1/](http://localhost/webhelp_1/).

To test your system, create a user or post as anonymous. Check that the notification emails are delivered to your inbox.

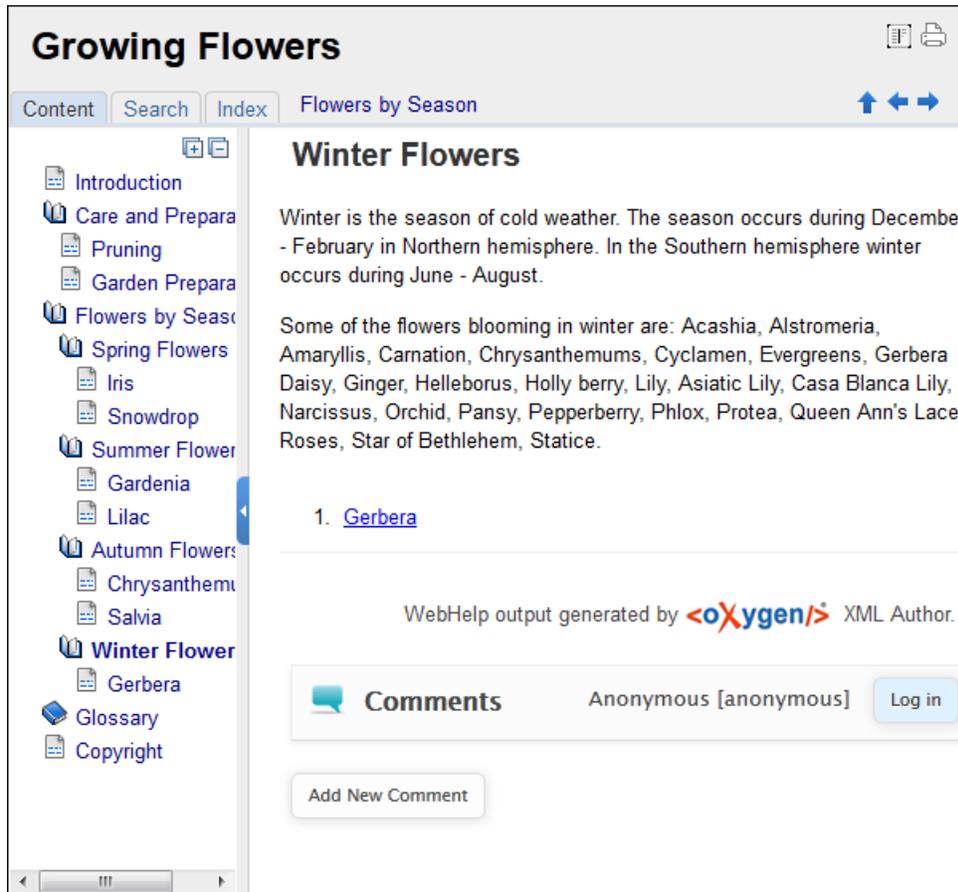
 **Note:** To read debug messages, do one of the following:

- open the `log.js` file, locate the `var log= new Log(Level.NONE);` line, and change the logging level to: `Level.INFO`, `Level.DEBUG`, `Level.WARN`, or `Level.ERROR`;
- append `?log=true` to the WebHelp URL.

### Layout of the Feedback-Enabled WebHelp System

The layout of the feedback-enabled WebHelp system resembles the layout of the basic WebHelp, the left frame remaining the same. However, the bottom of the right frame contains a **comments** bar. Select **Log in** from this bar to authenticate as a user of the WebHelp system. In case you do not have a user name, complete the fields in the dialog box that opens to create a user. Under the **comments** bar, you can click the **Add New Comment** button to add a comment whether you are logged in or not. The tabs in the left frame have the same functionality as the Content, Search, and Index tab of the basic WebHelp.

 **Note:** You can choose to enhance the appearance of the selected item in the table of contents. To highlight the background of the selected item, go to the output folder of the WebHelp, and locate the `toc.css` and `tocWDiv.css` files. You can find these files in the **oxygen-webhelp > resources > css** folder. Open the files, find the `menuItemSelected` class and change the value of the `background` property.



**Figure 192: The layout of the Feedback-Enabled WebHelp System**

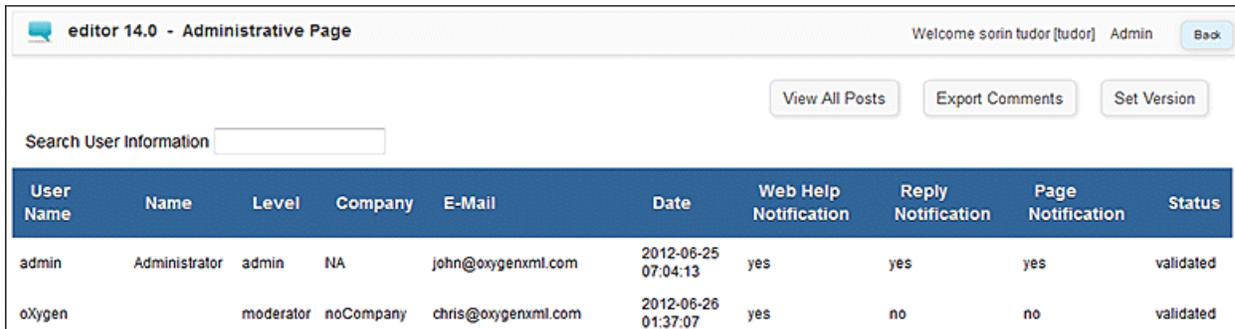
After you log in, your name and user name are displayed in the **Comments** bar together with the **Log of** and **Edit** buttons. Click the **Edit** button to open the **User Profile** dialog. In this dialog you can customize the following options:

- **Your Name** - you can use this field to edit the initial name that you used to create your user profile;
- **Your e-mail address** - you can use this field to edit the initial e-mail address that you used to create your profile;
- When to receive an e-mail:
  - when a comment is left on a page that you commented on,
  - when a comment is left on any topic in the Help system ;
  - when a reply is left to one of my comments.
- **New Password** - allows you to enter a new password for your user account.

 **Note:** The **Current Password** field from the top of the **User Profile** is mandatory in case you want to save the changes you make.

### Advanced Customization and Management

As an administrator, you have full access to all the features of the feedback-enabled WebHelp system. Apart from the options available for a regular user, you can also use the administrative page for advanced customization and management. To access the administrative page, select **Admin Panel** from the **Comments** bar.



User Name	Name	Level	Company	E-Mail	Date	Web Help Notification	Reply Notification	Page Notification	Status
admin	Administrator	admin	NA	john@oxygenxml.com	2012-06-25 07:04:13	yes	yes	yes	validated
oxygen		moderator	noCompany	chris@oxygenxml.com	2012-06-26 01:37:07	yes	no	no	validated

**Figure 193: The Administrative Page**

This page allows you to view all posts, export comments and set the version of the WebHelp. You can also view the details of each user and search through these details using the **Search User Information** filter.

 **Note:** When you delete a comment, all the replies to that comment are deleted.

To edit the details of a user, click its row and use the **Edit User admin** dialog. In this dialog, you can customize all the information of an user, including is **Status** and **Level**. The following options are available:

- **User Name** - specifies the User Name of the currently edited user;
- **Name** - specifies the name of the currently edited user;
- **Level** - use this field to modify the level of the currently edited user. You can choose from **Admin**, **User**, and **Moderator**;
- **Company** - specifies the company of the selected user;
- **E-mail** - specifies the e-mail address that the currently edited user used to create his account. This is also the address where notifications are sent;
- **Date** - specifies the date when the currently edited user created his account;
- **Web Help Notification** - specifies whether the currently edited user receives notifications when comments are posted anywhere in the feedback-enabled WebHelp system;
- **Reply Notification** - specifies whether the currently edited user receives notifications when comments are posted as a reply to a comment left by the user itself;
- **Page Notification** - specifies whether the currently edited user receives notifications when comments are posted on a page where the user posted a comment.;
- **Status** - specifies the status of an user:
  - **created** - the currently edited user is created but does not have any rights over the feedback-enabled WebHelp system;
  - **validated** - the currently edited user is able to use the feedback-enabled WebHelp system;
  - **suspended** - the currently edited user has no rights over the feedback-enabled WebHelp system.

The rights of the users depend on their level as follows:

- **user** - this type of user is able to post comments and receive e-mails when comments are posted anywhere in the documentation, on a single page where he posted a comment, or when a reply to one of his comments is posted;
- **moderator** - apart from the rights of a normal user, this type of user has access to the **Admin Panel**. On the administrative page a moderator can view, delete, export comments and set the version of the feedback-enabled WebHelp system;

 **Note:** Comments of version newer than the current version are not displayed.

- **admin** - the administrator has full access to all features of the feedback enabled WebHelp system.

### DocBook to PDF Output Customization

Main steps for customization of PDF output generated from DocBook XML documents.

When the default layout and output look of the DocBook to PDF transformation need to be customized, the following main steps should be followed. In this example a company logo image is added to the front matter of a book. Other types of customizations should follow some similar steps.

1. Create a custom version of the DocBook title spec file.

You should start from a copy of the file

[Oxygen-install-dir]/frameworks/docbook/xsl/fo/titlepage.templates.xml and customize it. The instructions for the spec file can be found [here](#).

An example of spec file:

```
<t:titlepage-content t:side="recto">
  <mediaobject/>
  <title
    t:named-template="book.verso.title"
    font-size="&hsize2;"
    font-weight="bold"
    font-family="{ $title.font.family }" />
  <corpauthor/>
  ...
</t:titlepage-content>
```

2. Generate a new XSLT stylesheet from the title spec file from the previous step.

Apply [Oxygen-install-dir]/frameworks/docbook/xsl/template/titlepage.xsl to the title spec file. The result is an XSLT stylesheet, let's call it mytitlepages.xsl.

3. Import mytitlepages.xsl in a *DocBook customization layer*.

The customization layer is the stylesheet that will be applied to the XML document. The mytitlepages.xsl should be imported with an element like:

```
<xsl:import href="dir-name/mytitlepages.xsl" />
```

4. Insert logo image in the XML document.

The path to the logo image must be inserted in the book/info/mediaobject element of the XML document.

5. Apply the customization layer to the XML document.

A quick way is duplicating the transformation scenario **DocBook PDF** that comes with Oxygen and set the customization layer in *the XSL URL property of the scenario*.

## DocBook 5 Templates

Default templates are available in the *New File wizard* and can be used for easily creating a skeletal form of a DocBook 5 book or article. These templates are stored in the `frameworks/docbook/templates/DocBook 5` folder.

Here are some of the DocBook 5 templates available when creating *new documents from templates*.

- **Article;**
- **Article with MathML;**
- **Article with SVG;**
- **Article with XInclude;**
- **Book;**
- **Book with XInclude;**
- **Chapter;**
- **Section.**

## Inserting olink Links in DocBook 5 Documents

An `olink` is a type of link between two DocBook XML documents.

The `olink` element is the equivalent for linking outside the current DocBook document. It has the attribute `targetdoc` for the document ID that contains the target element and the attribute `targetptr` for the ID (the value of an `id` or

xml:id attribute) of the target element. The combination of those two attributes provides a unique identifier to locate cross references.

For example, the *Administrator Guide* is a book with the document ID MailAdminGuide and it contains a chapter about user accounts like the following:

```
<chapter id="user_accounts">
<title>Administering User Accounts</title>
<para>blah blah</para>
...
```

You can form a cross reference to that chapter by adding an olink in the *User Guide* like the following:

```
You may need to update your
<olink targetdoc="MailAdminGuide" targetptr="user_accounts">user accounts
</olink>
when you get a new machine.
```

### 1. Decide what documents are included in the domain for cross referencing.

An ID should be assigned to each document that will be referenced with an olink. Usually it is added as an id or xml:id attribute to the root element of the document. A document ID is a string that is unique for each document in your collection. For example the documentation may include a user's guide, an administrator's guide, and a reference document. These could have simple IDs like ug, ag, and ref or more specific IDs like MailUserGuide, MailAdminGuide, and MailReference.

### 2. Decide the output hierarchy.

For creating links between documents, the relative locations of the output documents must be known. Generally the HTML files for multiple documents are output to different directories if chunking is used. Before going further you must decide the names and locations of the HTML output directories for all the documents from the domain. Each directory will be represented by an element <dir name="directory\_name"> in the target database document. In the example from the next step the hierarchy is documentation/guides/mailuser, documentation/guides/mailadmin, documentation/guides/reference.

### 3. Create the target database document.

Each collection of documents has a master target database document that is used to resolve all olinks from that collection. The target database document is an XML file that is created once. It provides a framework that pulls in the target data for each document. The database document is static and all the document data is pulled in dynamically. An example is the following:

```
<?xml version="1.0" encoding="utf-8"?>
<!DOCTYPE targetset
  SYSTEM "file:///tools/docbook-xsl/common/targetdatabase.dtd" [
<!ENTITY ugtargets SYSTEM "file:///doc/userguide/target.db">
<!ENTITY agtarget  SYSTEM "file:///doc/adminguide/target.db">
<!ENTITY reftargets SYSTEM "file:///doc/man/target.db">
]>
<targetset>
  <targetsetinfo>
    Description of this target database document,
    which is for the examples in olink doc.
  </targetsetinfo>

  <!-- Site map for generating relative paths between documents -->
  <sitemap>
    <dir name="documentation">
      <dir name="guides">
        <dir name="mailuser">
          <document targetdoc="MailUserGuide"
            baseuri="userguide.html">
            &ugtarget;
          </document>
        </dir>
        <dir name="mailadmin">
          <document targetdoc="MailAdminGuide">
            &agtarget;
          </document>
        </dir>
      </dir>
    <dir name="reference">
      <dir name="mailref">
        <document targetdoc="MailReference">
          &reftarget;
        </document>
      </dir>
    </dir>
  </sitemap>
</targetset>
```

```

    </dir>
  </dir>
</dir>
</sitemap>
</targetset>

```

An example of a target .db file:

```

<!DOCTYPE div
  PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
  "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<div element="book" href="#MailAdminGuide" number="1" targetptr="user_accounts">

  <ttml>Administering User Accounts</ttml>
  <xreftext>How to administer user accounts</xreftext>
  <div element="part" href="#d5e4" number="I">
    <ttml>First Part</ttml>
    <xreftext>Part I, "First Part"</xreftext>
    <div element="chapter" href="#d5e6" number="1">
      <ttml>Chapter Title</ttml>
      <xreftext>Chapter 1, Chapter Title</xreftext>
      <div element="sect1" href="#src_chapter" number="1"
targetptr="src_chapter">
        <ttml>Section1 Title</ttml>
        <xreftext>xreflabel_here</xreftext>
      </div>
    </div>
  </div>
</div>
</div>

```

#### 4. Generate the target data files.

These files are the `target.db` files from the above example of target database document. They are created with the same DocBook transformation scenario as the HTML or XHTML output. The XSLT parameter called `collect.xref.targets` must be set to the value `yes`. The default name of a target data file is `target.db` but it can be changed by setting an absolute file path in the XSLT parameter `targets.filename`.

#### 5. Insert olink elements in the DocBook XML documents.

When a DocBook XML document is edited in Author mode Oxygen provides the **Insert OLink** action on the toolbar. This action allows selecting the target of an `olink` from the list of all possible targets from a specified target database document. In the following image the target database document is called `target.xml`.

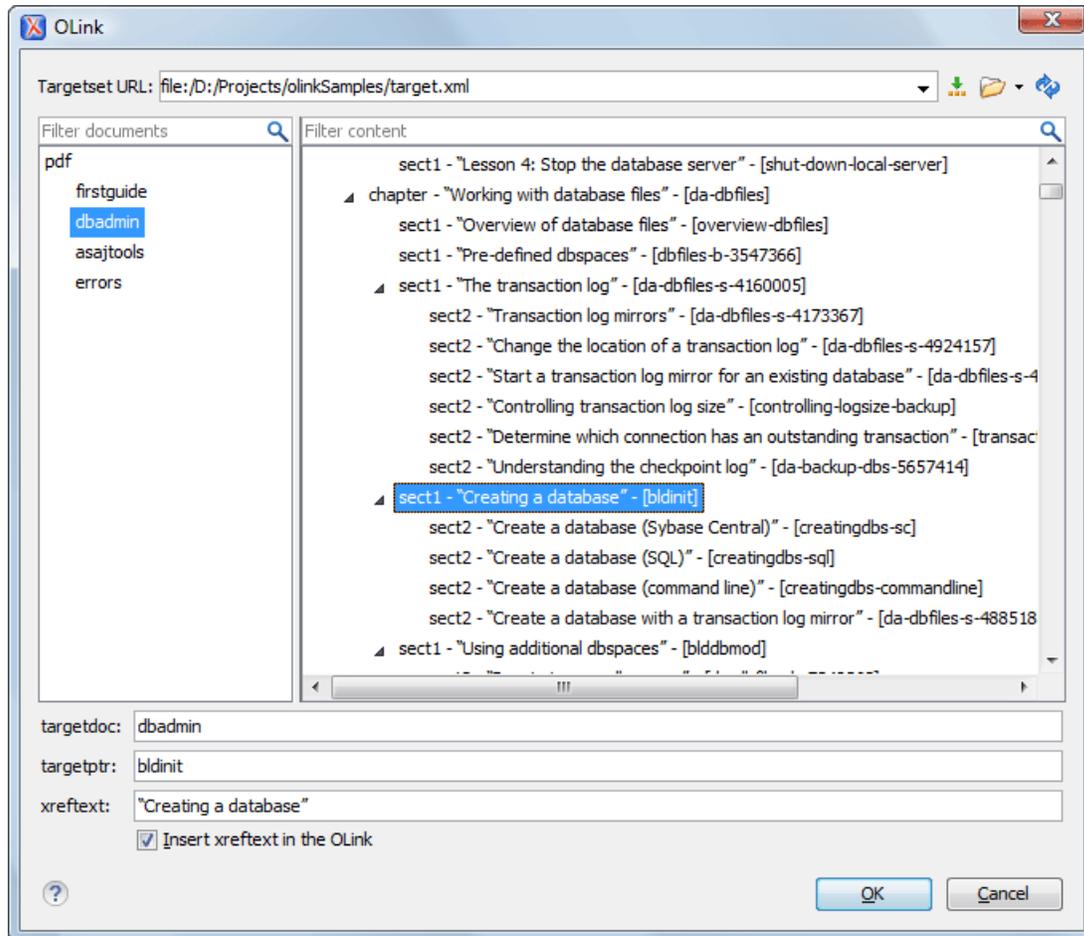


Figure 194: Insert OLink Dialog

6. Process each document for output.

That is done using a DocBook transformation scenario in which the URL of the target database document is set in the `target.database.document` parameter. The DocBook XSL stylesheets know how to resolve `olinks` in the output files using the value of this parameter.

## The DocBook Targetset Document Type

DocBook *Targetset* documents are used to resolve cross references with DocBook `olinks`.

A file is considered to be a *Targetset* when the root name is `targetset`.

This type of documents use a DTD and schema located in

`${frameworks}/docbook/xsl/common/targetdatabase.dtd`, where `${frameworks}` is a subdirectory of the Oxygen XML Editor install directory.

## DocBook Targetset Templates

There is a default template for *Targetset* documents in the `${frameworks}/docbook/templates/Targetset` folder. It is available when creating *new documents from templates*.

- **Docbook Targetset - Map** - New Targetset Map.

## The DITA Topics Document Type

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The Darwin Information Typing Architecture (DITA) is an XML-based architecture for authoring, producing, and delivering technical information. It divides content into small, self-contained topics that can be reused in different deliverables. The extensibility of DITA permits organizations to define specific information structures and still use standard tools to work with them. Oxygen XML Editor provides schema driven (DTD, RNG, XSD) templates for DITA documents.

A file is considered to be a DITA topic document when either of the following occurs:

- the root element name is one of the following: `concept`, `task`, `reference`, `dita`, `topic`
- PUBLIC ID of the document is one of the PUBLIC ID's for the elements above
- the root element of the file has an attribute named `DITAArchVersion` attribute from the “<http://dita.oasis-open.org/architecture/2005/>” namespace. This enhanced case of matching is only applied when the **Enable DTD processing** option from the *Document Type Association preferences page* is enabled.

The default schema used for DITA topic documents is located in `${frameworks}/dita/dtd/ditabase.dtd`, where `frameworks` is a subdirectory of the Oxygen XML Editor install directory.

The CSS file used for rendering DITA content in Author mode is `${frameworks}/dita/css/dita.css`.

The default XML catalog is `${frameworks}/dita/catalog.xml`.

### DITA Author Extensions

The specific actions for DITA topic documents are:

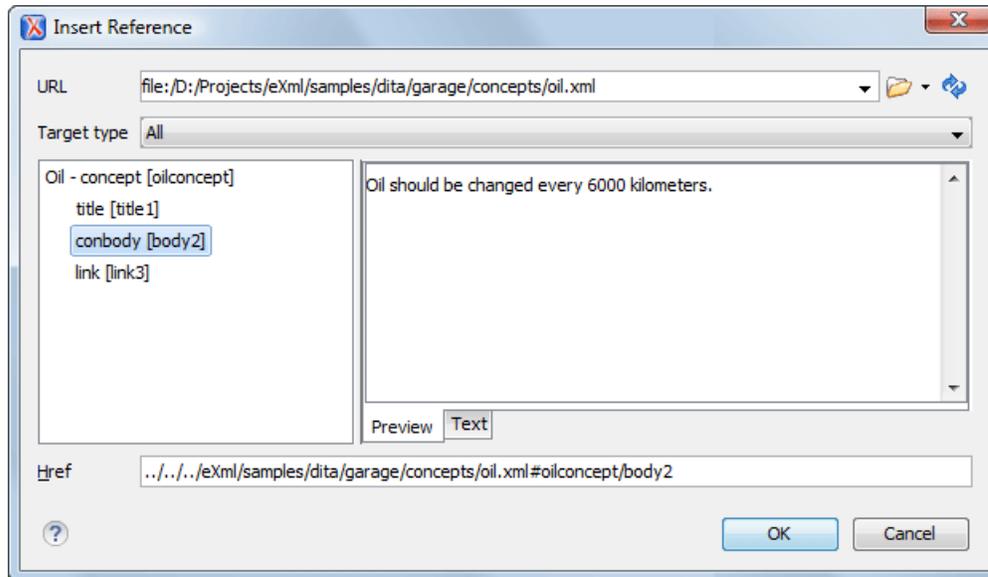
- **B Bold** - Surrounds the selected text with a `b` tag.
- **I Italic** - Surrounds the selected text with an `i` tag.
- **U Underline** - Surrounds the selected text with a `u` tag.

 **Note:**

**Bold**, **Italic**, and **Underline** are toggle actions.

For all of the above actions, if there is no selection in the document, then a new specific tag is inserted. These actions are available in any document context.

- **Browse reference manual** - opens in your web browser of choice a reference to the documentation of the XML element closest to the caret position.
- **Cross Reference** - Inserts an `xref` element with the value of attribute `format` set to `dita`. The target of the `xref` is selected in a dialog which lists all the IDs extracted from the selected file. When you select an ID, you can preview the content in the **Preview** tab or the XML source in the **Text** tab.



**Figure 195: Insert a cross reference in a DITA document**

- **Key Reference** - Inserts a user specified element with the value of the `keyref` attribute set to a specific key name. As stated in the DITA 1.2 specification, keys are defined at map level and referenced afterwards. You are able to select the target of the `keyref` in the **Insert Key Reference** dialog.

👉 **Note:** The **Insert Key Reference** dialog presents the list of keys available in the currently opened DITA Map. If the DITA Map is not opened in the **DITA Maps Manager** view, the **Insert Key Reference** dialog does not display any keys.

You can also reference elements at sub-topic level by pressing the **Sub-topic** button and choosing the target.

👉 **Important:** All keys which are presented in the dialog are gathered from the current opened DITA map. Elements which have the `keyref` attribute set are displayed as links. The current opened DITA map is also used to resolve references when navigating `keyref` links in the Author mode. Image elements which use key references are rendered as images.

- **File Reference** - Inserts an `xref` element with the value of attribute `format` set to `xml`.
- **Web Link** - Inserts an `xref` element with the value of attribute `format` set to `html`, and `scope` set to `external`.
- **Related Link to Topic** - Inserts a `link` element inside a `related-links` parent.
- **Related Link to File** - Inserts a `link` element with the `format` attribute set to `xml` inside a `related-links` parent.
- **Related Link to Web Page** - Inserts a `link` element with the attribute `format` set to `html` and `scope` set to `external` inside a `related-links` parent.

👉 **Note:** The actions for inserting references described above are grouped inside **link** toolbar actions group.

- **Paste as Link** (available on the contextual menu of Author editor for any topic file) - Inserts a `link` element or an `xref` one (depending on the location of the paste) that points to the DITA XML element from the clipboard. An entire DITA XML element with an ID attribute must be present in the clipboard when the action is invoked. The `href` attribute of `link/href` will point to this ID value.
- **Paste as Content Reference** (available on the contextual menu of Author editor for any topic file) - Inserts a content reference (a DITA element with a `conref` attribute) to the DITA XML element from the clipboard. An entire DITA XML element with an ID attribute must be present in the clipboard when the action is invoked. The `conref` attribute will point to this ID value.
- **§ Insert Section / Step** - Inserts a new section / step in the document, depending on the current context. A new section will be inserted in either one of the following contexts:

- section context, when the value of `class` attribute of the current element or one of its ancestors contains `topic` or `section`.
- topic's body context, when the value of `class` attribute of the current element contains `topic/body`.

A new step will be inserted in either one of the following contexts:

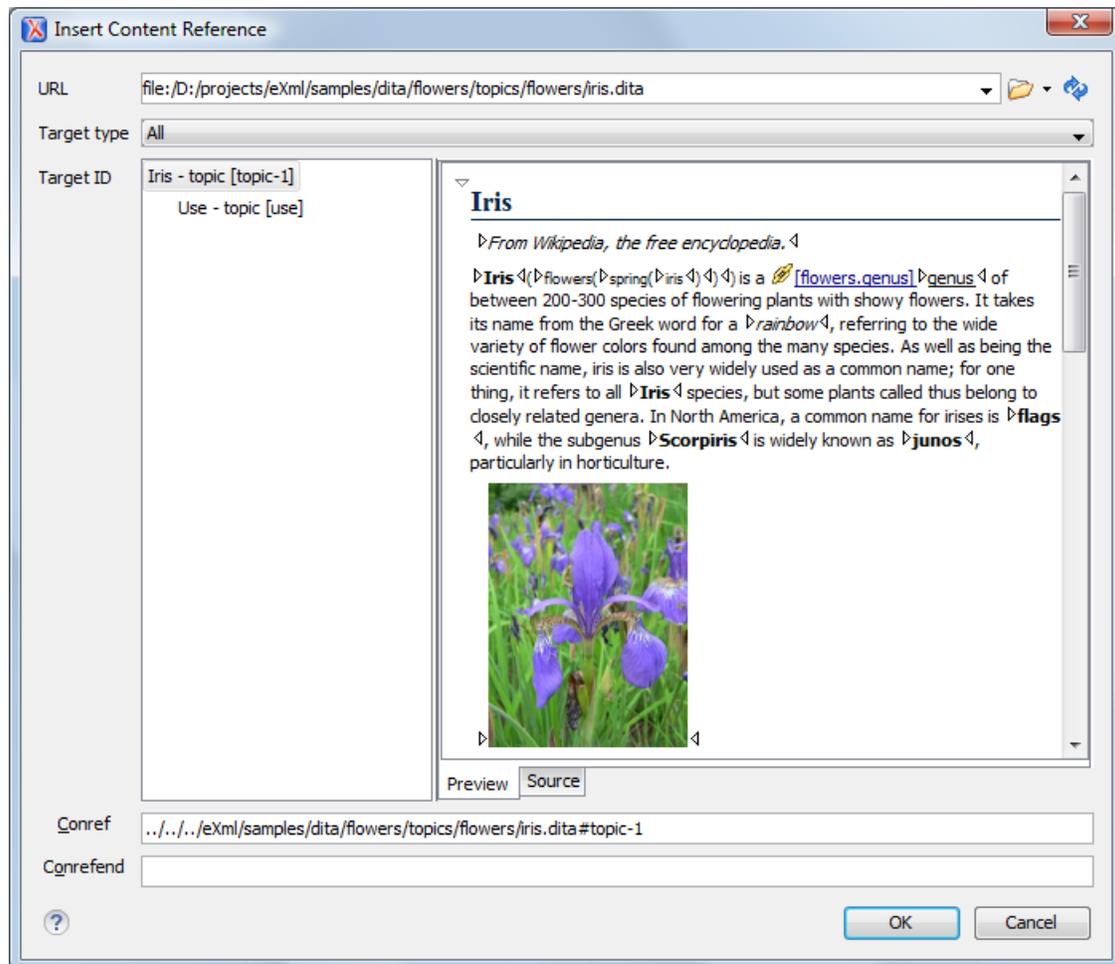
- task step context, when the value of `class` attribute of the current element or one of its ancestors contains `task/step`.
- task steps context, when the value of `class` attribute of the current element contains `task/steps`.
-  **Insert Concept** - Inserts a new concept. Concepts provide background information that users must know before they can successfully work with a product or interface. This action is available in one of the following contexts:
  - concept context, one of the current element ancestors is a `concept`. In this case an empty `concept` will be inserted after the current `concept`.
  - concept or DITA context, current element is a `concept` or `dita`. In this case an empty `concept` will be inserted at current caret position.
  - DITA topic context, current element is a `topic` child of a `dita` element. In this case an empty `concept` will be inserted at current caret position.
  - DITA topic context, one of the current element ancestors is a DITA `topic`. In this case an empty `concept` will be inserted after the first `topic` ancestor.
-  **Insert Task** - Inserts a new task. Tasks are the main building blocks for task-oriented user assistance. They generally provide step-by-step instructions that will enable a user to perform a task. This action is available in one of the following contexts:
  - task context, one of the current element ancestors is a `task`. In this case an empty `task` will be inserted after the last child of the first `concept`'s ancestor.
  - task context, the current element is a `task`. In this case an empty `task` will be inserted at current caret position.
  - topic context, the current element is a `dita topic`. An empty `task` will be inserted at current caret position.
  - topic context, one of the current element ancestors is a `dita topic`. An empty `task` will be inserted after the last child of the first ancestor that is a `topic`.
-  **Insert Reference** - Inserts a new reference in the document. A reference is a top-level container for a reference topic. This action is available in one of the following contexts:
  - reference context - one of the current element ancestors is a `reference`. In this case an empty `reference` will be inserted after the last child of the first ancestor that is a `reference`.
  - reference or dita context - the current element is either a `dita` or a `reference`. An empty `reference` will be inserted at caret position.
  - topic context - the current element is `topic` descendant of `dita` element. An empty `reference` will be inserted at caret position.
  - topic context - the current element is descendant of `dita` element and descendant of `topic` element. An empty `reference` will be inserted after the last child of the first ancestor that is a `topic`.
-  **Insert image reference** - *Inserts an image reference* at the caret position. Depending on the current context, an image-type DITA element is inserted. Also you can use this action to *refer MathML files*.
-  **Insert DITA Content Reference** - Inserts a content reference at the caret position.

The DITA `conref` attribute provides a mechanism for reuse of content fragments. The `conref` attribute stores a reference to another element and is processed to replace the referencing element with the referenced element. The element containing the content reference acts as a placeholder for the referenced element. The identifier for the referenced element must be either absolute or resolvable in the context of the referencing element. See [here](#) for more details.

Oxygen XML Editor *displays the referred content* of a DITA `conref` if it can resolve it to a valid resource. If you have URI's instead of local paths in the XML documents and your DITA OT transformation needs an XML catalog

to map the URI's to local paths you have to *add the catalog to Oxygen XML Editor*. If the URI's can be resolved the referred content will be displayed in Author mode and in the transformation output.

A content reference is inserted with the action **Insert a DITA Content Reference** available on the toolbar **Author custom actions** and on the menu **DITA > Insert**.



**Figure 196: Insert Content Reference Dialog**

In the URL chooser you set the URL of the file from which you want to reuse content. Depending on the **Target type** filter you will see a tree of elements which can be referred (which have ID's). For each element the XML content is shown in the preview area. The **Conref** value is computed automatically for the selected tree element. After pressing **OK** an element with the same name as the target element and having the attribute `conref` with the value specified in the **Conref** value field will be inserted at caret position.

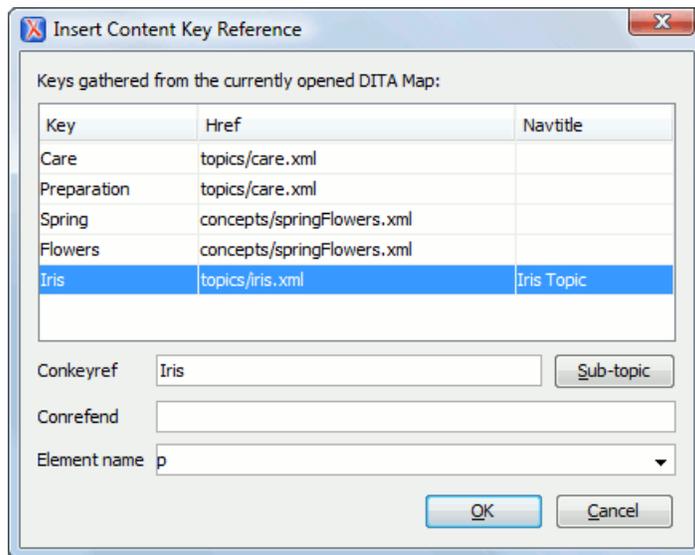
According to the DITA 1.2 specification the `conrefend` attribute can be used to specify content reference ranges. This is a very useful feature when referencing multiple consecutive steps or list items. If you use multiple contiguous sibling selection the `conrefend` value will also be set to the value of the last selected ID path. Oxygen XML Editor will present the entire referenced range as read-only content.

-  **Insert Content Key Reference** - Inserts a content key reference at the caret position.

As stated in the DITA 1.2 specification the `conkeyref` attribute provides a mechanism for reuse of content fragments similar with the `conref` mechanism. Keys are defined at map level which can be referenced using `conkeyref`. The `conkeyref` attribute contains a key reference to another element and is processed to replace the referencing element with the referenced element. The element containing the content key reference acts as a placeholder for the referenced element. The identifier for the referenced element must be either absolute or resolvable in the context of the referencing element.

Oxygen XML Editor *displays the key referred content* of a DITA `conkeyref` if it can resolve it to a valid resource in the context of the current opened DITA map.

A content key reference is inserted with the action **Insert a DITA Content Key Reference** available on the toolbar **Author custom actions** and on the menu **DITA > Insert**.



**Figure 197: Insert Content Key Reference Dialog**

To reference target elements at sub-topic level just press the **Sub-topic** button and choose the target.

According to the DITA 1.2 specification the `conrefend` attribute can be used to specify content reference ranges. This is a very useful feature when referencing multiple consecutive steps or list items. If you use multiple contiguous sibling selection for IDs at sub-topic level the `conrefend` value will also be set to the value of the last selected ID path. Oxygen XML Editor will present the entire referenced range as read-only content.

 **Important:** All keys which are presented in the dialog are gathered from the current opened DITA map. Elements which have the `conkeyref` attribute set are displayed by default with the target content expanded. The current opened DITA map is also used to resolve references when navigating `conkeyref` links in the Author mode.

- **Replace conref / conkeyref reference with content** - Replaces the content reference fragment or the `conkeyref` at caret position with the referenced content. This action is useful when you want to make changes to the content but decide to keep the referenced fragment unchanged.
- **Insert Equation** - Allows you to insert an MathML equation. For more information, see section [Editing MathML Notations](#).
- **Create Reusable Component** - Creates a reusable component from a selected fragment of text. For more information, see [Reusing Content](#).
- **Insert Reusable Component** - Inserts a reusable component at cursor location. For more information, see [Reusing Content](#).
- **Remove Content Reference** - Removes the `conref` attribute of an element. For more information, see [Reusing Content](#).
- **Add/Edit Content Reference** - Add or edit the `conref` attribute of an element. For more information, see [Reusing Content](#).
-  **Paste as Content Reference** - Pastes the content of the clipboard as a content reference. Note that the copied element must have the `id` attribute set.
-  **Paste as Link** - Pastes the content of the clipboard as a link. Note that the copied element must have the `id` attribute set.

-  **Insert an ordered list at the caret position** - inserts an ordered list. A child list item is also inserted automatically by default;
-  **Insert an unordered list at the caret position** - inserts an itemized list. A child list item is also inserted automatically by default;
-  **Insert a step or list Item** - inserts a new list item in any of the above list types.
-  **Insert Table** - opens a dialog that allows you to configure and insert a table. You can generate a header and footer, set the number of rows and columns of the table and decide how the table is framed;
-  **Insert Row** - inserts a new table row with empty cells. This action is available when the caret is positioned inside a table;
-  **Insert Column** - inserts a new table column with empty cells after the current column. This action is available when the caret is positioned inside a table;
-  **Insert Cell** - inserts a new empty cell depending on the current context. If the caret is positioned between two cells, Oxygen XML Editor a new cell at caret position. If the caret is inside a cell, the new cell is created after the current cell;
-  **Delete Column** - deletes the table column located at caret position;
-  **Delete Row** - deletes the table row located at caret position;
-  **Join Row Cells** - joins the content of the selected cells. The operation is available if the selected cells are from the same row and they have the same row span. The action is also available when the selection is missing, but the caret is positioned between two cells;
-  **Join Cell Above** - joins the content of the cell from the current caret position with the content of the cell above it. This action works only if both cells have the same column span;
-  **Join Cell Below** - joins the content of the cell from the current caret position with the content of the cell below it. This action works only if both cells have the same column span;
-  **Note:** When you use  **Join Cell Above** and  **Join Cell Below**, Oxygen XML Editor deletes the source row is case it remains empty. The cells that span over multiple rows are also updated.
-  **Split Cell To The Left** - splits the cell from the current caret position in two cells, inserting a new empty table cell to the left. This action works only if the current cell spans over more than one column. Oxygen XML Editor decreases the column span of the source cell with one;
-  **Split Cell To The Right** - splits the cell from the current caret position in two cells, inserting a new empty table cell to the right. This action works only if the current cell spans over more than one column. Oxygen XML Editor decreases the column span of the source cell with one;
-  **Split Cell Above** - splits the cell from current caret position in two cells, inserting a new empty table cell above. This action works only if the current cell spans over more than one row. Oxygen XML Editor decreases the column span of the source cell with one;
-  **Split Cell Below** - splits the cell from current caret position in two, inserting a new empty table cell below. This action works only if the current cell spans over more than one row. Oxygen XML Editor decreases the column span of the source cell with one.
- The following options are available for customizing the frame of a table:
  - none - the table has no frame;
  - all - the table has top, bottom and side borders;
  - top - the table has a top border;
  - topbot - the table top and bottom borders;
  - bottom - the table has a bottom border;
  - sides - the table has side border;

- `-dita-use-conref-target` - it indicates that when the element uses *conref* to pull in content, the attribute with a value of **-dita-use-conref-target** should also be pulled in from the target;
- `unspecified` - if you select this option, when you insert the table, the frame attribute is not inserted.



**Note:** DITA supports the CALS table model similar with DocBook document type in addition to the `simpletable` element specific for DITA.



**Caution:** Column specifications are required for table actions to work properly.

- **Generate IDs** - Available in the contextual menu, this action allows you to generate an unique ID for the element at caret position. If the element already has an ID set, it is preserved.

Further options are offered in the **ID Options** dialog, available in the document type specific main menu. The configurable ID value pattern can accept most of the application supported *editor variables*. You can also specify the elements for which Oxygen XML Editor generates an ID if the **Auto generate ID's for elements** is enabled.

If you want to keep an already set element ID's when copying content in the same document, make sure the **Remove ID's when copying content in the same document** option is not checked.

- **Search References** - Finds the references to the `id` attribute value of the selected element in all the topics from the current DITA map (opened in the **DITA Maps Manager** view). The default shortcut of the action is **Ctrl+Shift+G** and can be changed in the **DITA Topic** document type.

All actions described above are available in the contextual menu, the **DITA** submenu of the main menu or in the **Author custom actions** toolbar.

A drag and drop with a file from *the Project view* or from *the DITA Maps Manager view* to a DITA topic document that is edited in Author mode will create a link to the dragged file (the `xref` DITA element with the `href` attribute) at the drop location. A drag and drop with an image file from the default file system application (Windows Explorer on Windows, Finder on Mac OS X, etc) will insert an image element (the `image` DITA element with the `href` attribute) with the location of the dragged file at the drop location, like the **Insert Graphic** toolbar action.

## DITA Transformation Scenarios

The following default transformation scenarios are available for DITA Topics:

- **DITA XHTML** - Transforms a DITA topic to XHTML using DITA Open Toolkit 1.6.1;
- **DITA PDF** - Transforms a DITA topic to PDF using the DITA Open Toolkit 1.6.1 and the Apache FOP engine.

## DITA Templates

The default templates available for DITA topics are stored in `${frameworks}/dita/templates/topic` folder. They can be used for easily creating a DITA `concept`, `reference`, `task` or `topic`.

Here are some of the DITA templates available when creating *new documents from templates*:

- **DITA - Composite** - New DITA Composite;
- **DITA - Composite with MathML** - New DITA Composite with MathML;
- **DITA - Concept** - New DITA Concept;
- **DITA - General Task** - New DITA Task;
- **DITA - Glossentry** - New DITA Glossentry;
- **DITA - Glossgroup** - New DITA Glossgroup;
- **DITA - Machinery Task** - New DITA Machinery Task;
- **DITA - Reference** - New DITA Reference;
- **DITA - Task** - New DITA Task;
- **DITA - Topic** - New DITA Topic;
- **DITA - Learning Assessment** - New DITA Learning Assessment (learning specialization in DITA 1.2);
- **DITA - Learning Content** - New DITA Learning Content (learning specialization in DITA 1.2);

- **DITA - Learning Summary** - New DITA Learning Summary (learning specialization in DITA 1.2);
- **DITA - Learning Overview** - New DITA Learning Overview (learning specialization in DITA 1.2);
- **DITA - Learning Plan** - New DITA Learning Plan (learning specialization in DITA 1.2).

## The DITA Map Document Type

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DITA maps are documents that collect and organize references to DITA topics to indicate the relationships among the topics. They can also serve as outlines or tables of contents for DITA deliverables and as build manifests for DITA projects.

Maps allow scalable reuse of content across multiple contexts. They can be used by information architects, writers, and publishers to plan, develop, and deliver content.

A file is considered to be a DITA map document when either of the following occurs:

- root element name is one of the following: `map`, `bookmap`
- public id of the document is `-//OASIS//DTD DITA Map` or `-//OASIS//DTD DITA BookMap`.
- the root element of the file has an attribute named `class` which contains the value `map/map` and a `DITAArchVersion` attribute from the `http://dita.oasis-open.org/architecture/2005/` namespace. This enhanced case of matching is only applied when the **Enable DTD processing** option from the [Document Type Detection option page](#) is enabled.

The default schema used for DITA map documents is located in `${frameworks}/dita/DITA-OT/dtd/map.dtd`, where `${frameworks}` is a subdirectory of the Oxygen XML Editor install directory.

The CSS file used for rendering DITA content is located in `${frameworks}/dita/css/dita.css`.

The default XML catalog is stored in `${frameworks}/dita/catalog.xml`.

## DITA Map Author Extensions

Specific actions for DITA map documents are:

-  **Insert Topic Reference** - Inserts a reference to a topic.
-  **Insert Content Reference** - Inserts a content reference at the caret position.
-  **Insert Content Key Reference** - Inserts a content reference at the caret position.
-  **Insert Table** - Opens a dialog that allows you to configure the relationship table to be inserted. The dialog allows the user to configure the number of rows and columns of the relationship table, if the header will be generated and if the title will be added.
-  **Insert Row** - Inserts a new table row with empty cells. The action is available when the caret position is inside a table.
-  **Insert Column** - Inserts a new table column with empty cells after the current column. The action is available when the caret position is inside a table.
-  **Delete Column** - Deletes the table column where the caret is located.
-  **Delete Row** - Deletes the table row where the caret is located.

All actions described above are available in the contextual menu, the **DITA** submenu of the main menu and in the **Author custom actions** toolbar.

A drag and drop with a file from [the Project view](#) or from [the DITA Maps Manager view](#) to a DITA map document that is edited in Author mode will create a link to the dragged file (a `topicref` element, a chapter one, a part one, etc.) at the drop location.

## DITA Map Transformation Scenarios

The following default transformations are available:

- Predefined transformation scenarios allow you to transform a DITA Map to PDF, ODF, XHTML, WebHelp, EPUB and CHM files.
- **Run DITA OT Integrator** - Use this transformation scenario if you want to integrate a DITA OT plugin. This scenario runs an ANT task that integrates all the plug-ins from DITA-OT/plugins directory.
- **DITA Map Metrics Report** - Use this transformation scenario if you want to generate a DITA Map statistics report containing information like:
  - the number of processed maps and topics;
  - content reuse percentage;
  - number of elements, attributes, words, and characters used in the entire DITA Map structure;
  - DITA conditional processing attributes used in the DITA Maps;
  - words count;
  - information types like number of containing maps, bookmaps, or topics.

Many more output formats are available by clicking the **New** button. The transformation process relies on DITA Open Toolkit 1.6.1.

### WebHelp Output Format

WebHelp is a form of online help consisting of a series of web pages (XHTML format). Its advantages include platform independence and continuous content update, since it can be viewed using a regular web browser.

Oxygen XML Editor allows you to publish a DITA Map into a WebHelp format that provides both Table of Contents and advanced search capabilities.

The layout is composed of two frames:

- the left frame, containing separate tabs for **Content**, **Search**, and **Index**;
  - 👉 **Note:** In case your documents contain no *indexterm* elements, the **Index** tab is not generated.
  - 👉 **Note:** You can choose to enhance the appearance of the selected item in the table of contents. To highlight the background of the selected item, go to the output folder of the WebHelp, and locate the `toc.css` and `tocWDiv.css` files. You can find these files in the **oxygen-webhelp > resources > css** folder. Open the files, find the `menuItemSelected` class and change the value of the `background` property.
- the right frame where help pages are displayed.

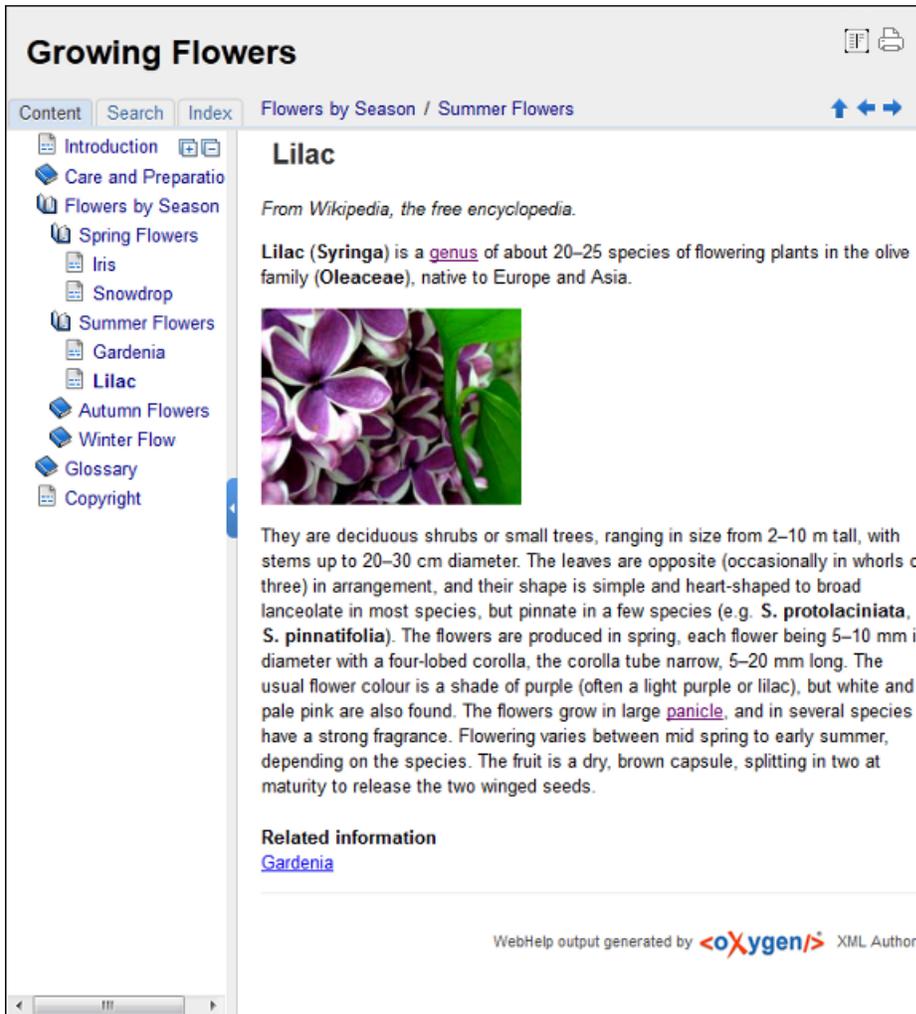
You can navigate through the content of your output using the arrows in the upper right part of the page. These arrows allow you to move to the parent, previous, and next topic. The parents of the currently opened topic are also presented at the top of the page.

- 👉 **Note:** You can edit the `args.hide.parent.link` parameter to hide the **Parent**, **Next**, and **Previous** links.

You can use these two buttons  , displayed in the **Content** tab, to expand and collapse all the topics presented the table of contents.

The top right corner of the page contains the following options:

- **With frames** - displays the output using HTML frames to render two separate sections: a section that presents the table of contents in the left side and a section that presents the content of a topic in the right side;
- **Print** - prints the content of the displayed page. The table of contents area is not printed;
- **Link to this page** - opens a new browser tab that displays the link to the currently rendered frame.
- 👉 **Note:** This option is available only in the HTML frames enabled version of the output.



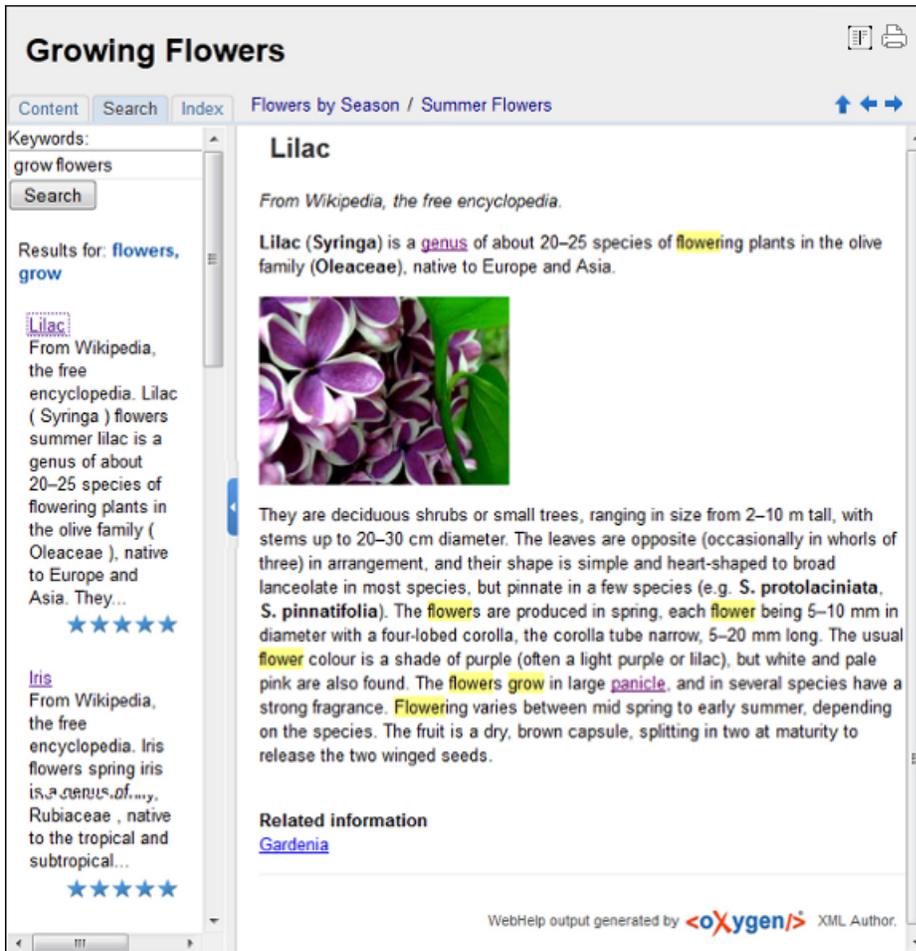
**Figure 198: WebHelp Output**

To publish the DITA map to WebHelp, you can use the **DITA Map WebHelp** transformation. To customize the out-of-the-box transformation, you can edit some of its parameters:

- `args.xhtml.toc` - name of the table of contents file. Default setting is `toc.html`;
- `use.stemming` - controls whether you want to include stemming search algorithms into the published output. Stemming is the process for reducing inflected (or sometimes derived) words to their stem, base or root form – generally a written word form. Default setting is `false`;
- `clean.output` - deletes all files from the output folder before the transformation is performed. Only the `no` and `yes` values are valid. The default value is `no`.

The **Search** tab is enhanced with a rating mechanism that computes scores for every page that matches the search criteria. These scores are then translated into a 5-star rating scheme. The search results are sorted depending on:

- number of keywords found in a single page. The higher the number, the better;
- context - if a word is found in a title or emphasized section of text it scores better than a word found in an unformatted text.



Rules applied during search:

- the space character separates keywords. An expression like *grow flowers* counts as two separate keywords: *grow* and *flowers*;
- do not use quotes to perform exact search for multiple-word expressions. An expression like "*grow flowers*", returns no results in our case, because it searches for two separate words: "*grow* and *flowers*" (note the quote signs attached to each word);
- *indexterm* and *keywords* DITA elements are an effective way to increase the ranking of a page. For example, content inside *keywords* elements weighs twice as much as content inside a *H1* HTML element;
- words composed by merging two or more words with colon (":"), minus ("-"), underline ("\_"), or dot (".") characters, count as a single word;
- search for words containing three or more characters. Shorter words, like *to*, or *of* are ignored. This rule does not apply to CJK (Chinese, Japanese, Korean) languages.

**Figure 199: WebHelp Search with Stemming Enabled**

### How to Localize WebHelp Output

Static labels used in the WebHelp output are kept in translation files in the DITA-OT\plugins\com.oxygenxml.webhelp\oxygen-webhelp\resources\localization folder. The DITA-OT folder is by default [oxygen installation folder]/frameworks/dita/DITA-OT, or elsewhere if you are using a different DITA-OT distribution. Translation files have the *strings-lang1-lang2.xml* name format, where *lang1* and *lang2* are ISO language codes. For example, the US English text is kept in the *strings-en-us.xml* file.

Follow these steps to localize the interface of the WebHelp output (for simplicity sake, let us suppose you want to localize the WebHelp interface into Canadian French.):

1. Look for the *strings-fr-ca.xml* file in `DITA-OT\plugins\com.oxygenxml.webhelp\oxygen-webhelp\resources\localization`. If it does not exist, create one starting from *strings-en-us.xml*.
2. Translate all the labels from the above language file. Labels are stored in XML elements that have the following format: `<str name="Label name">Caption</str>`.
3. Edit the **DITA Map WebHelp/DITA Map WebHelp with Feedback** transformation scenario and set the *args.default.language* parameter to the code of the language you want to localize the interface into (in our case, it is *fr-ca*).
4. Run the transformation scenario to produce the WebHelp output.

## WebHelp with Feedback Output Format

This section presents the Feedback-Enabled WebHelp systems support.

### Introduction

Oxygen XML Editor has the ability to transform DITA documents into feedback-enabled WebHelp systems.

WebHelp is a form of online help consisting of a series of web pages (XHTML format). Its advantages include platform independence and continuous content update, since it can be viewed using a regular web browser. It also provides table of contents and advanced search capabilities. The feedback system allows you to view discussion threads in a tree-like representation, post comments, reply to already posted comments, use stylized comments, and define administrators and moderators.

### The DITA map WebHelp with Feedback transformation

To publish a DITA map to WebHelp with Feedback, use the **DITA Map WebHelp with Feedback** transformation. You can customize the out-of-the-box transformation by editing some of its parameters:

- `args.xhtml.toc` - name of the table of contents file. Default setting is `toc.html`;
- `use.stemming` - controls whether you want to include stemming search algorithms into the published output. Stemming is the process for reducing inflected (or sometimes derived) words to their stem, base or root form – generally a written word form. Default setting is `false`;
- `clean.output` - deletes all files from the output folder before the transformation is performed. Only the `no` and `yes` values are valid. The default value is `no`.

Before the transformation starts, enter the documentation product ID and the documentation version. After you run a **DITA Map WebHelp with Feedback** transformation, your default browser opens the `instalation.html` file. This file contains information about the output location, system requirements, installation instructions and deployment of the output.

### Installation

#### System Requirements

The feedback-enabled WebHelp system of Oxygen XML Editor demands the following system requirements:

- Apache Web Server running;
- MySQL server running;
- PHP Version  $\geq$  5.1.6;
- PHP MySQL Support;
- oXygen WebHelp system supports the following browsers: IE7+, Chrome 19+, Firefox 11+, Safari 5+, Opera 11+.

#### Installation Instructions

 **Note:** These instructions were written for XAMPP 1.7.7 with PHP 5.3.8 and for *phpMyAdmin* 3.4.5. Later versions of these packages may change the location or name of some options, however the following installation steps should remain valid and basically the same.



You can choose to share comments with other products using the same database. After configuring the database connection, enable the **Display comments from other products** option. In the **Display comments from** section a list with the products sharing the same database is displayed. You can choose one or more products from this list to share comments with.

 **Note:** You can restrict the displayed comments of a product depending on its version. In case you have two products that use the same database and you restrict one of them to display comments starting from a certain version, the comments of the other product are also displayed from the specified version onwards.

- Press Next Step;
- Remove the installation folder from your web server;
- Click the link pointing to the index of the documentation, or visit: [http://localhost/webhelp\\_1/](http://localhost/webhelp_1/).

To test your system, create a user or post as anonymous. Check that the notification emails are delivered to your inbox.

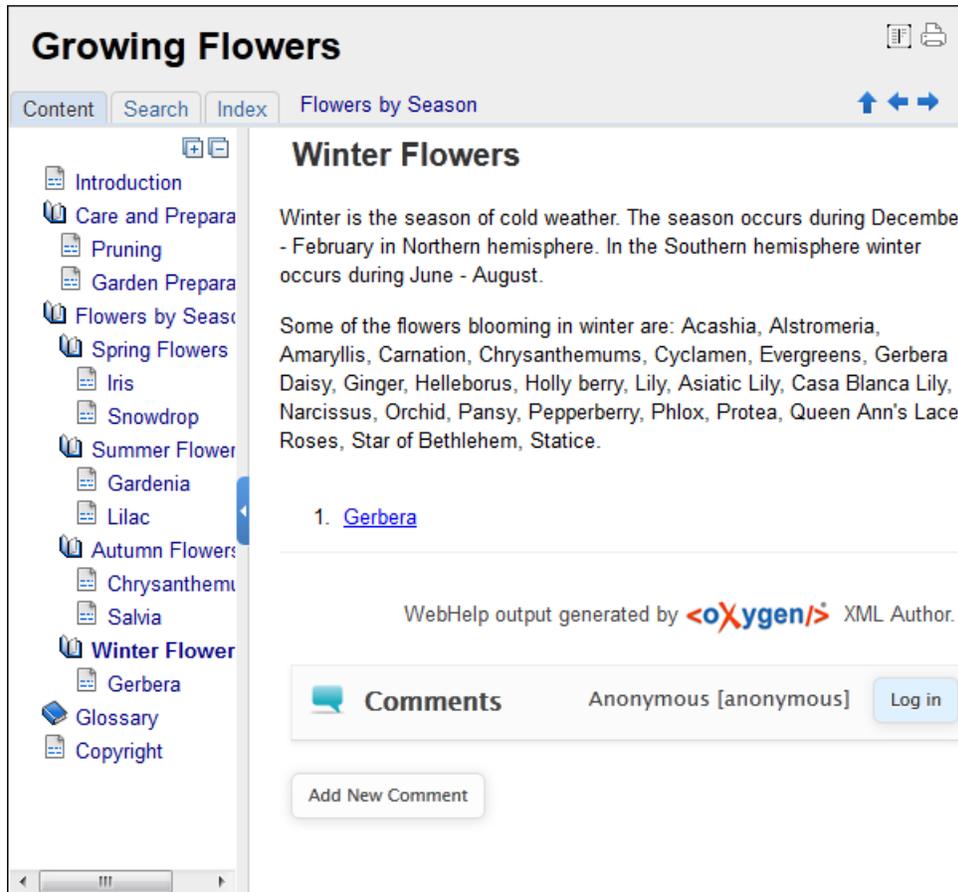
 **Note:** To read debug messages, do one of the following:

- open the `log.js` file, locate the `var log= new Log(Level.NONE);` line, and change the logging level to: `Level.INFO`, `Level.DEBUG`, `Level.WARN`, or `Level.ERROR`;
- append `?log=true` to the WebHelp URL.

### Layout of the Feedback-Enabled WebHelp System

The layout of the feedback-enabled WebHelp system resembles the layout of the basic WebHelp, the left frame remaining the same. However, the bottom of the right frame contains a **comments** bar. Select **Log in** from this bar to authenticate as a user of the WebHelp system. In case you do not have a user name, complete the fields in the dialog box that opens to create a user. Under the **comments** bar, you can click the **Add New Comment** button to add a comment whether you are logged in or not. The tabs in the left frame have the same functionality as the Content, Search, and Index tab of the basic WebHelp.

 **Note:** You can choose to enhance the appearance of the selected item in the table of contents. To highlight the background of the selected item, go to the output folder of the WebHelp, and locate the `toc.css` and `tocWDiv.css` files. You can find these files in the **oxygen-webhelp > resources > css** folder. Open the files, find the `menuItemSelected` class and change the value of the `background` property.



**Figure 200: The layout of the Feedback-Enabled WebHelp System**

After you log in, your name and user name are displayed in the **Comments** bar together with the **Log of** and **Edit** buttons. Click the **Edit** button to open the **User Profile** dialog. In this dialog you can customize the following options:

- **Your Name** - you can use this field to edit the initial name that you used to create your user profile;
- **Your e-mail address** - you can use this field to edit the initial e-mail address that you used to create your profile;
- When to receive an e-mail:
  - when a comment is left on a page that you commented on,
  - when a comment is left on any topic in the Help system ;
  - when a reply is left to one of my comments.
- **New Password** - allows you to enter a new password for your user account.

 **Note:** The **Current Password** field from the top of the **User Profile** is mandatory in case you want to save the changes you make.

### Advanced Customization and Management

As an administrator, you have full access to all the features of the feedback-enabled WebHelp system. Apart from the options available for a regular user, you can also use the administrative page for advanced customization and management. To access the administrative page, select **Admin Panel** from the **Comments** bar.

User Name	Name	Level	Company	E-Mail	Date	Web Help Notification	Reply Notification	Page Notification	Status
admin	Administrator	admin	NA	john@oxygenxml.com	2012-06-25 07:04:13	yes	yes	yes	validated
oXygen		moderator	noCompany	chris@oxygenxml.com	2012-06-26 01:37:07	yes	no	no	validated

**Figure 201: The Administrative Page**

This page allows you to view all posts, export comments and set the version of the WebHelp. You can also view the details of each user and search through these details using the **Search User Information** filter.

 **Note:** When you delete a comment, all the replies to that comment are deleted.

To edit the details of a user, click its row and use the **Edit User admin** dialog. In this dialog, you can customize all the information of an user, including is **Status** and **Level**. The following options are available:

- **User Name** - specifies the User Name of the currently edited user;
- **Name** - specifies the name of the currently edited user;
- **Level** - use this field to modify the level of the currently edited user. You can choose from **Admin**, **User**, and **Moderator**;
- **Company** - specifies the company of the selected user;
- **E-mail** - specifies the e-mail address that the currently edited user used to create his account. This is also the address where notifications are sent;
- **Date** - specifies the date when the currently edited user created his account;
- **Web Help Notification** - specifies whether the currently edited user receives notifications when comments are posted anywhere in the feedback-enabled WebHelp system;
- **Reply Notification** - specifies whether the currently edited user receives notifications when comments are posted as a reply to a comment left by the user itself;
- **Page Notification** - specifies whether the currently edited user receives notifications when comments are posted on a page where the user posted a comment.;
- **Status** - specifies the status of an user:
  - **created** - the currently edited user is created but does not have any rights over the feedback-enabled WebHelp system;
  - **validated** - the currently edited user is able to use the feedback-enabled WebHelp system;
  - **suspended** - the currently edited user has no rights over the feedback-enabled WebHelp system.

The rights of the users depend on their level as follows:

- **user** - this type of user is able to post comments and receive e-mails when comments are posted anywhere in the documentation, on a single page where he posted a comment, or when a reply to one of his comments is posted;
- **moderator** - apart from the rights of a normal user, this type of user has access to the **Admin Panel**. On the administrative page a moderator can view, delete, export comments and set the version of the feedback-enabled WebHelp system;

 **Note:** Comments of version newer than the current version are not displayed.

- **admin** - the administrator has full access to all features of the feedback enabled WebHelp system.

## DITA Map Templates

The default templates available for DITA maps are stored in `${frameworks}/dita/templates/map` folder. They can be used for easily creating a DITA map and bookmap files.

Here are some of the DITA Map templates available when creating *new documents from templates*:

- **DITA Map - Bookmap** - New DITA Bookmap
- **DITA Map - Map** - New DITA Map
- **DITA Map - Learning Map** - New DITA learning and training content specialization map
- **DITA Map - Learning Bookmap** - New DITA learning and training content specialization bookmap
- **DITA Map - Eclipse Map** - New DITA learning and training content specialization bookmap

## The XHTML Document Type

The Extensible HyperText Markup Language, or XHTML, is a markup language that has the same depth of expression as HTML, but also conforms to XML syntax.

A file is considered to be a XHTML document when the root element name is a `html`.

The schema used for these documents is located in `${frameworks}/xhtml/dtd/xhtml11-strict.dtd`, where `frameworks` is a subdirectory of the Oxygen XML Editor install directory.

The default CSS options for the XHTML document type are set to merge the CSSs specified in the document with the CSSs defined in the XHTML document type.

The CSS file used for rendering XHTML content is located in `${frameworks}/xhtml/css/xhtml.css`.

There are three default catalogs for XHTML document type:

- `${frameworks}/xhtml/dtd/xhtmlcatalog.xml`
- `${frameworks}/xhtml11/dtd/xhtmlcatalog.xml`
- `${frameworks}/xhtml11/schema/xhtmlcatalog.xml`

## XHTML Author Extensions

Specific actions are:

- **B Bold** - changes the style of the selected text to `bold` by surrounding it with `b` tag;
- **I Italic** - changes the style of the selected text to `italic` by surrounding it with `i` tag;
- **U Underline** - changes the style of the selected text to `underline` by surrounding it with `u` tag.

 **Note:**

**Bold**, **Italic**, and **Underline** are toggle actions.

For all of the above actions, if there is no selection, then a new specific tag will be inserted. These actions are available in any document context.

- **H Headings** - groups actions for inserting `h1`, `h2`, `h3`, `h4`, `h5`, `h6` elements;
-  **Insert image reference** - inserts a graphic object at the caret position. This is done by inserting an `img` element regardless of the current context. The following graphical formats are supported: GIF, JPG, JPEG, BMP, PNG, SVG;
  -  **Insert an ordered list at the caret position** - inserts an ordered list. A child list item is also inserted automatically by default;
  -  **Insert an unordered list at the caret position** - inserts an itemized list. A child list item is also inserted automatically by default;
  -  **Insert a step or list Item** - inserts a new list item in any of the above list types.

-  **Insert Definition List** - inserts a definition list (dl element) with one list item (a dt child element and a dd child element);
  -  **Insert Table** - opens a dialog that allows you to configure and insert a table. You can generate a header and footer, set the number of rows and columns of the table and decide how the table is framed;
  -  **Insert Row** - inserts a new table row with empty cells. This action is available when the caret is positioned inside a table;
  -  **Insert Column** - inserts a new table column with empty cells after the current column. This action is available when the caret is positioned inside a table;
  -  **Insert Cell** - inserts a new empty cell depending on the current context. If the caret is positioned between two cells, Oxygen XML Editor a new cell at caret position. If the caret is inside a cell, the new cell is created after the current cell;
  -  **Delete Column** - deletes the table column located at caret position;
  -  **Delete Row** - deletes the table row located at caret position;
  -  **Join Row Cells** - joins the content of the selected cells. The operation is available if the selected cells are from the same row and they have the same row span. The action is also available when the selection is missing, but the caret is positioned between two cells;
  -  **Join Cell Above** - joins the content of the cell from the current caret position with the content of the cell above it. This action works only if both cells have the same column span;
  -  **Join Cell Below** - joins the content of the cell from the current caret position with the content of the cell below it. This action works only if both cells have the same column span;
-  **Note:** When you use  **Join Cell Above** and  **Join Cell Below**, Oxygen XML Editor deletes the source row is case it remains empty. The cells that span over multiple rows are also updated.
-  **Split Cell To The Left** - splits the cell from the current caret position in two cells, inserting a new empty table cell to the left. This action works only if the current cell spans over more than one column. Oxygen XML Editor decreases the column span of the source cell with one;
  -  **Split Cell To The Right** - splits the cell from the current caret position in two cells, inserting a new empty table cell to the right. This action works only if the current cell spans over more than one column. Oxygen XML Editor decreases the column span of the source cell with one;
  -  **Split Cell Above** - splits the cell from current caret position in two cells, inserting a new empty table cell above. This action works only if the current cell spans over more than one row. Oxygen XML Editor decreases the column span of the source cell with one;
  -  **Split Cell Below** - splits the cell from current caret position in two, inserting a new empty table cell below. This action works only if the current cell spans over more than one row. Oxygen XML Editor decreases the column span of the source cell with one.

All actions described above are available in the contextual menu, the **XHTML** submenu of the main menu and in the **Author custom actions** toolbar.

A drag and drop with a file from *the Project view* or from *the DITA Maps Manager view* to a DITA topic document that is edited in Author mode will create a link to the dragged file (the `xref` DITA element with the `href` attribute) at the drop location. A drag and drop with an image file from the default file system application (Windows Explorer on Windows, Finder on Mac OS X, etc) will insert an image element (the `image` DITA element with the `href` attribute) with the location of the dragged file at the drop location, like the **Insert Graphic** toolbar action.

## XHTML Transformation Scenarios

The following default transformation scenarios are available for XHTML:

- **XHTML to DITA concept** - Converts an XHTML document to a DITA concept document

- **XHTML to DITA reference** - Converts an XHTML document to a DITA reference document
- **XHTML to DITA task** - Converts an XHTML document to a DITA task document
- **XHTML to DITA topic** - Converts an XHTML document to a DITA topic document

## XHTML Templates

Default templates are available for XHTML. They are stored in `${frameworksDir}/xhtml/templates` folder and they can be used for easily creating basic XHTML documents.

Here are some of the XHTML templates available when creating *new documents from templates*.

- **XHTML - 1.0 Strict** - New Strict XHTML 1.0
- **XHTML - 1.0 Transitional** - New Transitional XHTML 1.0
- **XHTML - 1.1 DTD Based** - New DTD based XHTML 1.1
- **XHTML - 1.1 DTD Based + MathML 2.0 + SVG 1.1** - New XHTML 1.1 with MathML and SVG insertions
- **XHTML - 1.1 Schema based** - New XHTML 1.1 XML Schema based

## The TEI ODD Document Type

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The **Text Encoding Initiative - One Document Does it all (TEI ODD)** is a TEI XML-conformant specification format that allows creating a custom TEI P5 schema in a literate programming fashion. A system of XSLT stylesheets called *Roma* was created by the TEI Consortium for manipulating the ODD files.

A file is considered to be a TEI ODD document when either of the following occurs:

- the file extension is `.odd`
- the document's namespace is `http://www.tei-c.org/ns/1.0`

The schema used for these documents is located in

`${frameworks}/tei/xml/tei/custom/schema/relaxng/brown_odds.rng`, where `${frameworks}` is a subdirectory of the Oxygen XML Editor install directory.

The CSS file used for rendering TEI ODD content is located in

`${frameworks}/tei/xml/tei/css/tei_oxygen_odd.css`.

There are two default catalogs for TEI ODD document type:

- `${frameworks}/tei/xml/tei/custom/schema/catalog.xml`
- `${frameworks}/tei/xml/tei/schema/catalog.xml`

## TEI ODD Author Extensions

The specific actions for TEI ODD documents are:

- **B Bold** - changes the style of the selected text to bold by surrounding it with `hi` tag and setting the `rend` attribute to bold;
- **I Italic** - changes the style of the selected text to italic by surrounding it with `hi` tag and setting the `rend` attribute to italic;
- **U Underline** - changes the style of the selected text to underline by surrounding it with `hi` tag and setting the `rend` attribute to ul;

 **Note:**

**Bold**, **Italic**, and **Underline** are toggle actions.

For all of the above actions, if there is no selection, then a new specific tag will be inserted. These actions are available in any document context.

-  **Insert Section** - inserts a new section / subsection, depending on the current context. For example if the current context is `div1` then a `div2` will be inserted and so on;
  -  **Insert image reference** - *inserts an image reference* at the caret position;
    -  **Insert an ordered list at the caret position** - inserts an ordered list. A child list item is also inserted automatically by default;
    -  **Insert an unordered list at the caret position** - inserts an itemized list. A child list item is also inserted automatically by default;
    -  **Insert a step or list Item** - inserts a new list item in any of the above list types.
  -  **Insert Table** - opens a dialog that allows you to configure and insert a table. You can generate a header and footer, set the number of rows and columns of the table and decide how the table is framed;
  -  **Insert Row** - inserts a new table row with empty cells. This action is available when the caret is positioned inside a table;
  -  **Insert Column** - inserts a new table column with empty cells after the current column. This action is available when the caret is positioned inside a table;
  -  **Insert Cell** - inserts a new empty cell depending on the current context. If the caret is positioned between two cells, Oxygen XML Editor a new cell at caret position. If the caret is inside a cell, the new cell is created after the current cell;
  -  **Delete Column** - deletes the table column located at caret position;
  -  **Delete Row** - deletes the table row located at caret position;
  -  **Join Row Cells** - joins the content of the selected cells. The operation is available if the selected cells are from the same row and they have the same row span. The action is also available when the selection is missing, but the caret is positioned between two cells;
  -  **Join Cell Above** - joins the content of the cell from the current caret position with the content of the cell above it. This action works only if both cells have the same column span;
  -  **Join Cell Below** - joins the content of the cell from the current caret position with the content of the cell below it. This action works only if both cells have the same column span;
-  **Note:** When you use  **Join Cell Above** and  **Join Cell Below**, Oxygen XML Editor deletes the source row is case it remains empty. The cells that span over multiple rows are also updated.
-  **Split Cell To The Left** - splits the cell from the current caret position in two cells, inserting a new empty table cell to the left. This action works only if the current cell spans over more than one column. Oxygen XML Editor decreases the column span of the source cell with one;
  -  **Split Cell To The Right** - splits the cell from the current caret position in two cells, inserting a new empty table cell to the right. This action works only if the current cell spans over more than one column. Oxygen XML Editor decreases the column span of the source cell with one;
  -  **Split Cell Above** - splits the cell from current caret position in two cells, inserting a new empty table cell above. This action works only if the current cell spans over more than one row. Oxygen XML Editor decreases the column span of the source cell with one;
  -  **Split Cell Below** - splits the cell from current caret position in two, inserting a new empty table cell below. This action works only if the current cell spans over more than one row. Oxygen XML Editor decreases the column span of the source cell with one.
- **Generate IDs** - Available in the contextual menu, this action allows you to generate an unique ID for the element at caret position. If the element already has an ID set, it is preserved. Further options are offered in the **ID Options** dialog, available in the **TEI ODD** main menu. Here you can specify the elements for which Oxygen XML Editor generates an ID if the **Auto generate ID's for elements** is enabled. If you want to keep already set element id's when

copying content in the same document, make sure the **Remove ID's when copying content in the same document** option is not checked.

All actions described above are available in the contextual menu, the **TEI ODD** submenu of the main menu or in the **Author custom actions** toolbar.

A drag and drop with a file from *the Project view* or from *the DITA Maps Manager view* to a **TEI ODD** document that is edited in Author mode will create a link to the dragged file (the `ptr` element with the `target` attribute) at the drop location.

## TEI ODD Transformation Scenarios

The following default transformations are available:

- **TEI ODD XHTML** - Transforms a TEI ODD document into an XHTML document
- **TEI ODD PDF** - Transforms a TEI ODD document into a PDF document using the Apache FOP engine
- **TEI ODD EPUB** - Transforms a TEI ODD document into an EPUB document
- **TEI ODD DOCX** - Transforms a TEI ODD document into a DOCX document
- **TEI ODD ODT** - Transforms a TEI ODD document into an ODT document
- **TEI ODD RelaxNG XML** - Transforms a TEI ODD document into a RelaxNG XML document
- **TEI ODD to DTD** - Transforms a TEI ODD document into a DTD document
- **TEI ODD to XML Schema** - Transforms a TEI ODD document into an XML Schema document
- **TEI ODD to RelaxNG Compact** - Transforms a TEI ODD document into an RelaxNG Compact document

## TEI ODD Templates

There is only one default template which is stored in the `${frameworks}/tei/templates/TEI ODD` folder and can be used for easily creating a basic TEI ODD document. This template is available when creating *new documents from templates*.

- **TEI ODD** - New TEI ODD document

## The TEI P4 Document Type

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The **Text Encoding Initiative (TEI) Guidelines** is an international and interdisciplinary standard that enables libraries, museums, publishers, and individual scholars to represent a variety of literary and linguistic texts for online research, teaching, and preservation.

A file is considered to be a TEI P4 document when either of the following occurs:

- the root's local name is `TEI . 2`
- the document's public id is `-//TEI P4`

The DTD schema used for these documents is located in `${frameworks}/tei/tei2xml.dtd`, where `${frameworks}` is a subdirectory of the Oxygen XML Editor install directory.

The CSS file used for rendering TEI P4 content is located in `${frameworks}/tei/xml/tei/css/tei_oxygen.css`.

There are two default catalogs for TEI P4 document type:

- `${frameworks}/tei/xml/teip4/schema/dtd/catalog.xml`
- `${frameworks}/tei/xml/teip4/custom/schema/dtd/catalog.xml`

## TEI P4 Author Extensions

The specific actions for TEI P4 documents are:

- **B Bold** - changes the style of the selected text to bold by surrounding it with `hi` tag and setting the `rend` attribute to bold;

- **I Italic** - changes the style of the selected text to *italic* by surrounding it with `hi` tag and setting the `rend` attribute to `italic`;
- **U Underline** - changes the style of the selected text to underline by surrounding it with `hi` tag and setting the `rend` attribute to `ul`;

 **Note:**

**Bold, Italic, and Underline** are toggle actions.

For all of the above actions, if there is no selection, then a new specific tag will be inserted. These actions are available in any document context.

- **Browse reference manual** - opens in your web browser of choice a reference to the documentation of the XML element closest to the caret position.
  - **§ Insert Section** - inserts a new section / subsection, depending on the current context. For example if the current context is `div1` then a `div2` will be inserted and so on;
  -  **Insert image reference** - *inserts an image reference* at the caret position;
    -  **Insert an ordered list at the caret position** - inserts an ordered list. A child list item is also inserted automatically by default;
    -  **Insert an unordered list at the caret position** - inserts an itemized list. A child list item is also inserted automatically by default;
    -  **Insert a step or list Item** - inserts a new list item in any of the above list types.
  -  **Insert Table** - opens a dialog that allows you to configure and insert a table. You can generate a header and footer, set the number of rows and columns of the table and decide how the table is framed;
  -  **Insert Row** - inserts a new table row with empty cells. This action is available when the caret is positioned inside a table;
  -  **Insert Column** - inserts a new table column with empty cells after the current column. This action is available when the caret is positioned inside a table;
  -  **Insert Cell** - inserts a new empty cell depending on the current context. If the caret is positioned between two cells, Oxygen XML Editor a new cell at caret position. If the caret is inside a cell, the new cell is created after the current cell;
  -  **Delete Column** - deletes the table column located at caret position;
  -  **Delete Row** - deletes the table row located at caret position;
  -  **Join Row Cells** - joins the content of the selected cells. The operation is available if the selected cells are from the same row and they have the same row span. The action is also available when the selection is missing, but the caret is positioned between two cells;
  -  **Join Cell Above** - joins the content of the cell from the current caret position with the content of the cell above it. This action works only if both cells have the same column span;
  -  **Join Cell Below** - joins the content of the cell from the current caret position with the content of the cell below it. This action works only if both cells have the same column span;
-  **Note:** When you use  **Join Cell Above** and  **Join Cell Below**, Oxygen XML Editor deletes the source row is case it remains empty. The cells that span over multiple rows are also updated.
-  **Split Cell To The Left** - splits the cell from the current caret position in two cells, inserting a new empty table cell to the left. This action works only if the current cell spans over more than one column. Oxygen XML Editor decreases the column span of the source cell with one;

-  **Split Cell To The Right** - splits the cell from the current caret position in two cells, inserting a new empty table cell to the right. This action works only if the current cell spans over more than one column. Oxygen XML Editor decreases the column span of the source cell with one;
-  **Split Cell Above** - splits the cell from current caret position in two cells, inserting a new empty table cell above. This action works only if the current cell spans over more than one row. Oxygen XML Editor decreases the column span of the source cell with one;
-  **Split Cell Below** - splits the cell from current caret position in two, inserting a new empty table cell below. This action works only if the current cell spans over more than one row. Oxygen XML Editor decreases the column span of the source cell with one.
- **Generate IDs** - Available in the contextual menu, this action allows you to generate a unique ID for the element at caret position. If the element already has an ID set, it is preserved.

Further options are offered in the **ID Options** dialog, available in the document type specific main menu. The configurable ID value pattern can accept most of the application supported *editor variables*. You can also specify the elements for which Oxygen XML Editor generates an ID if the **Auto generate ID's for elements** is enabled.

If you want to keep an already set element ID's when copying content in the same document, make sure the **Remove ID's when copying content in the same document** option is not checked.

All actions described above are available in the contextual menu, the **TEI P4** submenu of the main menu or in the **Author custom actions** toolbar.

A drag and drop with a file from *the Project view* or from *the DITA Maps Manager view* to a TEI P4 document that is edited in Author mode will create a link to the dragged file (the `ptr` element with the `target` attribute) at the drop location.

## TEI P4 Transformation Scenarios

The following default transformations are available:

- **TEI HTML** - Transforms a TEI document into a HTML document
- **TEI P4 -> TEI P5 Conversion** - Convert a TEI P4 document into a TEI P5 document
- **TEI PDF** - Transforms a TEI document into a PDF document using the Apache FOP engine

## TEI P4 Templates

The default templates are stored in `${frameworks}/tei/templates/TEI P4` folder and they can be used for easily creating basic TEI P4 documents. These templates are available when creating *new documents from templates*.

- **TEI P4 - Lite** - New TEI P4 Lite
- **TEI P4 - New Document** - New TEI P4 standard document

## Customization of TEI Frameworks Using the Latest Sources

The *TEI P4* and *TEI P5* frameworks are available as a public project at the following SVN repository:

<https://oxygen-tei.googlecode.com/svn/trunk/>

This project is the base for customizing a TEI framework.

1. Check out the project on a local computer from the SVN repository.
 

This action is done with an SVN client application that creates a working copy of the SVN repository on a local computer.
2. Customize the TEI framework in Oxygen.
  - a) Set the Oxygen `frameworks` folder to the folder of the SVN working copy.
 

Go to menu **Options > Preferences > Global** and set the path of the SVN working copy in the option **Use custom frameworks**.
  - b) Edit the TEI framework in the **Preferences** dialog.

Go to menu **Options > Preferences > Document Type Association** and edit the TEI framework.

c) Close the **Preferences** dialog with the **OK** button.

If the dialog is closed with the **Cancel** button, the modifications are not saved on disk.

3. Build a jar file with the TEI framework.

The SVN project includes a `build.xml` file that can be used for building a jar file using the Ant tool. The command that should be used:

```
ant -f build.xml
```

4. Distribute the jar file to the users that need the customized TEI framework.

The command from the above step creates a file `tei.zip` in the `dist` subfolder of the SVN project. Each user that needs the customized TEI framework will receive the `tei.zip` file and will unzip it in the `frameworks` folder of the Oxygen install folder. After restarting the Oxygen application the new TEI framework will appear in the **Options > Preferences > Document Type Association**.

## The TEI P5 Document Type

---

The TEI P5 document type is the same with that for TEI P4 with the following exceptions:

- A file is considered to be a TEI P5 document when the namespace is `http://www.tei-c.org/ns/1.0`.
- The schema is located in `${frameworks}/tei/xml/tei/custom/schema/relaxng/tei_allPlus.rng`, where `${frameworks}` is a subdirectory of the Oxygen XML Editor install directory.
- A drag and drop with an image file from the default file system application (Windows Explorer on Windows, Finder on Mac OS X, etc) will insert an image element (the `graphic` DITA element with the `url` attribute) with the location of the dragged file at the drop location, like the **Insert Graphic** toolbar action.

## TEI P5 Transformation Scenarios

The following default transformations are available:

- **TEI P5 XHTML** - Transforms a TEI P5 document into a XHTML document
- **TEI P5 PDF** - Transforms a TEI P5 document into a PDF document using the Apache FOP engine
- **TEI EPUB** - Transforms a TEI P5 document into an EPUB output. The EPUB output will contain any images referenced in the TEI XML document.
- **TEI DOCX** - Transforms a TEI P5 document into a DOCX (OOXML) document. The DOCX document will contain any images referenced in the TEI XML document.
- **TEI ODT** - Transforms a TEI P5 document into an ODT (ODF) document. The ODT document will contain any images referenced in the TEI XML document.

## TEI P5 Templates

The default templates are stored in `${frameworks}/tei/templates/TEI P5` folder and they can be used for easily creating basic TEI P5 documents. These templates are available when creating *new documents from templates*.

- **TEI P5 - All** - New TEI P5 All
- **TEI P5 - Bare** - New TEI P5 Bare
- **TEI P5 - Lite** - New TEI P5 Lite
- **TEI P5 - Math** - New TEI P5 Math
- **TEI P5 - Speech** - New TEI P5 Speech
- **TEI P5 - SVG** - New TEI P5 with SVG extensions
- **TEI P5 - XInclude** - New TEI P5 XInclude aware

## Customization of TEI Frameworks Using the Latest Sources

The [TEI P4](#) and [TEI P5](#) frameworks are available as a public project at the following SVN repository:

```
https://oxygen-tei.googlecode.com/svn/trunk/
```

This project is the base for customizing a TEI framework.

1. Check out the project on a local computer from the SVN repository.  
This action is done with an SVN client application that creates a working copy of the SVN repository on a local computer.
2. Customize the TEI framework in Oxygen.
  - a) Set the Oxygen `frameworks` folder to the folder of the SVN working copy.  
Go to menu **Options > Preferences > Global** and set the path of the SVN working copy in the option **Use custom frameworks**.
  - b) Edit the TEI framework in the **Preferences** dialog.  
Go to menu **Options > Preferences > Document Type Association** and edit the TEI framework.
  - c) Close the **Preferences** dialog with the **OK** button.  
If the dialog is closed with the **Cancel** button, the modifications are not saved on disk.
3. Build a jar file with the TEI framework.  
The SVN project includes a `build.xml` file that can be used for building a jar file using the Ant tool. The command that should be used:

```
ant -f build.xml
```

4. Distribute the jar file to the users that need the customized TEI framework.  
The command from the above step creates a file `tei.zip` in the `dist` subfolder of the SVN project. Each user that needs the customized TEI framework will receive the `tei.zip` file and will unzip it in the `frameworks` folder of the Oxygen install folder. After restarting the Oxygen application the new TEI framework will appear in the **Options > Preferences > Document Type Association**.

## Customization of TEI Frameworks Using the Compiled Sources

The following procedure describes how to update to the latest stable version of TEI Schema and TEI XSL, already integrated in the TEI framework for Oxygen XML Editor.

1. Go to <https://code.google.com/p/oxygen-tei/>;
2. Go to **Downloads**;
3. Download the latest uploaded `.zip` file;
4. Unpack the `.zip` file and copy its content in the Oxygen XML Editor `frameworks` folder.

## The EPUB Document Type

---

Three distinct frameworks support the EPUB document type:

- **NCX** - A declarative global navigation definition.
- **OCF** - The Open Container Format(OCF) defines a mechanism by which all components of an Open Publication Structure(OPS) can be combined into a single file-system entity.
- **OPF**: - The Open Packaging Format(OPF) defines the mechanism by which all components of a published work conforming to the Open Publication Structure(OPS) standard including metadata, reading order and navigational information are packaged into an OPS Publication.



**Note:** Oxygen XML Editor supports both OPF 2.0 and OPF 3.0.



---

# Chapter 8

---

## Author Developer Guide

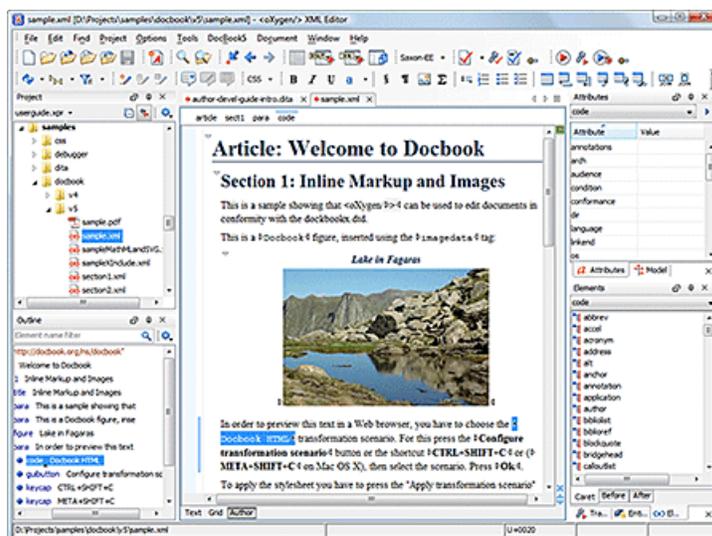
---

### Topics:

- [Simple Customization Tutorial](#)
- [Advanced Customization Tutorial - Document Type Associations](#)
- [CSS Support in Author](#)
- [Example Files Listings - The Simple Documentation Framework Files](#)
- [Author Component](#)
- [Creating and Running Automated Tests](#)

The Author editor of Oxygen XML Editor was designed to bridge the gap between the XML source editing and a friendly user interface. The main achievement is the fact that the Author combines the power of source editing with the intuitive interface of a text editor.

This guide is targeted at advanced authors who want to customize the Author editing environment and is included both as a chapter in the Oxygen XML Editor user manual and as a separate document in *the Author SDK*.



**Figure 202: Oxygen XML Editor Author Visual Editor**

Although Oxygen XML Editor comes with already configured frameworks for DocBook, DITA, TEI, XHTML, you might need to create a customization of the editor to handle other types of documents. The common use case is when your organization holds a collection of XML document types used to define the structure of internal documents and they need to be visually edited by people with no experience in working with XML files.

There are several ways to customize the editor:

1. Create a CSS file defining styles for the XML elements the user will work with, and create XML files that refer the CSS through an `xml-stylesheet` processing instruction.
2. Fully configure a document type association. This involves putting together the CSSs, the XML schemes, actions, menus, etc, bundling them and distributing an archive. The CSS and the GUI elements are settings of the Oxygen XML Editor Author. The other settings like the templates, catalogs, transformation scenarios are general settings and are enabled whenever the association is active, no matter the editing mode (Text, Grid or Author).

| Both approaches will be discussed in the following sections.

## Simple Customization Tutorial

The most important elements of a document type customization are represented by an XML Schema to define the XML structure, the CSS to render the information and the XML instance template which links the first two together.

### XML Schema

Let's consider the following XML Schema, `test_report.xsd` defining a report with results of a testing session. The report consists of a title, few lines describing the test suite that was run and a list of test results, each with a name and a boolean value indicating if the test passed or failed.

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:element name="report">
    <xs:complexType>
      <xs:sequence>
        <xs:element ref="title"/>
        <xs:element ref="description"/>
        <xs:element ref="results"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="title" type="xs:string"/>
  <xs:element name="description">
    <xs:complexType>
      <xs:sequence maxOccurs="unbounded">
        <xs:element name="line">
          <xs:complexType mixed="true">
            <xs:sequence minOccurs="0"
              maxOccurs="unbounded">
              <xs:element name="important"
                type="xs:string"/>
            </xs:sequence>
          </xs:complexType>
        </xs:element>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="results">
    <xs:complexType>
      <xs:sequence maxOccurs="unbounded">
        <xs:element name="entry">
          <xs:complexType>
            <xs:sequence>
              <xs:element name="test_name"
                type="xs:string"/>
              <xs:element name="passed"
                type="xs:boolean"/>
            </xs:sequence>
          </xs:complexType>
        </xs:element>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
</xs:schema>
```

The use-case is that several users are testing a system and must send report results to a content management system. The Author customization should provide a visual editor for this kind of documents.

### CSS Stylesheet

A set of rules must be defined for describing how the XML document is to be rendered into the Author. This is done using Cascading Style Sheets or CSS on short. CSS is a language used to describe how an HTML or XML document should be formatted by a browser. CSS is widely used in the majority of websites.

The elements from an XML document are displayed in the layout as a series of boxes. Some of the boxes contain text and may flow one after the other, from left to right. These are called in-line boxes. There are also other type of boxes that flow one below the other, like paragraphs. These are called block boxes.

For example consider the way a traditional text editor arranges the text. A paragraph is a block, because it contains a vertical list of lines. The lines are also blocks. But any block that contains inline boxes is arranging its children in a horizontal flow. That is why the paragraph lines are also blocks, but the traditional "bold" and "italic" sections are represented as inline boxes.

The CSS allows us to specify that some elements are displayed as tables. In CSS a table is a complex structure and consists of rows and cells. The "table" element must have children that have "table-row" style. Similarly, the "row" elements must contain elements with "table-cell" style.

To make it easy to understand, the following section describes the way each element from the above schema is formatted using a CSS file. Please note that this is just one from an infinite number of possibilities of formatting the content.

**report** This element is the root element of the report document. It should be rendered as a box that contains all other elements. To achieve this the display type is set to **block**. Additionally some margins are set for it. The CSS rule that matches this element is:

```
report{
  display:block;
  margin:1em;
}
```

**title** The title of the report. Usually titles have a larger font. The **block** display should also be used - the next elements will be placed below it, and change its font to double the size of the normal text.

```
title {
  display:block;
  font-size:2em;
}
```

**description** This element contains several lines of text describing the report. The lines of text are displayed one below the other, so the description will have the same **block** display. To make it stand out the background color is changed.

```
description {
  display:block;
  background-color:#EEEEFF;
  color:black;
}
```

**line** A line of text in the description. A specific aspect is not defined for it, just indicate that the display should be **block**.

```
line {
  display:block;
}
```

**important** The `important` element defines important text from the description. Because it can be mixed with text, its display property must be set to **inline**. To make it easier to spot, the text will be emphasized.

```
important {
  display:inline;
  font-weight:bold;
}
```

**results** The `results` element shows the list of `test_names` and the result for each one. To make it easier to read, it is displayed as a **table** with a green border and margins.

```
results{
  display:table;
  margin:2em;
  border:1px solid green;
}
```

**entry** An item in the results element. The results are displayed as a table so the entry is a row in the table. Thus, the display is **table-row**.

```
entry {
  display:table-row;
}
```

**test\_name,**  
**passed**

The name of the individual test, and its result. They are cells in the results table with display set to **table-cell**. Padding and a border are added to emphasize the table grid.

```
test_name, passed{
  display:table-cell;
  border:1px solid green;
  padding:20px;
}

passed{
  font-weight:bold;
}
```

The full content of the CSS file `test_report.css` is:

```
report {
  display:block;
  margin:1em;
}

description {
  display:block;
  background-color:#EEEEFF;
  color:black;
}

line {
  display:block;
}

important {
  display:inline;
  font-weight:bold;
}

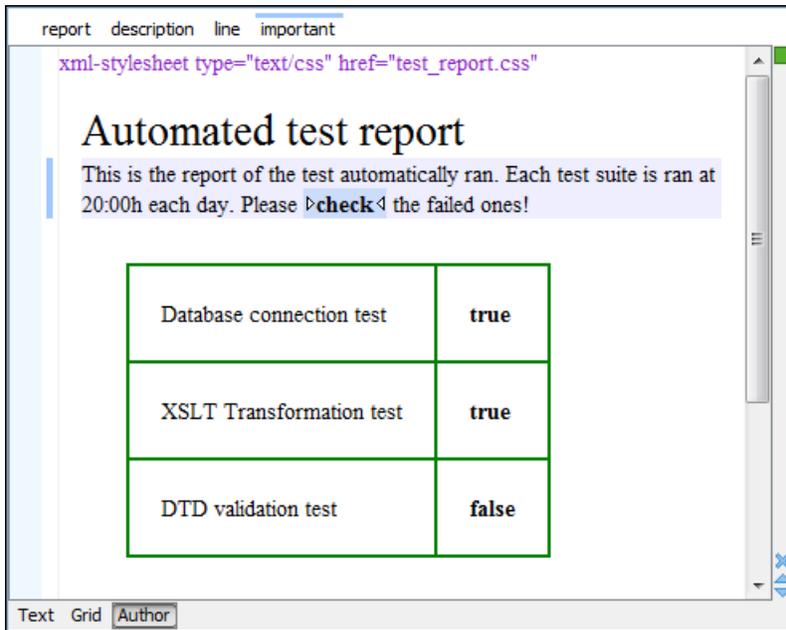
title {
  display:block;
  font-size:2em;
}

results{
  display:table;
  margin:2em;
  border:1px solid green;
}

entry {
  display:table-row;
}

test_name, passed{
  display:table-cell;
  border:1px solid green;
  padding:20px;
}

passed{
  font-weight:bold;
}
```



**Figure 203: A report opened in the Author**



**Note:**

You can edit attributes in-place in the Author mode using *form-based controls*.

## The XML Instance Template

Based on the XML Schema and the CSS file the Author can help the content author in loading, editing and validating the test reports. An XML file template must be created, a kind of skeleton, that the users can use as a starting point for creating new test reports. The template must be generic enough and refer the XML Schema file and the CSS stylesheet.

This is an example:

```
<?xml version="1.0" encoding="UTF-8"?>
<?xml-stylesheet type="text/css" href="test_report.css"?>
<report xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="test_report.xsd">
  <title>Automated test report</title>
  <description>
    <line>This is the report of the test automatically ran. Each test suite is ran at 20:00h each
      day. Please <important>check</important> the failed ones!</line>
  </description>
  <results>
    <entry>
      <test_name>Database connection test</test_name>
      <passed>true</passed>
    </entry>
    <entry>
      <test_name>XSLT Transformation test</test_name>
      <passed>true</passed>
    </entry>
    <entry>
      <test_name>DTD validation test</test_name>
      <passed>>false</passed>
    </entry>
  </results>
</report>
```

The processing instruction `xml-stylesheet` associates the CSS stylesheet to the XML file. The `href` pseudo attribute contains the URI reference to the stylesheet file. In our case the CSS is in the same directory as the XML file.

The next step is to place the XSD file and the CSS file on a web server and modify the template to use the HTTP URLs, like this:

```
<?xml version="1.0" encoding="UTF-8"?>
<?xml-stylesheet type="text/css"
  href="http://www.mysite.com/reports/test_report.css"?>
<report xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:noNamespaceSchemaLocation=
    "http://www.mysite.com/reports/test_report.xsd">
  <title>Test report title</title>
  <description>
  .....
```

The alternative is to create an archive containing the `test_report.xml`, `test_report.css` and `test_report.xsd` and send it to the content authors.

## Advanced Customization Tutorial - Document Type Associations

Oxygen XML Editor is highly customizable. Practically you can associate an entire class of documents (grouped logically by some common features like namespace, root element name or filename) to a bundle consisting of CSS stylesheets, validation schemas, catalog files, new files templates, transformation scenarios and even custom actions. The bundle is called *document type* and the association is called *Document Type Association* or, more generically, *framework*.

In this tutorial a **Document Type Association** will be created for a set of documents. As an example a light documentation framework (similar to DocBook) will be created, then complete customization of the Author editor will be set up.

-  **Note:** The samples used in this tutorial can be found in the [Example Files Listings](#).
-  **Note:** The complete source code can be found in the Simple Documentation Framework project, included in the [Oxygen Author SDK zip](#) available for download [on the Oxygen XML Editor website](#).
-  **Note:** The Javadoc documentation of the Author API used in the example files is [available on the Oxygen XML Editor website](#). Also it can be downloaded as a [zip archive from the website](#).

### Document Type

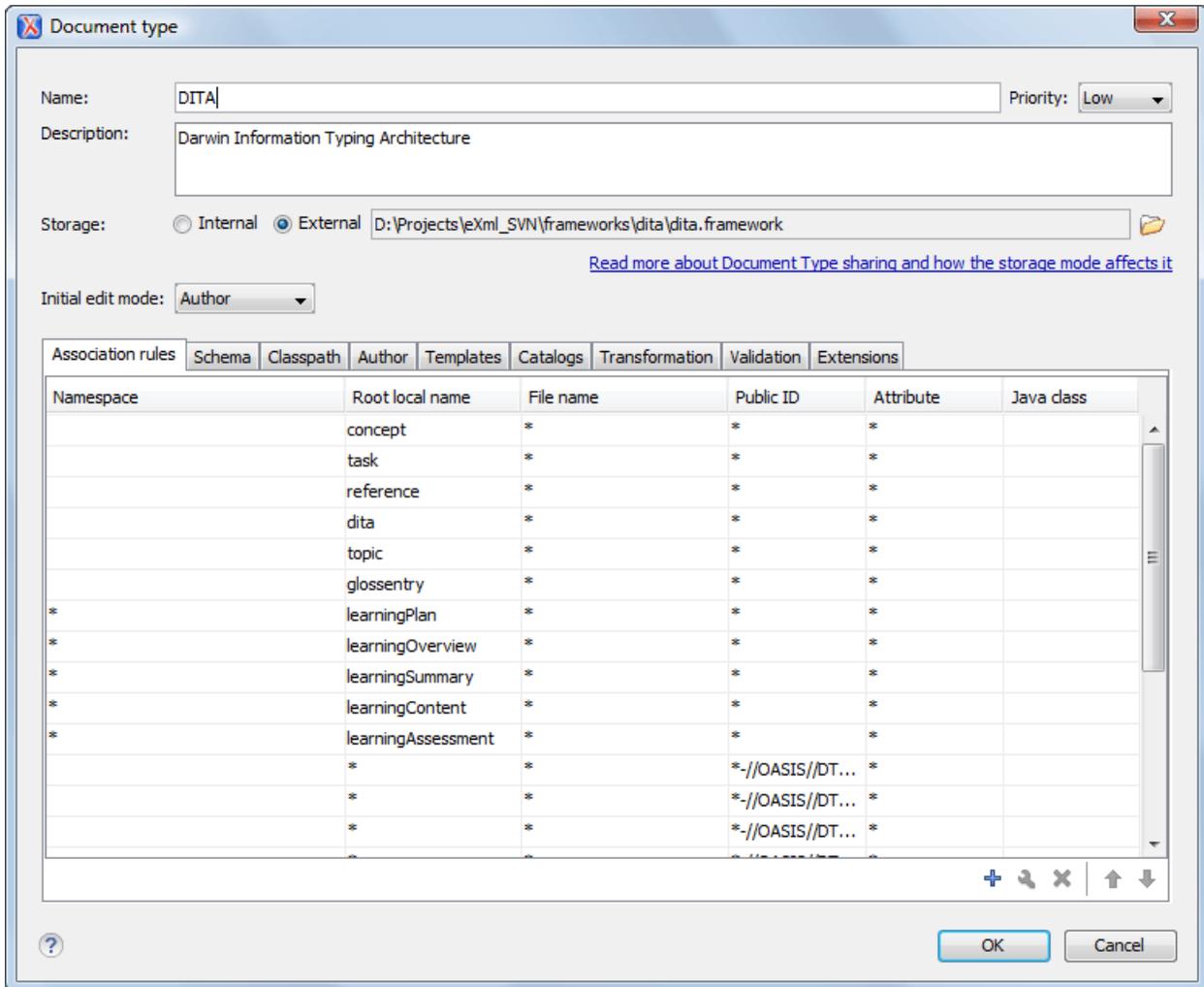
A *document type* or *framework* is associated to an XML file according to a set of rules. It includes also many settings that improve editing in the Author mode for the category of XML files it applies for. These settings include:

- a default grammar used for validation and content completion in both Author mode and Text mode;
- CSS stylesheet(s) for rendering XML documents in Author mode;
- user actions invoked from toolbar or menu in Author mode;
- predefined scenarios used for transformation of the class of XML documents defined by the document type;
- XML catalogs;
- directories with file templates;
- user-defined extensions for customizing the interaction with the content author in Author mode.

The tagless editor comes with some predefined document types already configured when the application is installed on the computer. These document types describe well-known XML frameworks largely used today for authoring XML documents. Editing a document which conforms to one of these types is as easy as opening it or creating it from one of the predefined document templates which also come with Oxygen XML Editor.

### Author Settings

You can add a new *Document Type Association* or edit the properties of an existing one from the **Options > Preferences > Document Type Association** option pane. All the changes can be made into the *Document type* edit dialog.



**Figure 204: The Document Type**

You can specify the following properties for a document type:

- **Name** - The name of the document type.
- **Priority** - When multiple document types match the same document, the priority determines the order in which they are applied. It can be one of: Lowest, Low, Normal, High, Highest. The predefined document types that are already configured when the application is installed on the computer have the default Low priority.

 **Note:** The frameworks having the same priority are alphabetically sorted.

- **Description** - The document type description displayed as a tooltip in the *Document Type Association table*.
- **Storage** - The location where the document type is saved. If you select the **External** storage, the document type is saved in the specified file with a mandatory `framework` extension, located in a subfolder of the current `frameworks` directory. If you select the **Internal** storage option, the document type data is saved in the current `.xpr` Oxygen XML Editor project file (for Project-level Document Type Association Options) or in the Oxygen XML Editor internal options (for Global-level Document Type Association Options). You can change the Document Type Association Options level in the *Document Type Association panel*.
- **Initial edit mode** - Allows you to select the initial editing mode (**Editor specific**, **Text**, **Author**, **Grid** and **Design** (available only for the W3C XML Schema editor)) for this document type. If the **Editor specific** option is selected, the initial edit mode is determined depending on the editor type. You can find the mapping between editors and edit modes in the *Edit modes preferences page*. You can decide to impose an initial mode for opening files which match the association rules of the document type. For example if the files are usually edited in the *Author* mode you can set it in the **Initial edit mode** combo box.



**Note:** You can also customize the initial mode for a document type in the **Edit modes** preferences page. To open this page, go to **Options > Preferences > Editor > Edit modes** .

You can specify the association rules used for determining a document type for an opened XML document. A rule can define one or more conditions. All conditions need to be fulfilled in order for a specific rule to be chosen. Conditions can specify:

- **Namespace** - The namespace of the document that matches the document type.
- **Root local name of document** - The local name of the document that matches the document type.
- **File name** - The file name (including the extension) of the document that matches the document type.
- **Public ID** (for DTDs) - The PUBLIC identifier of the document that matches the document type.
- **Attribute** - This field allows you to associate a document type depending on a certain value of the attribute in the root.
- **Java class** - Name of Java class that is called for finding if the document type should be used for an XML document. Java class must implement `ro.sync.ecss.extensions.api.DocumentTypeCustomRuleMatcher` interface from *Author API*.

In the **Schema** tab, you can specify the type and URI of schema used for validation and content completion of all documents from the document type, when there is no schema detected in the document.

You can choose one of the following schema types:

- DTD;
- Relax NG schema (XML syntax);
- Relax NG schema (XML syntax) + Schematron;
- Relax NG schema (compact syntax);
- XML Schema;
- XML Schema + Schematron rules;
- NVDL schema.

## Configuring Actions, Menus and Toolbars

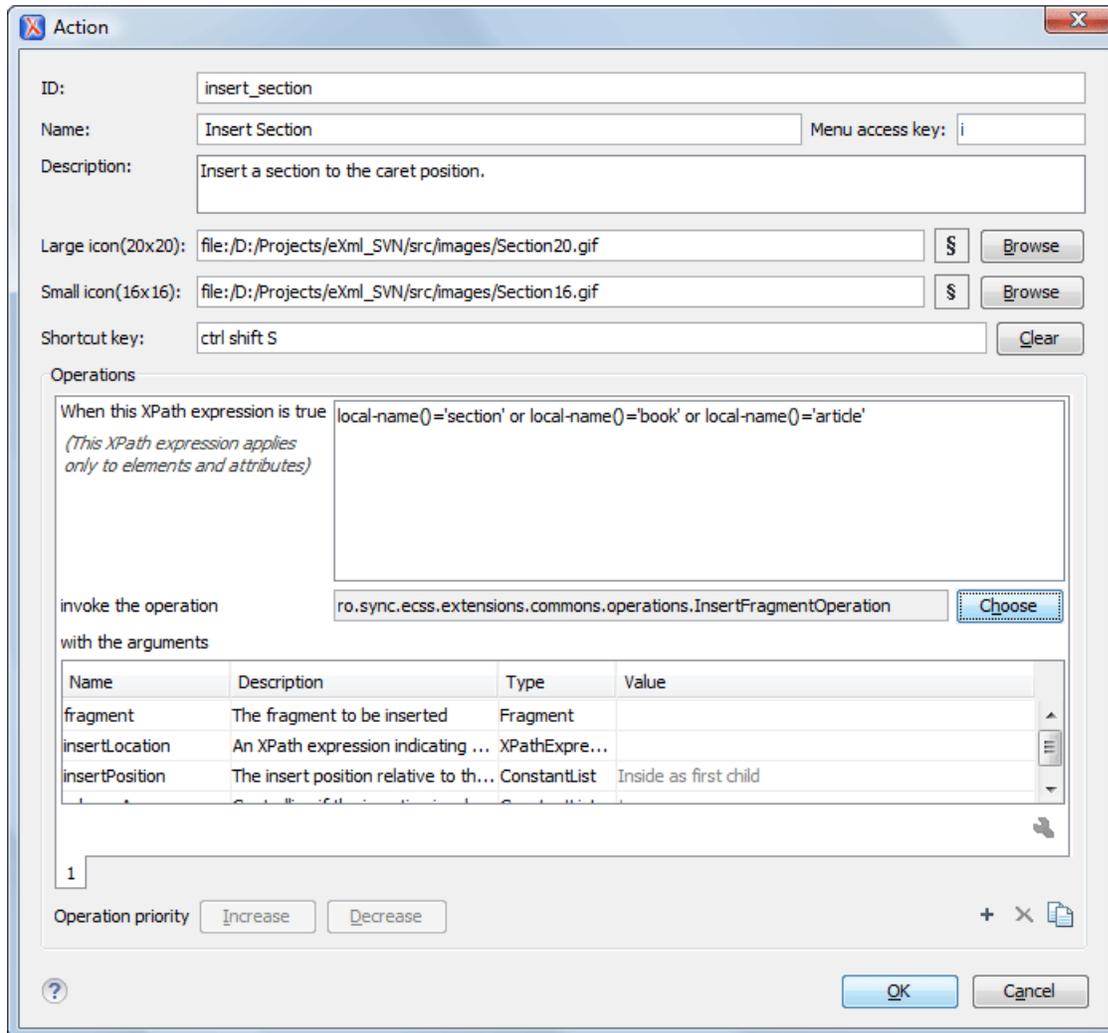
The Author toolbars and menus can be changed to provide a productive editing experience for the content authors. You can create a set of actions that are specific to a document type.

In the example with the `sdf` framework, you created the stylesheet and the validation schema. Now let's add some actions to insert a `section` and a `table`. To add a new action, follow the procedure:

1. Open the **Options Dialog**, and select the **Document Types Association** option pane.
2. In the lower part of the **Document Type Association** dialog, click on the **Author** tab, then select the **Actions** label.
3. To add a new action click on the **+ Add** button.

## Creating the Insert Section Action

This section shows all the steps needed to define the Insert Section action. We assume the icon files `§ (Section16.png)` for the menu item and `§ (Section20.png)` for the toolbar, are already available. Although you could use the same icon size for both menu and toolbar, usually the icons from the toolbars are larger than the ones found in the menus. These files should be placed in the `frameworks / sdf` directory.



**Figure 205: The Action Edit Dialog**

1. Set the **ID** field to **insert\_section**. This is a unique action identifier.
2. Set the **Name** field to **Insert Section**. This will be the action's name, displayed as a tooltip when the action is placed in the toolbar, or as the menu item name.
3. Set the **Menu access key** to **i**. On Windows, the menu items can be accessed using (ALT + letter) combination, when the menu is visible. The letter is visually represented by underlining the first letter from the menu item name having the same value.
4. Set the **Description** field to **Insert a section at caret position**.
5. Set the **Large icon (20x20)** field to `${frameworks} / sdf / Section20.png`. A good practice is to store the image files inside the framework directory and use *editor variable* `${frameworks}` to make the image relative to the framework location.

If the images are bundled in a jar archive together with some Java operations implementation for instance, it might be convenient for you to refer the images not by the file name, but by their relative path location in the class-path.

If the image file `Section20.png` is located in the **images** directory inside the jar archive, you can refer to it by using `/images/Section20.png`. The jar file must be added into the **Classpath** list.

6. Set the **Small icon (16x16)** field to `${frameworks} / sdf / Section16.png`.
7. Click the text field next to **Shortcut key** and set it to **Ctrl+Shift+S**. This will be the key combination to trigger the action using the keyboard only.

The shortcut is enabled only by *adding the action to the main menu of the Author mode* which contains all the actions that the author will have in a menu for the current document type.

8. At this time the action has no functionality added to it. Next you must define how this action operates. An action can have multiple operation modes, each of them activated by the evaluation of an XPath version 2.0 expression. The first enabled action mode will be executed when the action is triggered by the user. The scope of the XPath expression must be only element nodes and attribute nodes of the edited document, otherwise the expression will not return a match and will not fire the action. For this example we'll suppose you want allow the action to add a section only if the current element is either a book, article or another section.

- a) Set the XPath expression field to:

```
local-name()='section' or local-name()='book' or
local-name()='article'
```

- b) Set the **invoke operation** field to `InsertFragmentOperation` built-in operation, designed to insert an XML fragment at caret position. This belongs to a set of built-in operations, a complete list of which can be found in the *Author Default Operations* section. This set can be expanded with your own Java operation implementations.
- c) Configure the arguments section as follows:

```
<section xmlns=
"http://www.oxygenxml.com/sample/documentation">
  <title/>
</section>
```

`insertLocation` - leave it empty. This means the location will be at the caret position.

`insertPosition` - select **"Inside"**.

## The Insert Table Action

You will create an action that inserts into the document a table with three rows and three columns. The first row is the table header. Similarly to the insert section action, you will use the `InsertFragmentOperation`.

Place the icon files for the menu item and for the toolbar in the `frameworks / sdf` directory.

1. Set **ID** field to `insert_table`.
2. Set **Name** field to **Insert table**.
3. Set **Menu access key** field to `t`.
4. Set **Description** field to **Adds a section element**.
5. Set **Toolbar icon** to `${frameworks} / sdf / toolbarIcon.png`.
6. Set **Menu icon** to `${frameworks} / sdf / menuIcon.png`.
7. Set **Shortcut key** to `Ctrl+Shift+T`.
8. Set up the action's functionality:
  - a) Set **XPath expression** field to `true()`.  
`true()` is equivalent with leaving this field empty.
  - b) Set **Invoke operation** to use **InvokeFragmentOperation** built-in operation that inserts an XML fragment to the caret position.
  - c) Configure operation's arguments as follows:

**fragment** - set it to:

```
<table xmlns=
"http://www.oxygenxml.com/sample/documentation">
  <header><td/><td/><td/></header>
  <tr><td/><td/><td/></tr>
  <tr><td/><td/><td/></tr>
</table>
```

`insertLocation` - to add tables at the end of the section use the following code:

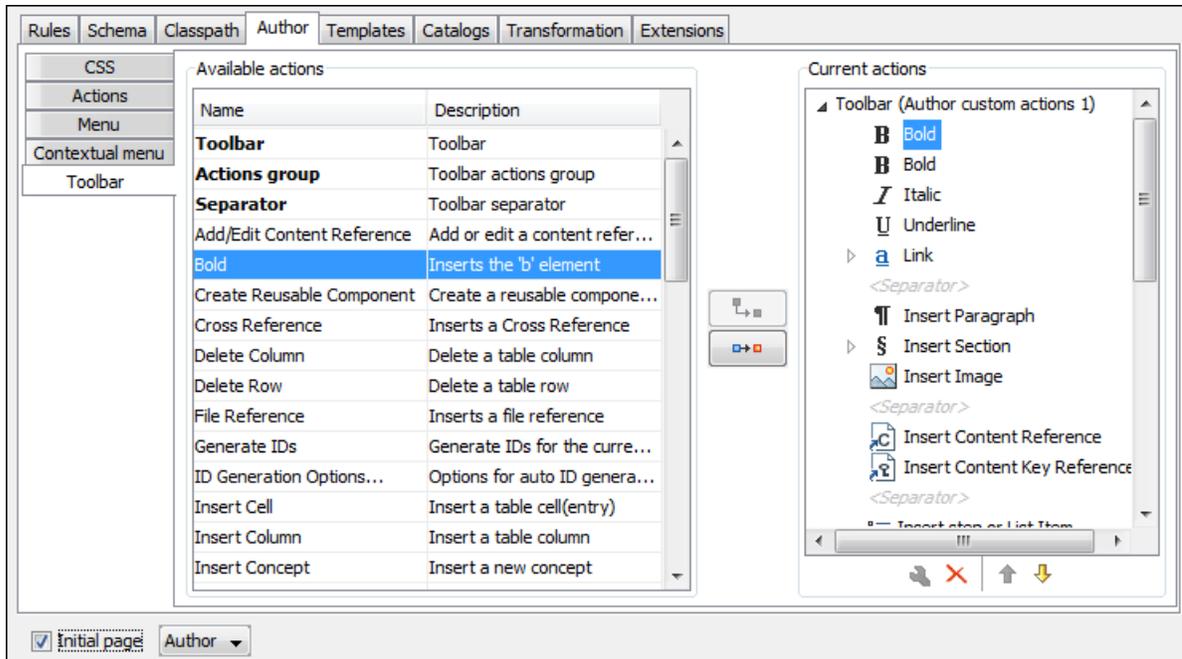
```
ancestor::section/*[last()]
```

`insertPosition` - Select **After**.

## Configuring the Toolbars

Now that you have defined the *Insert Section* action and the *Insert Table* action, you can add them to the toolbar. You can configure additional toolbars on which to add your custom actions.

1. Open the Document Type edit dialog for the **SDF** framework and select on the **Author** tab. Next click on the **Toolbar** label.



**Figure 206: Configuring the Toolbar**

The panel is divided in two sections: the left side contains a list of actions, while the right one contains an action tree, displaying the list of actions added in the toolbar. The special entry called *Separator* allows you to visually separate the actions in the toolbar.

2. Select the **Insert section** action in the left panel section and the **Toolbar** label in the right panel section, then press the **Add as child** button.
3. Select the **Insert table** action in the left panel section and the **Insert section** in the right panel section. Press the **Add as sibling** button.
4. When opening a **Simple Documentation Framework** test document in Author mode, the toolbar below will be displayed at the top of the editor.

**Figure 207: Author Custom Actions Toolbar**



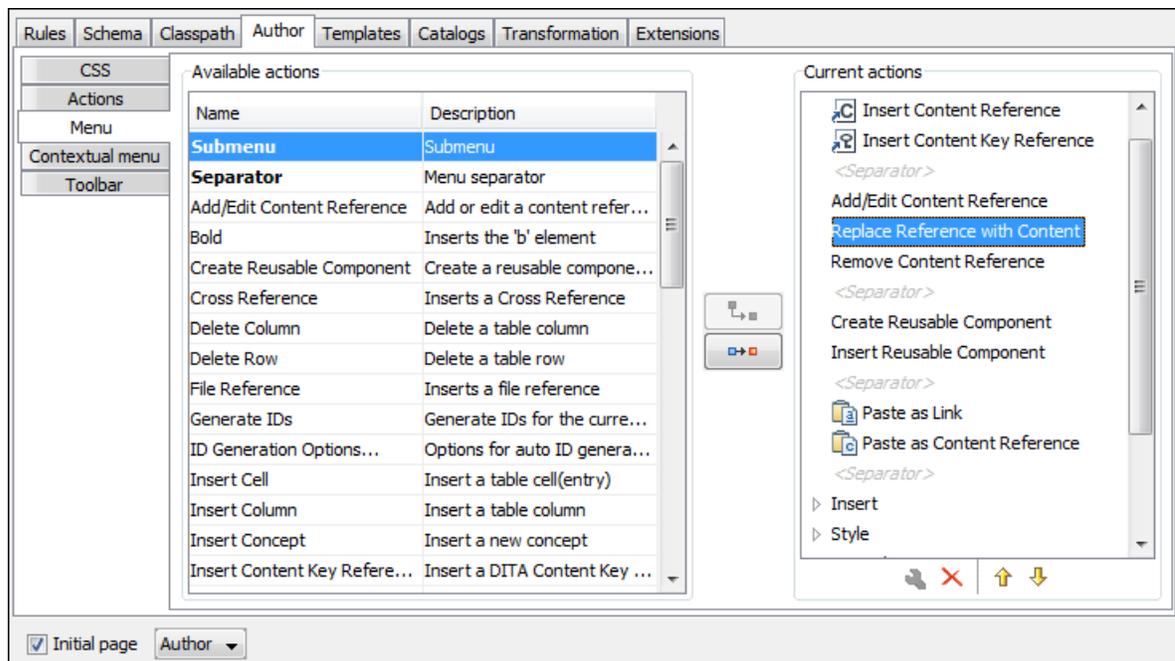
**Tip:** If you have many custom toolbar actions or want to group actions according to their category you can add additional toolbars with custom names and split the actions to better suit your purpose.

-  **Tip:** If your toolbar is not showing when switching to the **Author** mode, check if the toolbar was accidentally hidden: display the contextual menu by clicking in the upper part of application window, and check if the entry labeled **Author custom actions 1** is checked.

## Configuring the Main Menu

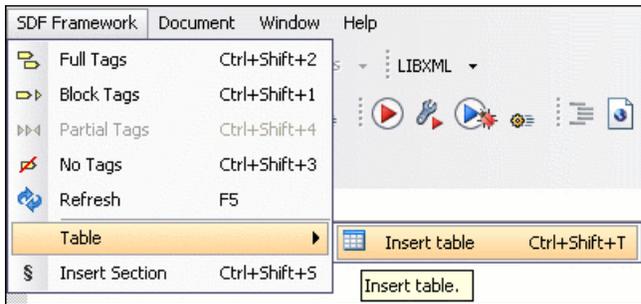
Defined actions can be grouped into customized menus in the Oxygen XML Editor menu bar.

1. Open the Document Type dialog for the **SDF** framework and click on the **Author** tab.
2. Click on the **Menu** label. In the left side you have the list of actions and some special entries:
  - **Submenu** - Creates a submenu. You can nest an unlimited number of menus.
  - **Separator** - Creates a separator into a menu. This way you can logically separate the menu entries.
3. The right side of the panel displays the menu tree with **Menu** entry as root. To change its name click on this label to select it, then press the  **Edit** button. Enter **SD Framework** as name, and **D** as menu access key.
4. Select the **Submenu** label in the left panel section and the **SD Framework** label in the right panel section, then press the  **Add as child** button. Change the submenu name to **Table**, using the  **Edit** button.
5. Select the **Insert section** action in the left panel section and the **Table** label in the right panel section, then press the  **Add as sibling** button.
6. Now select the **Insert table** action in the left panel section and the **Table** in the right panel section. Press the  **Add as child** button.



**Figure 208: Configuring the Menu**

When opening a **Simple Documentation Framework** test document in Author mode, the menu you created is displayed in the editor menu bar, between the **Tools** and the **Document** menus. The upper part of the menu contains generic Author actions (common to all document types) and the two actions created previously (with **Insert table** under the **Table** submenu).

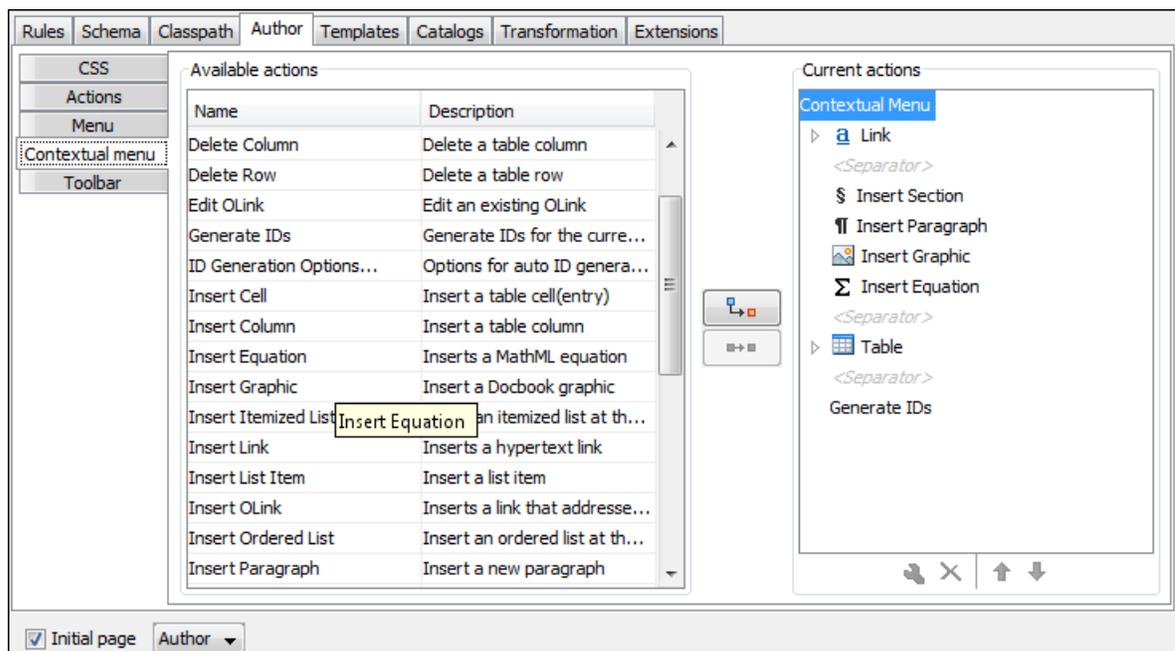


**Figure 209: Author Menu**

### Configuring the Contextual Menu

The contextual menu is shown when you right click (**ctrl + mouse click** on Mac) in the Author editing area. In fact you are configuring the bottom part of the menu, since the top part is reserved for a list of generic actions like Copy, Paste, Undo, etc.

1. Open the Document Type dialog for the **SDF** framework and click on the **Author** tab. Next click on the **Contextual Menu** label.
2. Follow the same steps as explained in the [Configuring the Main Menu](#), except changing the menu name because the contextual menu does not have a name.



**Figure 210: Configuring the Contextual Menu**

To test it, open the test file, and open the contextual menu. In the lower part there is shown the **Table** sub-menu and the **Insert section** action.

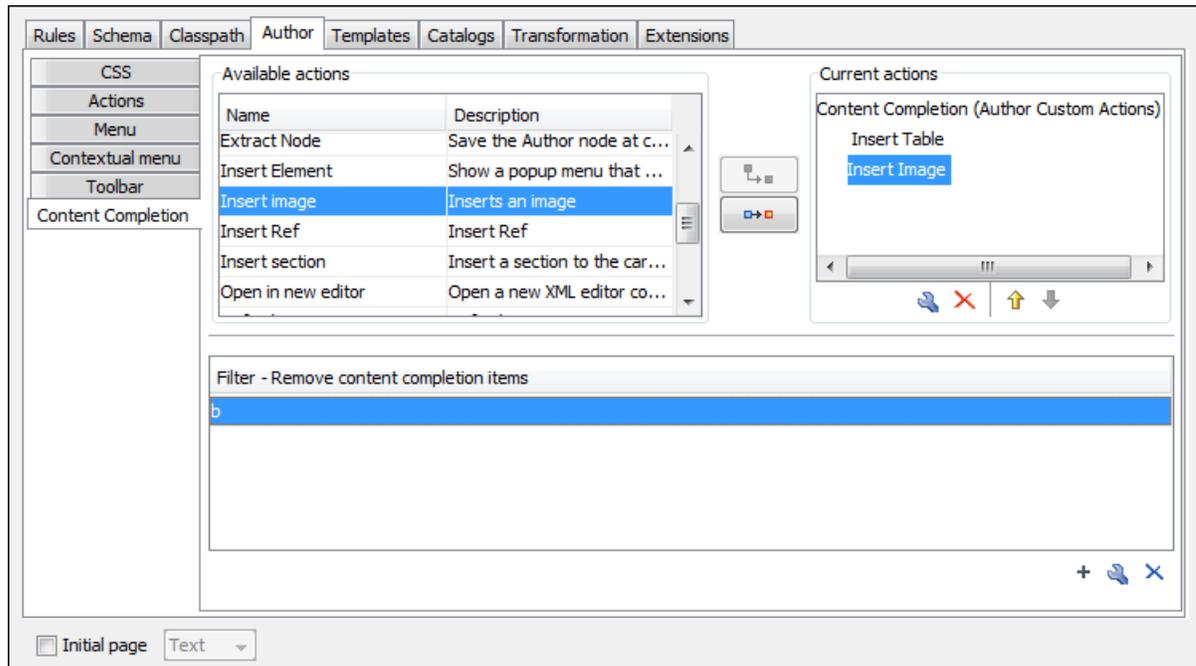
### Customize Content Completion

You can customize the content of the following **Author** controls, adding items (which, when invoked, perform custom actions) or filtering the default contributed ones:

- Content Completion window;
- **Elements** view;
- **Element Insert** menus (from the **Outline** view or breadcrumb contextual menus).

You can use the content completion customization support in the *Simple Documentation Framework* following the next steps:

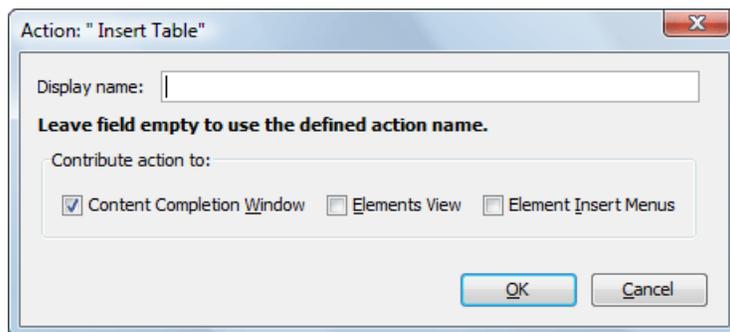
1. Open the **Document type** edit dialog for the **SDF** framework and select the **Author** tab. Next click on the **Content Completion** tab.



**Figure 211: Customize Content Completion**

The top side of the **Content Completion** section contains the list with all the actions defined within the simple documentation framework and the list of actions that you decided to include in the **Content Completion** items lists. The bottom side contains the list with all the items that you decided to remove from the **Content Completion** items lists.

2. If you want to add a custom action to the list of current **Content Completion** items, select the action item from the **Available actions** list and press the **Add as child** or **Add as sibling** button to include it in the **Current actions** list. The following dialog appears, giving you the possibility to select where to provide the selected action:



**Figure 212: Insert action dialog**

3. If you want to exclude a certain item from the **Content Completion** items list, you can use the **+ Add** button from the **Filter - Remove content completion items** list. The following dialog is displayed, allowing you to input the item name and to choose the controls that filter it.

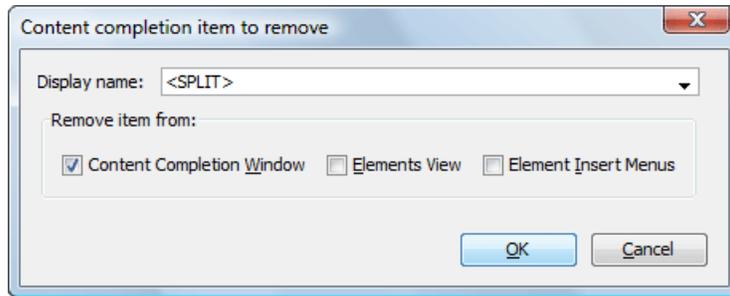


Figure 213: Remove item dialog

## Author Default Operations

Below are listed all the operations and their arguments.

<b>InsertFragmentOperation</b>	Inserts an XML fragment at the current cursor position. The selection - if there is one - will be inserted in the current context of the cursor position meaning that if the current document has namespace declarations then the inserted fragment must use the same declarations. The inserted fragment will be pasted to the cursor position, but the namespace declarations of the fragment will be replaced by the namespace declarations of the XML document. For more details about the list of parameters go to <a href="#">The arguments of the InsertFragmentOperation operation</a> on page 383.
<b>InsertOrReplaceFragmentOperation</b>	Similar to <code>InsertFragmentOperation</code> , except it removes the selected content before inserting the fragment.
<b>InsertOrReplaceTextOperation</b>	Inserts a text at current position removing the selected content, if any.
	<b>text</b> The text section to insert.
<b>SurroundWithFragmentOperation</b>	Surrounds the selected content with a text fragment. Since the fragment can have namespace declarations, it will be always placed in the first leaf element. If there is no selection, the operation will insert the fragment at the caret position. For more details about the list of parameters go to <a href="#">The arguments of the SurroundWithFragmentOperation operation</a> on page 384.
<b>SurroundWithTextOperation</b>	This operation has two arguments (two text values) that will be inserted before and after the selected content. If no selected content, the two sections will be inserted at the caret position. The arguments are:
	<b>header</b> The text that will be placed before the selection.
	<b>footer</b> The text that will be placed after the selection.
<b>InsertEquationOperation</b>	Inserts a fragment containing a MathML equation at caret offset. The operation arguments are:
	<b>fragment</b> The XML fragment containing the MathML content.
<b>InsertXIncludeOperation</b>	Insert an XInclude element at caret offset.
<b>ChangeAttributeOperation</b>	This operation allows adding/modifying/removing an attribute. You can use this operation to add a new attribute, modify the value for a certain attribute on a specific XML element. The arguments are:
	<b>name</b> The attribute local name.
	<b>namespace</b> The attribute namespace.
	<b>elementLocation</b> The XPath location that identifies the element to be modified.
	<b>value</b> The new value for the attribute. If empty or null the attribute will be removed.
	<b>editAttribute</b> If an in-place editor exists for this attribute, it will be started and start editing.

**removeIfEmpty** The possible values are **true** and **false**. True means that the element is removed if an empty value is provided. The default behavior is **false**.

### UnwrapTagsOperation

This operation allows removing the element tags either from the current element or from a specific location. The argument of the operation is:

**unwrapElementLocation** An XPath expression indicating the element location. The element at caret is unwrapped.

**ToggleSurroundWithElementOperation** This operation allows wrapping and unwrapping content in a specific element with toggle actions like highlighting text as bold, italic, or underline. The arguments of the operation are:

**element** The element to wrap content (or unwrap).

**schemaAware** This argument applies only on the surround with operation. It indicates if the insertion is schema aware or not.

**XSLTOperation and XQueryOperation** Applies an XSLT or XQuery script on a source element and then replaces or inserts the result into the target location.

This operation has the following parameters:

**sourceLocation** An XPath expression indicating the element that the script will be applied to. The element at the caret position will be used.

There may be situations in which you want to look at an ancestor node (for example /) then declare a parameter called `currentElementLocation` and use it to re-position in the current element like:

```
<xsl:stylesheet xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
  xpath-default-namespace="http://docbook.org/ns/docbook"
  exclude-result-prefixes="saxon">
  <!-- This is an XPath location which will be sent back to the caller -->
  <xsl:param name="currentElementLocation"/>

  <xsl:template match="/">
    <!-- Evaluate the XPath of the current element -->
    <xsl:apply-templates select="saxon:eval(saxon:eval($currentElementLocation))"/>
  </xsl:template>

  <xsl:template match="para">
    <!-- And the context is again inside the current element -->
    from the entire XML -->
    <xsl:variable name="keyImage"
      select="//imagedata[@fileref='images/lake.jpeg']/ancestor::*[name()='img']" />
    <xref linkend="{ $keyImage }" role="key-image" />
  </xsl:template>
</xsl:stylesheet>
```

**targetLocation** An XPath expression indicating the insert location. If it is not defined then the insert location will be the current element.

**script** The script content (XSLT or XQuery). The base system ID for this script is the value of the `href` attribute. The include/import reference will be resolved relative to the `base` attribute definition.

For example if your script has the following value:

```
<xsl:stylesheet xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
  <xsl:import href="xslt_operation.xsl" />
</xsl:stylesheet>
```

then the imported `xslt_operation.xsl` needs to be located in the same directory as the `xslt_operation.xsl`.

<b>action</b>	The insert action relative to the node determined by the <code>action</code> parameter. Possible values are: Replace, At caret position, Before, After, Insert.
<b>caretPosition</b>	The position of the caret after the action is executed. Possible values are: First editable position, End or After. If not specified, the caret position is determined by the <code>action</code> parameter. In XSLT script a <code>caret</code> editor variable outputs the caret position.
<b>expandEditorVariables</b>	Parameter controlling the expansion of editor variables. Expansion is enabled by default.

Author operations can take parameters that might contain the following editor variables:

- **`\${caret}`** - The position where the caret is inserted. This variable can be used in a *code template*, in **Author** operations, or in a *selection plugin*.
- **`\${selection}`** - The XML content of the current selection in the editor panel. This variable can be used in a *code template* and Author operations, or in a *selection plugin*.
- **`\${ask('message', type, ('real\_value1':'rendered\_value1'; 'real\_value2':'rendered\_value2'; ...), 'default\_value')}`** - To prompt for values at runtime, use the `ask('message', type, ('real_value1':'rendered_value1'; 'real_value2':'rendered_value2'; ...), 'default-value')` editor variable. The following parameters can be set:
  - 'message' - the displayed message. Note the quotes that enclose the message.
  - type - optional parameter. Can have one of the following values:
    - url - input is considered an URL. Oxygen XML Editor checks that the URL is valid before passing it to the transformation;
    - password - input characters are hidden;
    - generic - the input is treated as generic text that requires no special handling;
    - relative\_url - input is considered an URL. Oxygen XML Editor tries to make the URL relative to that of the document you are editing.



**Note:** You can use the `$ask` editor variable in file templates. In this case, Oxygen XML Editor keeps an absolute URL.

- combobox - displays a dialog that contains a non-editable combo-box;
- editable\_combobox - displays a dialog that contains an editable combo-box;
- radio - displays a dialog that contains radio buttons;
- 'default-value' - optional parameter. Provides a default value in the input text box.

#### Examples:

- ``${ask('message')}`` - Only the message displayed for the user is specified.
  - ``${ask('message', generic, 'default')}`` - 'message' is displayed, the type is not specified (the default is string), the default value is 'default'.
  - ``${ask('message', password)}`` - 'message' is displayed, the characters typed are masked with a circle symbol.
  - ``${ask('message', password, 'default')}`` - same as before, the default value is 'default'.
  - ``${ask('message', url)}`` - 'message' is displayed, the parameter type is URL.
  - ``${ask('message', url, 'default')}`` - same as before, the default value is 'default'.
- **`\${timeStamp}`** - Time stamp, that is the current time in Unix format. It can be used for example to save transformation results in different output files on each transform.
  - **`\${uuid}`** - Universally unique identifier.
  - **`\${id}`** - Application-level unique identifier.
  - **`\${cfn}`** - Current file name without extension and without parent folder.
  - **`\${cfne}`** - Current file name with extension.
  - **`\${cf}`** - Current file as file path, that is the absolute file path of the current edited document.

- **`\${cfd}`** - Current file folder as file path, that is the path of the current edited document up to the name of the parent folder.
- **`\${frameworksDir}`** - The path (as file path) of the `frameworks` subfolder of the Oxygen XML Editor installation folder.
- **`\${pd}`** - Current project folder as file path.
- **`\${oxygenInstallDir}`** - Oxygen XML Editor installation folder as file path.
- **`\${homeDir}`** - The path (as file path) of the user home folder.
- **`\${pn}`** - Current project name.
- **`\${env(VAR\_NAME)}`** - Value of the `VAR_NAME` environment variable. The environment variables are managed by the operating system. If you are looking for Java System Properties, use the **`\${system(var.name)}`** editor variable.
- **`\${system(var.name)}`** - Value of the `var.name` Java system property. The Java system properties can be specified in the command line arguments of the Java runtime as `-Dvar.name=var.value`. If you are looking for operating system environment variables, use the **`\${env(VAR\_NAME)}`** editor variable instead.
- **`\${date(pattern)}`** - Current date. Follows the given pattern. Example: `yyyy-MM-dd`.

*The arguments of `InsertFragmentOperation` operation*

### fragment

The value for this argument is a text. This is parsed by Oxygen XML Editor Author as it was already in the document at the caret position. You can use entity references declared in the document and it is namespace aware. The fragment may have multiple roots.



#### Note:

You can even use namespace prefixes that are not declared in the inserted fragment, if they are declared in the document where the insertion is done. For the sake of clarity, you should always prefix and declare namespaces in the inserted fragment!



#### Note:

If the fragment contains namespace declarations that are identical to those found in the document, the namespace declaration attributes will be removed from elements contained by the inserted fragment.

There are two possible scenarios:

### 1. Prefixes that are not bound explicitly

For instance, the fragment:

```
<x:item id="dty2"/>
&ent;
<x:item id="dty3"/>
```

Can be correctly inserted in the document: (| marks the insertion point):

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE x:root [
  <!ENTITY ent "entity">
]>

<x:root xmlns:x="nsp">
  |
</x:root>
```

Result:

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE x:root [
  <!ENTITY ent "entity">
]>
<x:root xmlns:x="nsp">
  <x:item id="dty2"/>
  &ent;
</x:root>
```

```
<x:item id="dty3"/>
</x:root>
```

## 2. Default namespaces

If there is a default namespace declared in the document and the document fragment does not declare a namespace, the elements from the fragment are considered to be in **no namespace**.

For instance the fragment:

```
<item id="dty2"/>
<item id="dty3"/>
```

Inserted in the document:

```
<?xml version="1.0" encoding="UTF-8"?>
<root xmlns="nsp">
|
</root>
```

Gives the result document:

```
<?xml version="1.0" encoding="UTF-8"?>
<root xmlns="nsp">
  <item xmlns="" id="dty2"/>
  <item xmlns="" id="dty3"/>
</root>
```

**insertLocation**

An XPath expression that is relative to the current node. It selects the reference node for the fragment insertion.

**insertPosition**

One of the three constants: "**Inside**", "**After**", or "**Before**", showing where the insertion is made relative to the reference node selected by the `insertLocation`. "**Inside**" has the meaning of the first child of the reference node.

**goToNextEditablePosition** After inserting the fragment, the first editable position is detected and the caret is placed at that location. It handles any in-place editors used to edit attributes. It will be ignored if the fragment specifies a caret position using the caret editor variable. The possible values of this action are **true** and **false**.

### *The arguments of SurroundWithFragmentOperation*

The Author operation `SurroundWithFragmentOperation` has only one argument:

- fragment -

The XML fragment that will surround the selection. For example let's consider the fragment:

```
<F>
  <A></A>
  <B>
    <C></C>
  </B>
</F>
```

and the document:

```
<doc>
  <X></X>
  <Y></Y>
  <Z></Z>
</doc>
```

Considering the selected content to be surrounded is the sequence of elements X and Y, then the result is:

```
<doc>
  <F>
```

```

    <A>
      <X></X>
      <Y></Y>
    </A>
    <B>
      <C></C>
    </B>
  </F>
<Z></Z>
<doc>

```

Because the element A was the first leaf in the fragment, it received the selected content. The fragment was then inserted in the place of the selection.

## How to Add a Custom Action to an Existing Document Type

This task explains how to add a custom Author operation to an existing document type.

1. Download the Author SDK toolkit: [http://www.oxygenxml.com/developer.html#XML\\_Editor\\_Authoring\\_SDK](http://www.oxygenxml.com/developer.html#XML_Editor_Authoring_SDK)
2. Create a Java project with a custom implementation of `ro.sync.ecss.extensions.api.AuthorOperation` which performs your custom operation and updates the Author mode using our API like:  
`AuthorAccess.getDocumentController().insertXMLFragment.`
3. Pack the operation class inside a Java *jar* library.
4. Copy the *jar* library to the `OXYGEN_INSTALL_DIR/frameworks/framework_dir` directory.
5. Go to Oxygen **Preferences** > **Document Type Association** page and edit the document type (you need write access to the `OXYGEN_INSTALLATION_DIR`).
  - a) In the **Classpath** tab, add a new entry like: `${frameworks}/docbook/customAction.jar`.
  - b) In the **Author** tab, add a new action which uses your custom operation.
  - c) Mount the action to the toolbars or menus.
6. Share the modifications with your colleagues. The files which should be shared are your `customAction.jar` library and the `.framework` configuration file from the `OXYGEN_INSTALL_DIR/frameworks/framework_dir` directory.

## Java API - Extending Author Functionality through Java

Oxygen XML Editor Author has a built-in set of operations covering the insertion of text and XML fragments (see the [Author Default Operations](#)) and the execution of XPath expressions on the current document edited in Author mode. However, there are situations in which you need to extend this set. For instance if you need to enter an element whose attributes should be edited by the user through a graphical user interface. Or the users must send the selected element content or even the whole document to a server, for some kind of processing or the content authors must extract pieces of information from a server and insert it directly into the edited XML document. Or you need to apply an XPath expression on the current Author document and process the nodes of the result nodeset.

The following sections contain the Java programming interface (API) available to the developers. You will need the [Oxygen Author SDK](#) available [on the Oxygen XML Editor website](#) which includes the source code of the Author operations in the predefined document types and the full documentation in Javadoc format of the public API available for the developer of Author custom actions.

The next Java examples are making use of AWT classes. If you are developing extensions for the Oxygen XML Editor XML Editor plugin for Eclipse you will have to use their SWT counterparts.

It is assumed you already read the [Configuring Actions, Menus, Toolbar](#) section and you are familiar with the Oxygen XML Editor Author customization. You can find the XML schema, CSS and XML sample in the [Example Files Listings](#).



### Attention:

Make sure the Java classes of your custom Author operations are compiled with the same Java version used by Oxygen XML Editor. Otherwise the classes may not be loaded by the Java virtual machine. For example if you run Oxygen XML Editor with a Java 1.6 virtual machine but the Java classes of your custom Author operations are compiled with a Java 1.7 virtual machine then the custom operations cannot be loaded and used by the Java 1.6 virtual machine.

**Example 1. Step by Step Example. Simple Use of a Dialog from an Author Operation.**

Let's start adding functionality for inserting images in the **Simple Documentation Framework** (shortly SDF). The images are represented by the `image` element. The location of the image file is represented by the value of the `href` attribute. In the Java implementation you will show a dialog with a text field, in which the user can enter a full URL, or he can browse for a local file.

1. Create a new Java project, in your IDE of choice. Create the `lib` folder in the project folder. Copy the `oxygen.jar` file from the `{oxygen_installation_directory}/lib` folder into the newly created `lib` folder. `oxygen.jar` contains the Java interfaces you have to implement and the API needed to access the Author features.
2. Create the `simple.documentation.framework.InsertImageOperation` class that implements the `ro.sync.ecss.extensions.api.AuthorOperation` interface. This interface defines three methods: `doOperation`, `getArguments` and `getDescription`

A short description of these methods follows:

- The `doOperation` method is invoked when the action is performed either by pressing the toolbar button, by selecting the menu item or by pressing the shortcut key. The arguments taken by this methods can be one of the following combinations:
  - an object of type `ro.sync.ecss.extensions.api.AuthorAccess` and a map
  - argument names and values
- The `getArguments` method is used by Oxygen XML Editor when the action is configured. It returns the list of arguments (name and type) that are accepted by the operation.
- The `getDescription` method is used by Oxygen XML Editor when the operation is configured. It returns a description of the operation.

Here is the implementation of these three methods:

```
/**
 * Performs the operation.
 */
public void doOperation(
    AuthorAccess authorAccess,
    ArgumentsMap arguments)
    throws IllegalArgumentException,
        AuthorOperationException {

    JFrame oxygenFrame = (JFrame) authorAccess.getParentFrame();
    String href = displayURLDialog(oxygenFrame);
    if (href.length() != 0) {
        // Creates the image XML fragment.
        String imageFragment =
            "<image xmlns='http://www.oxygenxml.com/sample/documentation' href='"
            + href + "'/>";

        // Inserts this fragment at the caret position.
        int caretPosition = authorAccess.getCaretOffset();
        authorAccess.insertXMLFragment(imageFragment, caretPosition);
    }
}

/**
 * Has no arguments.
 *
 * @return null.
 */
public ArgumentDescriptor[] getArguments() {
    return null;
}

/**
 * @return A description of the operation.
 */
public String getDescription() {
    return "Inserts an image element. Asks the user for a URL reference.";
}
```



**Note:** The complete source code can be found in the Simple Documentation Framework project, included in the [Oxygen Author SDK zip](#) available for download [on the Oxygen XML Editor website](#).

**Important:**

Make sure you always specify the namespace of the inserted fragments.

```
<image xmlns='http://www.oxygenxml.com/sample/documentation'
href='path/to/image.png'/>
```

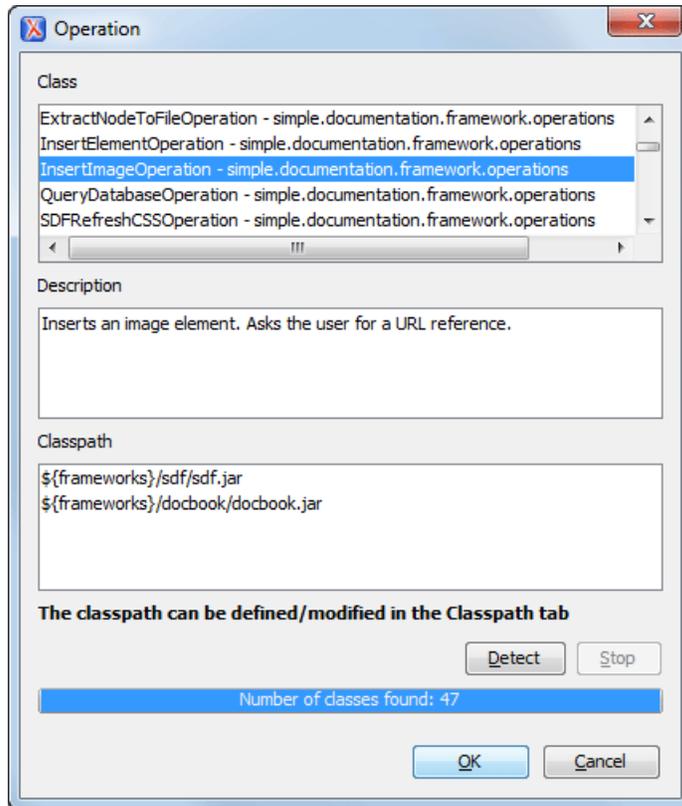
3. Package the compiled class into a jar file. An example of an ANT script that packages the `classes` folder content into a jar archive named `sdf.jar` is listed below:

```
<?xml version="1.0" encoding="UTF-8"?>
<project name="project" default="dist">
  <target name="dist">
    <jar destfile="sdf.jar" basedir="classes">
      <fileset dir="classes">
        <include name="**/*"/*"/>
      </fileset>
    </jar>
  </target>
</project>
```

4. Copy the `sdf.jar` file into the `frameworks / sdf` folder.
5. Add the `sdf.jar` to the Author class path. To do this, open the **Options > Preferences > Document Type Association** dialog, select **SDF** and press the **Edit** button.
6. Select the **Classpath** tab in the lower part of the dialog and press the **+ Add** button. In the displayed dialog enter the location of the jar file, relative to the Oxygen XML Editor `frameworks` folder.
7. Let's create now the action which will use the defined operation. Click on the **Actions** label. Copy the icon files for the menu item and for the toolbar in the `frameworks / sdf` folder.
8. Define the action's properties:
  - Set **ID** to `insert_image`.
  - Set **Name** to `Insert image`.
  - Set **Menu access key** to letter `i`.
  - Set **Toolbar action** to `${frameworks}/sdf/toolbarImage.png`.
  - Set **Menu icon** to `${frameworks}/sdf/menuImage.png`.
  - Set **Shortcut key** to `Ctrl+Shift+i`.
9. Now let's set up the operation. You want to add images only if the current element is a `section`, `book` or `article`.
  - Set the value of **XPath expression** to

```
local-name()='section' or local-name()='book'
or local-name()='article'
```

- Set the **Invoke operation** field to `simple.documentation.framework.InsertImageOperation`.



**Figure 214: Selecting the Operation**

10. Add the action to the toolbar, using the **Toolbar** panel.

To test the action, you can open the `sdf_sample.xml` sample, then place the caret inside a `section` between two `para` elements for instance. Press the button associated with the action from the toolbar. In the dialog select an image URL and press **OK**. The image is inserted into the document.

### Example 2. Operations with Arguments. Report from Database Operation.

In this example you will create an operation that connects to a relational database and executes an SQL statement. The result should be inserted in the edited XML document as a `table`. To make the operation fully configurable, it will have arguments for the *database connection string*, the *user name*, the *password* and the *SQL expression*.

1. Create a new Java project in your preferred IDE. Create the `lib` folder in the Java project directory and copy the `oxygen.jar` file from the `{oxygen_installation_directory}/lib` directory.
2. Create the class `simple.documentation.framework.QueryDatabaseOperation`. This class must implement the `ro.sync.ecss.extensions.api.AuthorOperation` interface.

```
import ro.sync.ecss.extensions.api.ArgumentDescriptor;
import ro.sync.ecss.extensions.api.ArgumentsMap;
import ro.sync.ecss.extensions.api.AuthorAccess;
import ro.sync.ecss.extensions.api.AuthorOperation;
import ro.sync.ecss.extensions.api.AuthorOperationException;

public class QueryDatabaseOperation implements AuthorOperation{
```

3. Now define the operation's arguments. For each of them you will use a `String` constant representing the argument name:

```
private static final String ARG_JDBC_DRIVER = "jdbc_driver";
private static final String ARG_USER = "user";
private static final String ARG_PASSWORD = "password";
private static final String ARG_SQL = "sql";
private static final String ARG_CONNECTION = "connection";
```

4. You must describe each of the argument name and type. To do this implement the `getArguments` method which will return an array of argument descriptors:

```
public ArgumentDescriptor[] getArguments() {
    ArgumentDescriptor args[] = new ArgumentDescriptor[] {
        new ArgumentDescriptor(
            ARG_JDBC_DRIVER,
            ArgumentDescriptor.TYPE_STRING,
            "The name of the Java class that is the JDBC driver."),
        new ArgumentDescriptor(
            ARG_CONNECTION,
            ArgumentDescriptor.TYPE_STRING,
            "The database URL connection string."),
        new ArgumentDescriptor(
            ARG_USER,
            ArgumentDescriptor.TYPE_STRING,
            "The name of the database user."),
        new ArgumentDescriptor(
            ARG_PASSWORD,
            ArgumentDescriptor.TYPE_STRING,
            "The database password."),
        new ArgumentDescriptor(
            ARG_SQL,
            ArgumentDescriptor.TYPE_STRING,
            "The SQL statement to be executed.")
    };
    return args;
}
```

These names, types and descriptions will be listed in the **Arguments** table when the operation is configured.

5. When the operation is invoked, the implementation of the `doOperation` method extracts the arguments, forwards them to the method that connects to the database and generates the XML fragment. The XML fragment is then inserted at the caret position.

```
public void doOperation(AuthorAccess authorAccess, ArgumentsMap map)
    throws IllegalArgumentException, AuthorOperationException {

    // Collects the arguments.
    String jdbcDriver =
        (String)map.getArgumentValue(ARG_JDBC_DRIVER);
    String connection =
        (String)map.getArgumentValue(ARG_CONNECTION);
    String user =
        (String)map.getArgumentValue(ARG_USER);
    String password =
        (String)map.getArgumentValue(ARG_PASSWORD);
    String sql =
        (String)map.getArgumentValue(ARG_SQL);

    int caretPosition = authorAccess.getCaretOffset();
    try {
        authorAccess.insertXMLFragment(
            getFragment(jdbcDriver, connection, user, password, sql),
            caretPosition);
    } catch (SQLException e) {
        throw new AuthorOperationException(
            "The operation failed due to the following database error: "
            + e.getMessage(), e);
    } catch (ClassNotFoundException e){
        throw new AuthorOperationException(
            "The JDBC database driver was not found. Tried to load ' "
            + jdbcDriver + "', e);
    }
}
```

6. The `getFragment` method loads the JDBC driver, connects to the database and extracts the data. The result is a table element from the `http://www.oxygenxml.com/sample/documentation` namespace. The header element contains the names of the SQL columns. All the text from the XML fragment is escaped. This means that the '<' and '&' characters are replaced with the '&lt;' and '&amp;' character entities to ensure the fragment is well-formed.

```
private String getFragment(
    String jdbcDriver,
    String connectionURL,
    String user,
    String password,
    String sql) throws
    SQLException,
    ClassNotFoundException {
```

```

Properties pr = new Properties();
pr.put("characterEncoding", "UTF8");
pr.put("useUnicode", "TRUE");
pr.put("user", user);
pr.put("password", password);

// Loads the database driver.
Class.forName(jdbcDriver);
// Opens the connection
Connection connection =
    DriverManager.getConnection(connectionURL, pr);
java.sql.Statement statement =
    connection.createStatement();
ResultSet resultSet =
    statement.executeQuery(sql);

StringBuffer fragmentBuffer = new StringBuffer();
fragmentBuffer.append(
    "<table xmlns=" +
    "'http://www.oxygenxml.com/sample/documentation'">");

//
// Creates the table header.
//
fragmentBuffer.append("<header>");
ResultSetMetaData metaData = resultSet.getMetaData();
int columnCount = metaData.getColumnCount();
for (int i = 1; i <= columnCount; i++) {
    fragmentBuffer.append("<td>");
    fragmentBuffer.append(
        xmlEscape(metaData.getColumnName(i)));
    fragmentBuffer.append("</td>");
}
fragmentBuffer.append("</header>");

//
// Creates the table content.
//
while (resultSet.next()) {
    fragmentBuffer.append("<tr>");
    for (int i = 1; i <= columnCount; i++) {
        fragmentBuffer.append("<td>");
        fragmentBuffer.append(
            xmlEscape(resultSet.getObject(i)));
        fragmentBuffer.append("</td>");
    }
    fragmentBuffer.append("</tr>");
}

fragmentBuffer.append("</table>");

// Cleanup
resultSet.close();
statement.close();
connection.close();
return fragmentBuffer.toString();
}

```

 **Note:** The complete source code can be found in the Simple Documentation Framework project, included in the [Oxygen Author SDK zip](#) available for download [on the Oxygen XML Editor website](#).

7. Package the compiled class into a jar file.
8. Copy the jar file and the JDBC driver files into the `frameworks / sdf` directory.
9. Add the jars to the Author class path. For this, Open the options Document Type Dialog, select **SDF** and press the **Edit** button. Select the **Classpath** tab in the lower part of the dialog.
10. Click on the **Actions** label. The action properties are:
  - Set **ID** to **clients\_report**.
  - Set **Name** to **Clients Report**.
  - Set **Menu access key** to letter **r**.
  - Set **Description** to **Connects to the database and collects the list of clients**.
  - Set **Toolbar icon** to `$(frameworks)/sdf/TableDB20.png` (image  `TableDB20.png` is already stored in the `frameworks / sdf` folder).
  - Leave empty the **Menu icon**.
  - Set **shortcut key** to **Ctrl+Shift+C**.

11. The action will work only if the current element is a **section**. Set up the operation as follows:

- Set **XPath expression** to:

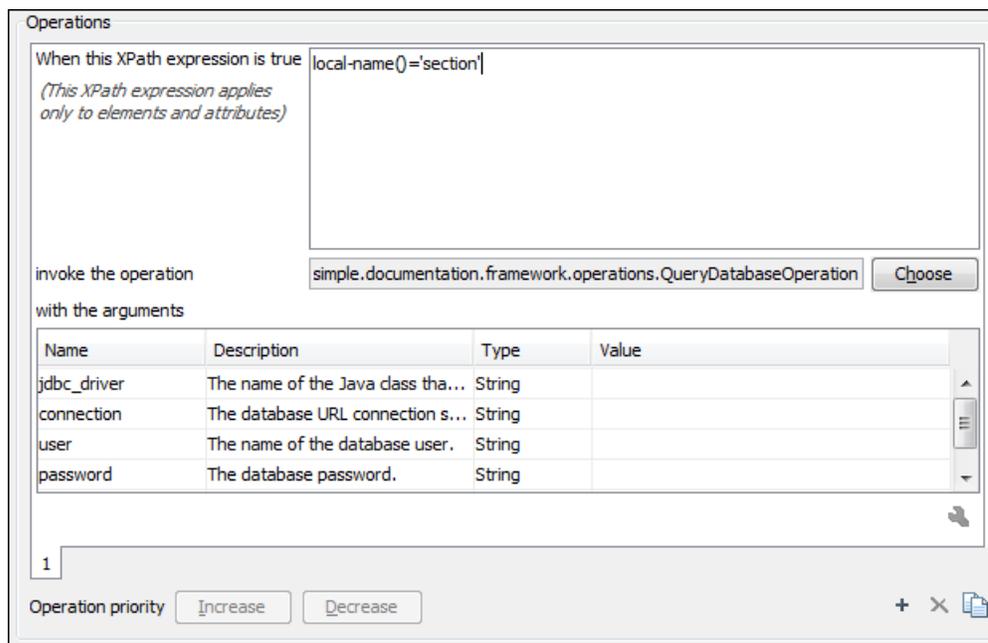
```
local-name()='section'
```

- Use the Java operation defined earlier to set the **Invoke operation** field. Press the **Choose** button, then select `simple.documentation.framework.QueryDatabaseOperation`. Once selected, the list of arguments is displayed. In the figure below the first argument, `jdbc_driver`, represents the class name of the MySQL JDBC driver. The connection string has the URL syntax: `jdbc://<database_host>:<database_port>/<database_name>`.

The SQL expression used in the example follows, but it can be any valid **SELECT** expression which can be applied to the database:

```
SELECT userID, email FROM users
```

12. Add the action to the toolbar, using the **Toolbar** panel.



**Figure 215: Java Operation Arguments Setup**

To test the action you can open the `sdf_sample.xml` sample place the caret inside a `section` between two para elements for instance. Press the  **Create Report** button from the toolbar. You can see below the toolbar with the action button and sample table inserted by the **Clients Report** action.

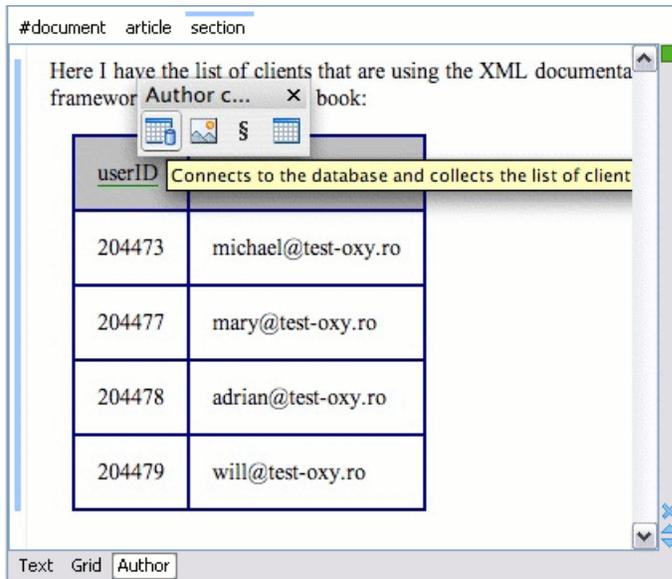


Figure 216: Table Content Extracted from the Database

## Editing attributes in-place using form controls

To edit attributes in the **Author** mode, use the [Attributes View](#) or the in-place attributes editing dialog.

The `oxy_editor` CSS extension function allows you to edit attribute and element text values directly in the Author mode using form-based controls. Various implementations are available out of the box: [combo boxes](#), [checkboxes](#), [text fields](#), [pop-ups](#), [buttons](#) which invoke custom Author actions or [URL choosers](#). You can also implement custom editors for your specific needs.

As a working example, the bundled samples project contains a file called `personal.xml` which allows editing attributes in-place using some of these default implementations.

## Localizing Frameworks

Oxygen XML Editor supports framework localization (translating framework actions, buttons, and menu entries to different languages). Thus you can develop and distribute a framework to users that speak different languages without changing the distributed framework. Changing the language used in Oxygen (in **Options > Preferences > Global > Language** Global preferences page) is enough to set the right language for each framework.

To localize the content of a framework, create a `translation.xml` file which contains all the translation (key, value) mappings. The `translation.xml` has the following format:

```
<translation>
  <languageList>
    <language description="English" lang="en_US"/>
    <language description="German" lang="de_DE"/>
    <language description="French" lang="fr_FR"/>
  </languageList>
  <key value="list">
    <comment>List menu item name.</comment>
    <val lang="en_US">List</val>
    <val lang="de_DE">Liste</val>
    <val lang="fr_FR">Liste</val>
  </key>
  .....
</translation>
```

Oxygen XML Editor matches the GUI language with the language set in the `translation.xml` file. In case this language is not found, the first available language declared in the `languageList` tag for the corresponding framework is used.

Add the directory where this file is located to the **Classpath** list corresponding to the edited document type.

After you create this file, you are able to use the keys defined in it to customize the name and description of:

- framework actions;
- menu entries;
- contextual menus;
- toolbar.

For example, if you want to localize the bold action go to **Options > Preferences > Document Type Association**.

Open the **Document type** dialog, go to **Author > Actions**, and rename the bold action to `#{i18n(translation_key)}`. Actions with a name format different than `#{i18n(translation_key)}` are not localized. `translation_key` corresponds to the key from the `translation.xml` file.

Now open the `translation.xml` file and edit the translation entry if it exists or create one if it does not exist. This example presents an entry in the `translation.xml` file:

```
<key value="translation_key">
  <comment>Bold action name.</comment>
  <val lang="en_US">Bold</val>
  <val lang="de_DE">Bold</val>
  <val lang="fr_FR">Bold</val>
</key>
```

To use a description from the `translation.xml` file in the Java code used by your custom framework, use the new `ro.sync.ecss.extensions.api.AuthorAccess.getAuthorResourceBundle()` API method to request for a certain key the associated value. In this way all the dialogs that you present from your custom operations can have labels translated in different languages.

 **Note:** You can enter any language you want in the `languageList` tag and any number of keys.

The `translation.xml` file for the DocBook framework is located here: `[OXYGEN_INSTALL_DIR]/frameworks/docbook/i18n/translation.xml`. In the **Classpath** list corresponding to the Docbook document type the following entry was added: `#{framework}/i18n/`.

In **Options > Preferences > Document Type Association > Author > Actions**, you can see how the DocBook actions are defined to use these keys for their name and description. If you look in the Java class `ro.sync.ecss.extensions.docbook.table.SADocbookTableCustomizerDialog` available in the Author SDK, you can see how the new `ro.sync.ecss.extensions.api.AuthorResourceBundle` API is used to retrieve localized descriptions for different keys.

## How to deploy a framework as an Oxygen XML Editor add-on

To deploy a framework as an Oxygen XML Editor add-on, follow the next steps:

1. Pack the framework directory as a ZIP file;
2. Create a descriptor file. You can use a template that Oxygen XML Editor provides. To use this template, go to **File > New** and create an Oxygen XML Editor descriptor file;
3. Copy the ZIP file and the descriptor file to an HTTP server. The URL to this location serves as the **Update Site URL**.

## Creating the Basic Association

Let us go through an example of creating a document type and editing an XML document of this type. We will call our document type **Simple Documentation Framework**.

## First Step - XML Schema

Our documentation framework will be very simple. The documents will be either articles or books, both composed of sections. The sections may contain titles, paragraphs, figures, tables and other sections. To complete the picture, each section will include a `def` element from another namespace.

The first schema file:

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
  targetNamespace="http://www.oxygenxml.com/sample/documentation"
  xmlns:doc="http://www.oxygenxml.com/sample/documentation"
  xmlns:abs="http://www.oxygenxml.com/sample/documentation/abstracts"
  elementFormDefault="qualified">

  <xs:import namespace=
    "http://www.oxygenxml.com/sample/documentation/abstracts"
    schemaLocation=
    "abs.xsd" />
```

The namespace of the documents will be `http://www.oxygenxml.com/sample/documentation`. The namespace of the `def` element is `http://www.oxygenxml.com/sample/documentation/abstracts`.

Now let's define the structure of the sections. They all start with a title, then have the optional `def` element then either a sequence of other sections, or a mixture of paragraphs, images and tables.

```
<xs:element name="book" type="doc:sectionType"/>
<xs:element name="article" type="doc:sectionType"/>
<xs:element name="section" type="doc:sectionType"/>

<xs:complexType name="sectionType">
  <xs:sequence>
    <xs:element name="title" type="xs:string"/>
    <xs:element ref="abs:def" minOccurs="0"/>
    <xs:choice>
      <xs:sequence>
        <xs:element ref="doc:section" maxOccurs="unbounded"/>
      </xs:sequence>
      <xs:choice maxOccurs="unbounded">
        <xs:element ref="doc:para"/>
        <xs:element ref="doc:image"/>
        <xs:element ref="doc:table"/>
      </xs:choice>
    </xs:choice>
  </xs:sequence>
</xs:complexType>
```

The paragraph contains text and other styling markup, such as bold (`b`) and italic (`i`) elements.

```
<xs:element name="para" type="doc:paragraphType"/>

<xs:complexType name="paragraphType" mixed="true">
  <xs:choice minOccurs="0" maxOccurs="unbounded">
    <xs:element name="b"/>
    <xs:element name="i"/>
  </xs:choice>
</xs:complexType>
```

The image element has an attribute with a reference to the file containing image data.

```
<xs:element name="image">
  <xs:complexType>
    <xs:attribute name="href" type="xs:anyURI" use="required"/>
  </xs:complexType>
</xs:element>
```

The table contains a header row and then a sequence of rows (`tr` elements) each of them containing the cells. Each cell has the same content as the paragraphs.

```
<xs:element name="table">
  <xs:complexType>
    <xs:sequence>
      <xs:element name="header">
        <xs:complexType>
          <xs:sequence>
            <xs:element name="td" maxOccurs="unbounded">
```

```

        type="doc:paragraphType"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="tr" maxOccurs="unbounded">
    <xs:complexType>
      <xs:sequence>
        <xs:element name="td" type="doc:tdType"
          maxOccurs="unbounded"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
</xs:sequence>
</xs:complexType>
</xs:element>

<xs:complexType name="tdType">
  <xs:complexContent>
    <xs:extension base="doc:paragraphType">
      <xs:attribute name="row_span" type="xs:integer"/>
      <xs:attribute name="column_span" type="xs:integer"/>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>

```

The `def` element is defined as a text only element in the imported schema `abs.xsd`:

```

<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
  targetNamespace=
    "http://www.oxygenxml.com/sample/documentation/abstracts">
  <xs:element name="def" type="xs:string"/>
</xs:schema>

```

Now the XML data structure will be styled.

## Schema Settings

In [the dialog for editing the document type properties](#), in the bottom section there are a series of tabs. The first one refers to the schema that is used for validation of the documents that match the defined **Association Rules**.

### Important:

If the document refers a schema, using for instance a DOCTYPE declaration or a `xsi:schemaLocation` attribute, the schema from the document type association will not be used when validating.

<b>Schema Type</b>	Select from the combo box the value <b>XML Schema</b> .
<b>Schema URI</b>	Enter the value <code>\${frameworks}/sdf/schema/sdf.xsd</code> . We should use the <code>\${frameworks}</code> editor variable in the schema URI path instead of a full path in order to be valid for different Oxygen XML Editor installations.

### Important:

The `${frameworks}` variable is expanded at the validation time into the absolute location of the directory containing the frameworks.

## Second Step - The CSS

If you read the [Simple Customization Tutorial](#) then you already have some basic notions about creating simple styles. The example document contains elements from different namespaces, so you will use CSS Level 3 extensions supported by the Author layout engine to associate specific properties with that element.

## Defining the General Layout

Now the basic layout of the rendered documents is created.

Elements that are stacked one on top of the other are: `book`, `article`, `section`, `title`, `figure`, `table`, `image`. These elements are marked as having `block` style for display. Elements that are placed one after the other in a flowing sequence are: `b`, `i`. These will have `inline` display.

```
/* Vertical flow */
book,
section,
para,
title,
image,
ref {
  display:block;
}

/* Horizontal flow */
b,i {
  display:inline;
}
```



### Important:

Having `block` display children in an `inline` display parent, makes Oxygen XML Editor Author change the style of the parent to `block` display.

## Styling the `section` Element

The title of any section must be bold and smaller than the title of the parent section. To create this effect a sequence of CSS rules must be created. The `*` operator matches any element, it can be used to match titles having progressive depths in the document.

```
title{
  font-size: 2.4em;
  font-weight:bold;
}
* * title{
  font-size: 2.0em;
}
* * * title{
  font-size: 1.6em;
}
* * * * title{
  font-size: 1.2em;
}
```

It's useful to have before the title a constant text, indicating that it refers to a section. This text can include also the current section number. The `:before` and `:after` pseudo elements will be used, plus the CSS counters.

First declare a counter named `sect` for each `book` or `article`. The counter is set to zero at the beginning of each such element:

```
book,
article{
  counter-reset:sect;
}
```

The `sect` counter is incremented with each `section`, that is a direct child of a `book` or an `article` element.

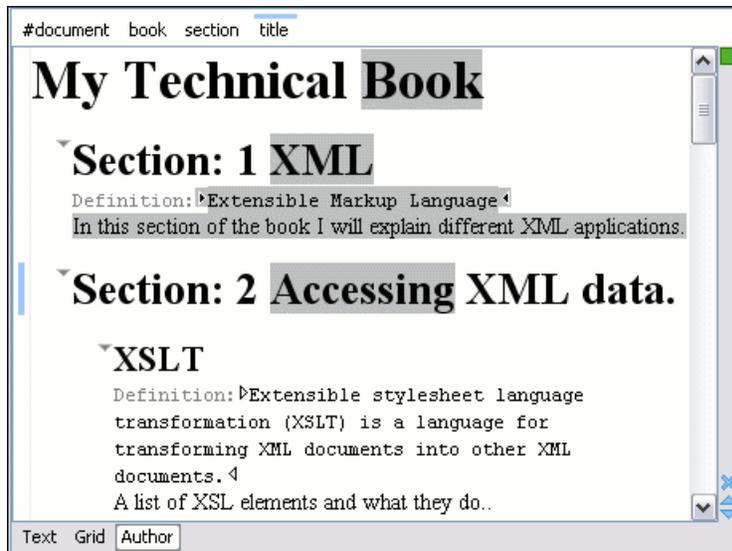
```
book > section,
article > section{
  counter-increment:sect;
}
```

The "static" text that will prefix the section title is composed of the constant "Section ", followed by the decimal value of the `sect` counter and a dot.

```
book > section > title:before,
article > section > title:before{
  content: "Section " counter(sect) ". ";
}
```

To make the documents easy to read, you add a margin to the sections. In this way the higher nesting level, the larger the left side indent. The margin is expressed relatively to the parent bounds:

```
section{
  margin-left:1em;
  margin-top:1em;
}
```



**Figure 217: A sample of nested sections and their titles.**

In the above screenshot you can see a sample XML document rendered by the CSS stylesheet. The selection "avoids" the text that is generated by the CSS "content" property. This happens because the CSS generated text is not present in the XML document and is just a visual aid.

### Styling the Inline Elements

The "bold" style is obtained by using the `font-weight` CSS property with the value `bold`, while the "italic" style is specified by the `font-style` property:

```
b {
  font-weight:bold;
}
i {
  font-style:italic;
}
```

### Styling Images

The CSS 2.1 does not specify how an element can be rendered as an image. To overpass this limitation, Oxygen XML Editor Author supports a CSS Level 3 extension allowing to load image data from an URL. The URL of the image must be specified by one of the element attributes and it is resolved through the catalogs specified in Oxygen XML Editor.

```
image{
  display:block;
  content: attr(href, url);
  margin-left:2em;
}
```

Our `image` element has the required attribute `href` of type `xs:anyURI`. The `href` attribute contains an image location so the rendered content is obtained by using the function:

```
attr(href, url)
```

**Important:**

The first argument is the name of the attribute pointing to the image file. The second argument of the `attr` function specifies the type of the content. If the type has the `url` value, then Oxygen XML Editor identifies the content as being an image. If the type is missing, then the content will be the text representing the attribute value.

**Important:**

Oxygen XML Editor Author handles both absolute and relative specified URLs. If the image has an *absolute* URL location (e.g: "http://www.oasis-open.org/images/standards/oasis\_standard.jpg") then it is loaded directly from this location. If the image URL is *relative* specified to the XML document (e.g: "images/my\_screenshot.jpg") then the location is obtained by adding this value to the location of the edited XML document.

An image can also be referenced by the name of a DTD entity which specifies the location of the image file. For example if the document declares an entity **graphic** which points to a JPEG image file:

```
<!ENTITY graphic SYSTEM "depo/keyboard_shortcut.jpg" NDATA JPEG>
```

and the image is referenced in the XML document by specifying the name of the entity as the value of an attribute:

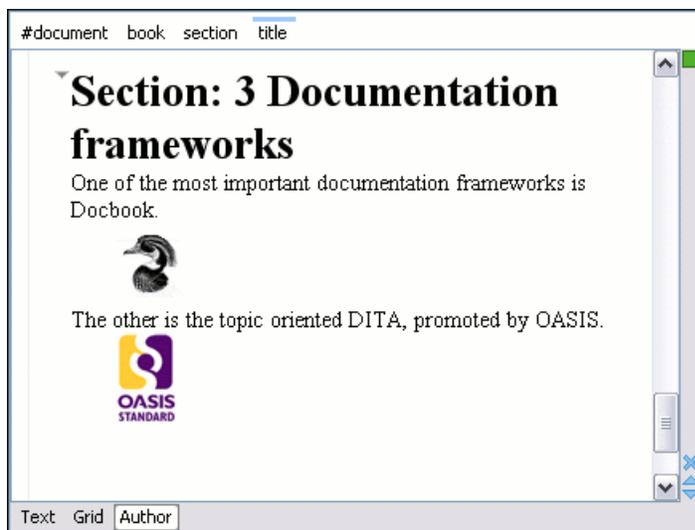
```
<mediaobject>
  <imageobject>
    <imagedata entityref="graphic" scale="50"/>
  </imageobject>
</mediaobject>
```

The CSS should use the functions `url`, `attr` and `unparsed-entity-uri` for displaying the image in the Author mode:

```
imagedata[entityref]{
  content: url(unparsed-entity-uri(attr(entityref)));
}
```

To take into account the value of the `width` attribute of the `imagedata` and use it for resizing the image, the CSS can define the following rule:

```
imagedata[width]{
  width:attr(width, length);
}
```



**Figure 218: Samples of images in Author**

## Testing the Document Type Association

To test the new Document Type create an XML instance that is conforming with the *Simple Documentation Framework* association rules. You will not specify an XML Schema location directly in the document, using an `xsi:schemaLocation` attribute; Oxygen XML Editor will detect instead its associated document type and use the specified schema.

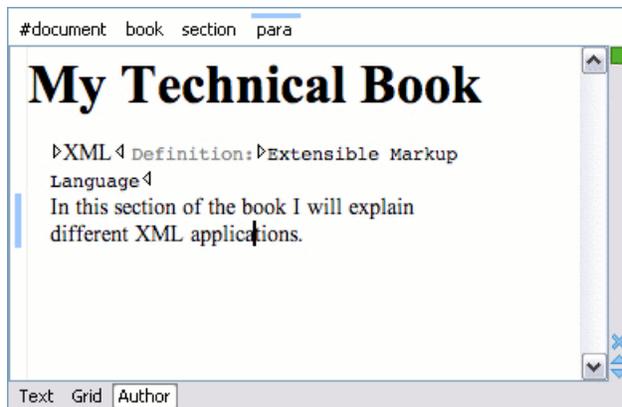
```
<book xmlns="http://www.oxygenxml.com/sample/documentation"
      xmlns:abs="http://www.oxygenxml.com/sample/documentation/abstracts">

  <title>My Technical Book</title>
  <section>
    <title>XML</title>
    <abs:def>Extensible Markup Language</abs:def>
    <para>In this section of the book I will
      explain different XML applications.</para>
  </section>
</book>
```

When trying to validate the document there should be no errors. Now modify the `title` to `title2`. Validate again. This time there should be one error:

```
cvc-complex-type.2.4.a: Invalid content was found starting with element
'title2'. One of '{"http://www.oxygenxml.com/sample/documentation":title}'
is expected.
```

Undo the tag name change. Press on the **Author** button at the bottom of the editing area. Oxygen XML Editor should load the CSS from the document type association and create a layout similar to this:



## Organizing the Framework Files

First create a new folder called `sdf` (from "Simple Documentation Framework") in `{oxygen_installation_directory}/frameworks`. This folder will be used to store all files related to the documentation framework. The following folder structure will be created:

```
oxygen
  frameworks
    sdf
      schema
      css
```



### Important:

The `frameworks` directory is the container where all the oXygen framework customizations are located.

Each subdirectory contains files related to a specific type of XML documents: schemas, catalogs, stylesheets, CSSs, etc.

Distributing a framework means delivering a framework directory.

**Important:**

It is assumed that you have the right to create files and folder inside the oXygen installation directory. If you do not have this right, you will have to install another copy of the program in a folder you have access to, the home directory for instance, or your desktop. You can download the "all platforms" distribution from the oXygen website and extract it in the chosen folder.

To test your framework distribution you will need to copy it in the `frameworks` directory of the newly installed application and start oXygen by running the provided start-up script files.

You should copy the created schema files `abs . xsd` and `sdf . xsd`, `sdf . xsd` being the master schema, to the `schema` directory and the CSS file `sdf . css` to the `css` directory.

**Packaging and Deploying**

Using a file explorer, go to the Oxygen XML Editor `frameworks` directory. Select the `sdf` directory and make an archive from it. Move it to another Oxygen XML Editor installation (eventually on another computer). Extract it in the `frameworks` directory. Start Oxygen XML Editor and test the association as explained above.

If you create multiple document type associations and you have a complex directory structure it might be easy from the deployment point of view to use an Oxygen XML Editor All Platforms distribution. Add your framework files to it, repackage it and send it to the content authors.

**Attention:**

When deploying your customized `sdf` directory please make sure that your `sdf` directory contains the `sdf . framework` file (that is the file defined as External Storage in Document Type Association dialog shall always be stored inside the `sdf` directory). If your external storage points somewhere else Oxygen XML Editor will not be able to update the Document Type Association options automatically on the deployed computers.

**Configuring New File Templates**

You will create a set of document templates that the content authors will use as starting points for creating new *Simple Document Framework* books and articles.

Each of the Document Type Associations can point to a directory usually named `templates` containing the file templates. All files found here are considered templates for the respective document type. The template name is taken from the file name, and the template type is detected from the file extension.

1. Create the `templates` directory into the `frameworks / sdf` directory. The directory tree for the documentation framework is now:

```
oxygen
  frameworks
    sdf
      schema
      css
      templates
```

2. Now let's create in this `templates` directory two files, one for the *book* template and another for the *article* template.

The `Book . xml` file:

```
<?xml version="1.0" encoding="UTF-8"?>
<book xmlns="http://www.oxygenxml.com/sample/documentation"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:abs="http://www.oxygenxml.com/sample/documentation/abstracts">
  <title>Book Template Title</title>
  <section>
    <title>Section Title</title>
    <abs:def/>
    <para>This content is copyrighted:</para>
    <table>
      <header>
        <td>Company</td>
        <td>Date</td>
      </header>
      <tr>
        <td/>
```

```

        </td/>
      </tr>
    </table>
  </section>
</book>

```

The `Article.xml` file:

```

<?xml version="1.0" encoding="UTF-8"?>
<article
  xmlns="http://www.oxygenxml.com/sample/documentation"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <title></title>
  <section>
    <title></title>
    <para></para>
    <para></para>
  </section>
</article>

```

You can also use *editor variables* in the template files' content and they will be expanded when the files are opened.

- Open the Document Type dialog for the **SDF** framework and click on the **Templates** tab. Enter in the **Templates directory** text field the value `${frameworksDir} / sdf / templates`. As you already seen before, it is recommended that all the file references made from a Document Type Association to be relative to the `${frameworksDir}` directory. Binding a Document Type Association to an absolute file (e. g.: `"C:\some_dir\templates"`) makes the association difficult to share between users.
- To test the templates settings, press the **File/New** menu item to display the **New** dialog. The names of the two templates are prefixed with the name of the Document Type Association, in our case **SDF**. Selecting one of them should create a new XML file with the content specified in the template file.

## Editor Variables

An editor variable is a shorthand notation for context-dependent information, like a file or folder path, a time-stamp or a date. It is used in the definition of a command (for example the input URL of a transformation, the output file path of a transformation, the command line of an external tool) to make a command or a parameter generic and reusable with other input files. When the same command is applied to different files, the notation is expanded at the execution of the command so that the same command has different effects depending on the actual file.

You can use the following editor variables in Oxygen XML Editor commands of external engines or other external tools, in transformation scenarios, validation scenarios, and Author operations:

- **\${oxygenHome}** - Oxygen XML Editor installation folder as URL.
- **\${oxygenInstallDir}** - Oxygen XML Editor installation folder as file path.
- **\${frameworks}** - The path (as URL) of the `frameworks` subfolder of the Oxygen XML Editor install folder.
- **\${frameworksDir}** - The path (as file path) of the `frameworks` subfolder of the Oxygen XML Editor installation folder.
- **\${home}** - The path (as URL) of the user home folder.
- **\${homeDir}** - The path (as file path) of the user home folder.
- **\${pdu}** - Current project folder as URL.
- **\${pd}** - Current project folder as file path.
- **\${pn}** - Current project name.
- **\${cfdu}** - Current file folder as URL, that is the path of the current edited document up to the name of the parent folder, represented as a URL.
- **\${cfd}** - Current file folder as file path, that is the path of the current edited document up to the name of the parent folder.
- **\${cfn}** - Current file name without extension and without parent folder.
- **\${cfne}** - Current file name with extension.
- **{cf}** - Current file as file path, that is the absolute file path of the current edited document.
- **{cfu}** - The path of the current file as a URL.

- **`\${af}`** - The file path of the zip archive that includes the current transformed file (this variable is available only in a transformation scenario).
- **`\${afu}`** - The URL of the zip archive that includes the current transformed file (this variable is available only in a transformation scenario).
- **`\${afd}`** - The directory of the zip archive that includes the current transformed file (this variable is available only in a transformation scenario).
- **`\${afdu}`** - The URL of the directory of the zip archive that includes the current transformed file (this variable is available only in a transformation scenario).
- **`\${afn}`** - The file name (without parent directory and without file extension) of the zip archive that includes the current transformed file (this variable is available only in a transformation scenario).
- **`\${afne}`** - The file name (with file extension, for example `.zip` or `.epub`, but without parent directory) of the zip archive that includes the current transformed file (this variable is available only in a transformation scenario).
- **`\${currentFileURL}`** - Current file as URL, that is the absolute file path of the current edited document represented as URL.
- **`\${ps}`** - Path separator, that is the separator which can be used on the current platform (Windows, Mac OS X, Linux) between library files specified in the class path.
- **`\${timeStamp}`** - Time stamp, that is the current time in Unix format. It can be used for example to save transformation results in different output files on each transform.
- **`\${caret}`** - The position where the caret is inserted. This variable can be used in a *code template*, in **Author** operations, or in a *selection plugin*.
- **`\${selection}`** - The XML content of the current selection in the editor panel. This variable can be used in a *code template* and Author operations, or in a *selection plugin*.
- **`\${id}`** - Application-level unique identifier.
- **`\${uuid}`** - Universally unique identifier.
- **`\${env(VAR\_NAME)}`** - Value of the `VAR_NAME` environment variable. The environment variables are managed by the operating system. If you are looking for Java System Properties, use the **`\${system(var.name)}`** editor variable.
- **`\${ask('message', type, ('real\_value1': 'rendered\_value1'; 'real\_value2': 'rendered\_value2'; ...), 'default\_value')}`** - To prompt for values at runtime, use the `ask('message', type, ('real_value1': 'rendered_value1'; 'real_value2': 'rendered_value2'; ...), 'default-value')` editor variable. The following parameters can be set:
  - `'message'` - the displayed message. Note the quotes that enclose the message.
  - `type` - optional parameter. Can have one of the following values:
    - `url` - input is considered an URL. Oxygen XML Editor checks that the URL is valid before passing it to the transformation;
    - `password` - input characters are hidden;
    - `generic` - the input is treated as generic text that requires no special handling;
    - `relative_url` - input is considered an URL. Oxygen XML Editor tries to make the URL relative to that of the document you are editing.



**Note:** You can use the `$ask` editor variable in file templates. In this case, Oxygen XML Editor keeps an absolute URL.

- `combobox` - displays a dialog that contains a non-editable combo-box;
  - `editable_combobox` - displays a dialog that contains an editable combo-box;
  - `radio` - displays a dialog that contains radio buttons;
- `'default-value'` - optional parameter. Provides a default value in the input text box.

#### Examples:

- ``${ask('message')}`` - Only the message displayed for the user is specified.
- ``${ask('message', generic, 'default')}`` - 'message' is displayed, the type is not specified (the default is string), the default value is 'default'.
- ``${ask('message', password)}`` - 'message' is displayed, the characters typed are masked with a circle symbol.

- `${ask('message', password, 'default')}` - same as before, the default value is 'default'.
- `${ask('message', url)}` - 'message' is displayed, the parameter type is URL.
- `${ask('message', url, 'default')}` - same as before, the default value is 'default'.
- `${system(var.name)}` - Value of the *var.name* Java system property. The Java system properties can be specified in the command line arguments of the Java runtime as `-Dvar.name=var.value`. If you are looking for operating system environment variables, use the `${env(VAR_NAME)}` editor variable instead.
- `${date(pattern)}` - Current date. Follows the given pattern. Example: yyyy-MM-dd.
- `${dbgXML}` - The path to the current Debugger source selection (for tools started from the XSLT/XQuery Debugger).
- `${dbgXSL}` - The path to the current Debugger stylesheet selection (for tools started from the XSLT/XQuery Debugger).
- `${tsf}` - The transformation result file.
- `${ps}` - The path separator which can be used on different operating systems between libraries specified in the class path.
- `${dsu}` - The path of the detected schema as a URL.
- `${ds}` - The path of the detected schema as a local file path.
- `${cp}` - Current page number.
- `${tp}` - Total number of pages in the document.

### Custom Editor Variables

An editor variable can be created by the user and included in any user defined expression where a built-in editor variable is also allowed. For example a custom editor variable may be necessary for configuring the command line of an external tool, the working directory of a custom validator, the command line of a custom XSLT engine, a custom FO processor, etc. All the custom editor variables are listed together with the built-in editor variables, for example when editing the working folder or the command line of an *external tool* or of a *custom validator*, the working directory, etc.

Creating a custom editor variable is very simple: just specify the name that will be used in user defined expressions, the value that will replace the variable name at runtime and a textual description for the user of that variable.

You can configure the custom editor variables in the [Preferences page](#).

## Configuring XML Catalogs

In the XML sample file for **SDF** you did not use a `xsi:schemaLocation` attribute, but instead you let the editor use the schema from the association. However there are cases in which you must refer for instance the location of a schema file from a remote web location and an Internet connection may not be available. In such cases an XML catalog may be used to map the web location to a local file system entry. The following procedure presents an example of using an XML catalogs, by modifying our `sdf.xsd` XML Schema file from the [Example Files Listings](#).

1. Create a catalog file that will help the parser locate the schema for validating the XML document. The file must map the location of the schema to a local version of the schema.

Create a new XML file called `catalog.xml` and save it into the `{oxygen_installation_directory} / frameworks / sdf` directory. The content of the file should be:

```
<?xml version="1.0"?>
<catalog xmlns="urn:oasis:names:tc:entity:xmlns:xml:catalog">
  <uri name="http://www.oxygenxml.com/SDF/abs.xsd"
        uri="schema/abs.xsd"/>
  <uri name="http://www.oxygenxml.com/SDF/abs.xsd"
        uri="schema/abs.xsd"/>
</catalog>
```

2. Add catalog files to your Document Type Association using the Catalogs tab from the Document Type dialog.

To test the catalog settings, restart Oxygen XML Editor and try to validate a new sample **Simple Documentation Framework** document. There should be no errors.

The `sdf.xsd` schema that validates the document refers the other file `abs.xsd` through an import element:

```
<xs:import namespace=
  "http://www.oxygenxml.com/sample/documentation/abstracts"
  schemaLocation="http://www.oxygenxml.com/SDF/abs.xsd"/>
```

The `schemaLocation` attribute references the `abs.xsd` file:

```
xsi:schemaLocation="http://www.oxygenxml.com/sample/documentation/abstracts
  http://www.oxygenxml.com/SDF/abs.xsd"/>
```

The catalog mapping is:

```
http://www.oxygenxml.com/SDF/abs.xsd -> schema/abs.xsd
```

This means that all the references to `http://www.oxygenxml.com/SDF/abs.xsd` must be resolved to the `abs.xsd` file located in the `schema` directory. The URI element is used by URI resolvers, for example for resolving a URI reference used in an XSLT stylesheet.

## Configuring Transformation Scenarios

When distributing a framework to the users, it is a good idea to have the transformation scenarios already configured. This would help the content authors publish their work in different formats. Being contained in the **Document Type Association** the scenarios can be distributed along with the actions, menus, toolbars, catalogs, etc.

These are the steps that allow you to create a transformation scenario for your framework.

1. Create a `xsl` folder inside the `frameworks / sdf` folder.

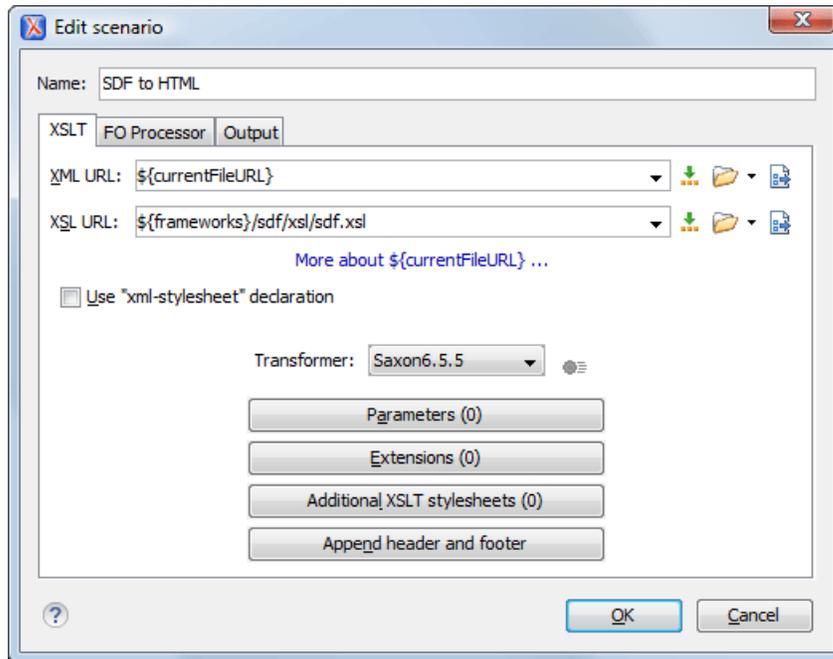
The folder structure for the documentation framework should be:

```
oxygen
  frameworks
    sdf
      schema
      css
      templates
      xsl
```

2. Create the `sdf.xsl` file in the `xsl` folder. The complete content of the `sdf.xsl` file is found in the [Example Files Listings](#).
3. Open the **Options/Preferences/Document Type Associations**. Open the **Document Type** dialog for the **SDF** framework then choose the **Transformation** tab. Click the **New** button.

In the **Edit Scenario** dialog, fill the following fields:

- Fill in the **Name** field with *SDF to HTML*. This will be the name of your transformation scenario.
- Set the **XSL URL** field to `${frameworks}/sdf/xsl/sdf.xsl`.
- Set the **Transformer** to *Saxon 9B*.

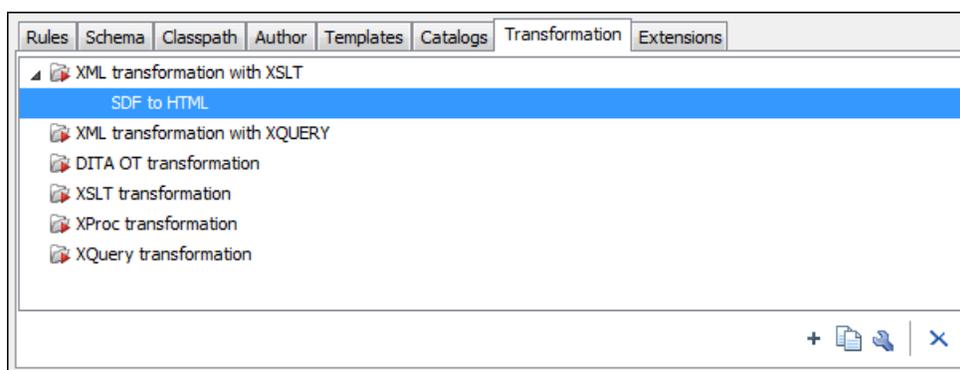


**Figure 219: Configuring a transformation scenario**

4. Change to the **Output** tab. Configure the fields as follows:

- Set the **Save as** field to `${cfd}/${cfn}.html`. This means the transformation output file will have the name of the XML file and the *html* extension and will be stored in the same folder.
- Enable the **Open in Browser/System Application** option.
  - 👉 **Note:** If you already set the **Default Internet browser** option in the **Global** preferences page, it takes precedence over the default system application settings.
- Enable the **Saved file** option.

Now the scenario is listed in the **Transformation** tab:



**Figure 220: The transformation tab**

To test the transformation scenario you just created, open the **SDF XML** sample from the *Example Files Listings*. Click the  **Apply Transformation Scenario(s)** button to display the **Configure Transformation Scenario(s)** dialog. Its scenario list contains the scenario you defined earlier *SDF to HTML*. Click it then choose **Transform now**. The HTML file should be saved in the same folder as the XML file and displayed in the browser.

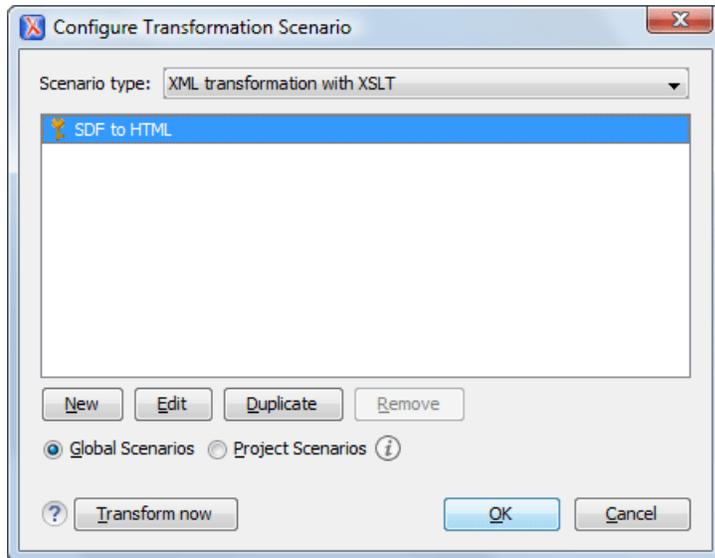


Figure 221: Selecting the predefined scenario

## Configuring Validation Scenarios

You can distribute a framework with a series of already configured validation scenarios. Also, this provides enhanced validation support allowing you to use multiple grammars to check the document. For example, you can use Schematron rules to impose guidelines, otherwise impossible to enforce using conventional validation.

To associate a validation scenario with a specific framework, follow these steps:

1. Open the **Options/Preferences/Document Type Associations**. Open the **Document Type** dialog for the **SDF** framework, then choose the **Validation** tab. This tab holds a list of document types for which you can define validation scenarios. To set one of the validation scenarios as default for a specific document type, select it and press  /  **Toggle default**.
2. Press the **New** button to add a new scenario.
3. Press the **Add** button to add a new validation unit with default settings. The dialog that lists all validation units of the scenario is opened.

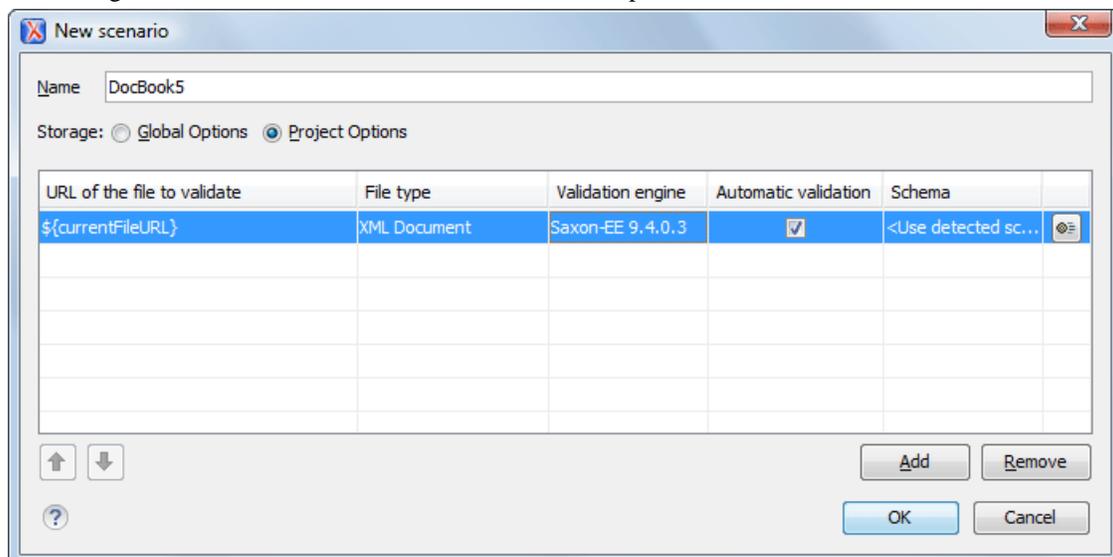


Figure 222: Add / Edit a Validation Unit

The table holds the following information:

- **Storage** - allows you to create a scenario at project level, or as global;
- **URL of the file to validate** - the URL of the main module which includes the current module. It is also the entry module of the validation process when the current one is validated;
- **File type** - the type of the document validated in the current validation unit. Oxygen XML Editor automatically selects the file type depending on the value of the **URL of the file to validate** field;
- **Validation engine** - one of the engines available in Oxygen XML Editor for validation of the type of document to which the current module belongs. **Default engine** is the default setting and means that the default engine executes the validation. This engine is set in **Preferences** pages for the type of the current document (XML document, XML Schema, XSLT stylesheet, XQuery file, and others) instead of a validation scenario;
- **Automatic validation** - if this option is checked, then the validation operation defined by this row of the table is applied also by *the automatic validation feature*. If the **Automatic validation** feature is *disabled in Preferences* then this option does not take effect as the Preference setting has higher priority;
- **Schema** - active when you set the **File type** to **XML Document**;
- **Settings** - contains an action that allows you to set a schema, when validating XML documents, or a list of extensions when validating XSL or XQuery documents.

#### 4. Edit the URL of the main validation module.

Specify the URL of the main module:

- browsing for a local, remote, or archived file;
- using an *editor variable* or a *custom editor variable*, available in the following pop-up menu, opened after pressing the  button:

```

${Desktop} - My Desktop
${start-dir} - Start directory of custom validator
${standard-params} - List of standard params for command line
${cfn} - The current file name without extension
${currentFileURL} - The path of the currently edited file (URL)
${cfdu} - The path of current file directory (URL)
${frameworks} - Oxygen frameworks directory (URL)
${pdu} - Project directory (URL)
${oxygenHome} - Oxygen installation directory (URL)
${home} - The path to user home directory (URL)
${pn} - Project name
${env(VAR_NAME)} - Value of environment variable VAR_NAME
${system(var.name)} - Value of system variable var.name

```

**Figure 223: Insert an Editor Variable**

#### 5. Select the type of the validated document.

Note that it determines the list of possible validation engines.

#### 6. Select the validation engine.

#### 7. Select the **Automatic validation** option if you want to validate the current unit when *automatic validation feature is turned on in Preferences*.

#### 8. Choose what schema is used during validation: the one detected after parsing the document or a custom one.

## Configuring Extensions

You can add extensions to your Document Type Association using the **Extensions** tab from the Document Type dialog.

### Configuring an Extensions Bundle

Starting with Oxygen XML Editor 10.3 version a single bundle was introduced acting as a provider for all other extensions. The individual extensions can still be set and if present they take precedence over the single provider, but this practice

is being discouraged and the single provider should be used instead. To set individual extensions go to **Options > Preferences > Document Type Association**, double-click a document type and go to the extension tab.

The extensions bundle is represented by the `ro.sync.ecss.extensions.api.ExtensionsBundle` class. The provided implementation of the `ExtensionsBundle` is instantiated when the rules of the Document Type Association defined for the custom framework match a document opened in the editor. Therefore references to objects which need to be persistent throughout the application running session must not be kept in the bundle because the next detection event can result in creating another `ExtensionsBundle` instance.

 **Note:** The Javadoc documentation of the Author API used in the example files is [available on the Oxygen XML Editor website](#). Also it can be downloaded as a [zip archive from the website](#).

1. Create a new Java project, in your IDE. Create the `lib` folder in the Java project folder and copy in it the `oxygen.jar` file from the `{oxygen_installation_directory}/lib` folder.
2. Create the class `simple.documentation.framework.SDFExtensionsBundle` which must extend the abstract class `ro.sync.ecss.extensions.api.ExtensionsBundle`.

```
public class SDFExtensionsBundle extends ExtensionsBundle {
```

3. A **Document Type ID** and a short description should be defined first by implementing the methods `getDocumentTypeID` and `getDescription`. The Document Type ID is used to uniquely identify the current framework. Such an ID must be provided especially if options related to the framework need to be persistently stored and retrieved between sessions.

```
public String getDocumentTypeID() {
    return "Simple.Document.Framework.document.type";
}

public String getDescription() {
    return "A custom extensions bundle used for the Simple Document" +
        "Framework document type";
}
```

4. In order to be notified about the activation of the custom Author extension in relation with an opened document an `ro.sync.ecss.extensions.api.AuthorExtensionStateListener` should be implemented. The **activation** and **deactivation** events received by this listener should be used to perform custom initializations and to register / remove listeners like `ro.sync.ecss.extensions.api.AuthorListener`, `ro.sync.ecss.extensions.api.AuthorMouseListener` or `ro.sync.ecss.extensions.api.AuthorCaretListener`. The custom author extension state listener should be provided by implementing the method `createAuthorExtensionStateListener`.

```
public AuthorExtensionStateListener createAuthorExtensionStateListener() {
    return new SDFAuthorExtensionStateListener();
}
```

The `AuthorExtensionStateListener` is instantiated and notified about the activation of the framework when the rules of the Document Type Association match a document opened in the Author editor mode. The listener is notified about the deactivation when another framework is activated for the same document, the user switches to another mode or the editor is closed. A complete description and implementation of an `ro.sync.ecss.extensions.api.AuthorExtensionStateListener` can be found in the [Implementing an Author Extension State Listener](#).

If Schema Aware mode is active in Oxygen, all actions that can generate invalid content will be redirected toward the `ro.sync.ecss.extensions.api.AuthorSchemaAwareEditingHandler`. The handler can either resolve a specific case, let the default implementation take place or reject the edit entirely by throwing an `ro.sync.ecss.extensions.api.InvalidEditException`. The actions that are forwarded to this handler include typing, delete or paste.

See the [Implementing an Author Schema Aware Editing Handler](#) section for more details about this handler.

5. Customizations of the content completion proposals are permitted by creating a schema manager filter extension. The interface that declares the methods used for content completion proposals filtering is

[ro.sync.contentcompletion.xml.SchemaManagerFilter](#). The filter can be applied on elements, attributes or on their values. Responsible for creating the content completion filter is the method `createSchemaManagerFilter`. A new `SchemaManagerFilter` will be created each time a document matches the rules defined by the Document Type Association which contains the filter declaration.

```
public SchemaManagerFilter createSchemaManagerFilter() {
    return new SDFSchemasManagerFilter();
}
```

A detailed presentation of the schema manager filter can be found in [Configuring a Content completion handler](#) section.

- The Author supports link based navigation between documents and document sections. Therefore, if the document contains elements defined as links to other elements, for example links based on the `id` attributes, the extension should provide the means to find the referred content. To do this an implementation of the [ro.sync.ecss.extensions.api.link.ElementLocatorProvider](#) interface should be returned by the `createElementLocatorProvider` method. Each time an element pointed by a link needs to be located the method is invoked.

```
public ElementLocatorProvider createElementLocatorProvider() {
    return new DefaultElementLocatorProvider();
}
```

The section that explains how to implement an element locator provider is [Configuring a Link target element finder](#).

- The drag and drop functionality can be extended by implementing the [ro.sync.exml.editor.xmleditor.pageauthor.AuthorDndListener](#) interface. Relevant methods from the listener are invoked when the mouse is dragged, moved over, or exits the Author editor mode, when the drop action changes, and when the drop occurs. Each method receives the `DropTargetEvent` containing information about the drag and drop operation. The drag and drop extensions are available on Author mode for both Oxygen XML Editor Eclipse plugin and standalone application. The Text mode corresponding listener is available only for Oxygen XML Editor Eclipse plugin. The methods corresponding to each implementation are: `createAuthorAWTDndListener`, `createTextSWTDndListener` and `createAuthorSWTDndListener`.

```
public AuthorDndListener createAuthorAWTDndListener() {
    return new SDFAuthorDndListener();
}
```

For more details about the Author drag and drop listeners see the [Configuring a custom Drag and Drop listener](#) section.

- Another extension which can be included in the bundle is the reference resolver. In our case the references are represented by the `ref` element and the attribute indicating the referred resource is `location`. To be able to obtain the content of the referred resources you will have to implement a Java extension class which implements the [ro.sync.ecss.extensions.api.AuthorReferenceResolver](#). The method responsible for creating the custom references resolver is `createAuthorReferenceResolver`. The method is called each time a document opened in an Author editor mode matches the Document Type Association where the extensions bundle is defined. The instantiated references resolver object is kept and used until another extensions bundle corresponding to another Document Type is activated as result of the detection process.

```
public AuthorReferenceResolver createAuthorReferenceResolver() {
    return new ReferencesResolver();
}
```

A more detailed description of the references resolver can be found in the [Configuring a References Resolver](#) section.

- To be able to dynamically customize the default CSS styles for a certain [ro.sync.ecss.extensions.api.node.AuthorNode](#) an implementation of the [ro.sync.ecss.extensions.api.StylesFilter](#) can be provided. The extensions bundle method responsible for creating the `StylesFilter` is `createAuthorStylesFilter`. The method is called each time a document opened in an Author editor mode matches the document type association where the extensions bundle is defined.

The instantiated filter object is kept and used until another extensions bundle corresponding to another Document Type is activated as a result of the detection process.

```
public StylesFilter createAuthorStylesFilter() {
    return new SDFStylesFilter();
}
```

See the [Configuring CSS styles filter](#) section for more details about the styles filter extension.

10. In order to edit data in custom tabular format implementations of the [ro.sync.ecss.extensions.api.AuthorTableCellSpanProvider](#) and the [ro.sync.ecss.extensions.api.AuthorTableColumnWidthProvider](#) interfaces should be provided. The two methods from the ExtensionsBundle specifying these two extension points are `createAuthorTableCellSpanProvider` and `createAuthorTableColumnWidthProvider`.

```
public AuthorTableCellSpanProvider createAuthorTableCellSpanProvider() {
    return new TableCellSpanProvider();
}

public AuthorTableColumnWidthProvider
createAuthorTableColumnWidthProvider() {
    return new TableColumnWidthProvider();
}
```

The two table information providers are not reused for different tables. The methods are called for each table in the document so new instances should be provided every time. Read more about the cell span and column width information providers in [Configuring a Table Cell Span Provider](#) and [Configuring a Table Column Width Provider](#) sections.

If the functionality related to one of the previous extension point does not need to be modified then the developed [ro.sync.ecss.extensions.api.ExtensionsBundle](#) should not override the corresponding method and leave the default base implementation to return `null`.

11. An XML vocabulary can contain links to different areas of a document. In case the document contains elements defined as link you can choose to present a more relevant text description for each link. To do this an implementation of the [ro.sync.ecss.extensions.api.link.LinkTextResolver](#) interface should be returned by the `createLinkTextResolver` method. This implementation is used each time [the oxy\\_link-text\(\) function](#) is encountered in the CSS styles associated with an element.

```
public LinkTextResolver createLinkTextResolver() {
    return new DitaLinkTextResolver();
}
```

Oxygen XML Editor offers built in implementations for DITA and DocBook:

[ro.sync.ecss.extensions.dita.link.DitaLinkTextResolver](#)

[ro.sync.ecss.extensions.docbook.link.DocbookLinkTextResolver](#)

12. Pack the compiled class into a jar file.
13. Copy the jar file into the `frameworks / sdf` directory.
14. Add the jar file to the Author class path.
15. Register the Java class by clicking on the **Extensions** tab. Press the **Choose** button and select from the displayed dialog the name of the class: `SDFExtensionsBundle`.



**Note:** The complete source code can be found in the Simple Documentation Framework project, included in the [Oxygen Author SDK zip](#) available for download [on the Oxygen XML Editor website](#).

## Customize Profiling Conditions

For each document type, you can configure the phrase-type elements that wrap the profiled content by setting a custom [ro.sync.ecss.extensions.api.ProfilingConditionalTextProvider](#). This configuration is set by default for DITA and Docbook frameworks.

## Preserve Style and Format on Copy and Paste from External Applications

Styled content can be inserted in the Author editor by copying or dragging it from:

- Office-type applications (**Microsoft Word** and **Microsoft Excel**, **OpenOffice.org Writer** and **OpenOffice.org Calc**);
- web browsers (like **Mozilla Firefox** or **Microsoft Internet Explorer**);
- the **Data Source Explorer** view (where resources are available from WebDAV or CMS servers).

The styles and general layout of the copied content like: sections with headings, tables, list items, bold, and italic text, hyperlinks, are preserved by the paste operation by transforming them to the equivalent XML markup of the target document type. This is available by default in the following *predefined document types*: *DITA*, *DocBook 4*, *DocBook 5*, *TEI 4*, *TEI 5*, *XHTML*.

For other document types the default behavior of the paste operation is to keep only the text content without the styling but it can be customized by setting an XSLT stylesheet in that document type. The XSLT stylesheet must accept as input an XHTML flavor of the copied content and transform it to the equivalent XML markup that is appropriate for the target document type of the paste operation. The stylesheet is *set up* by implementing the `getImporterStylesheetFileName` method of an instance object of *the `AuthorExternalObjectInsertionHandler` class* which is returned by the `createExternalObjectInsertionHandler` method of *the `ExtensionsBundle` instance* of the target document type.

## Implementing an Author Extension State Listener

The `ro.sync.ecss.extensions.api.AuthorExtensionStateListener` implementation is notified when the Author extension where the listener is defined is activated or deactivated in the Document Type detection process.

 **Note:** The Javadoc documentation of the Author API used in the example files is *available on the [Oxygen XML Editor website](#)*. Also it can be downloaded as a *zip archive from the website*.

```
import ro.sync.ecss.extensions.api.AuthorAccess;
import ro.sync.ecss.extensions.api.AuthorExtensionStateListener;

public class SDFAuthorExtensionStateListener implements
    AuthorExtensionStateListener {
    private AuthorListener sdfAuthorDocumentListener;
    private AuthorMouseListener sdfMouseListener;
    private AuthorCaretListener sdfCaretListener;
    private OptionListener sdfOptionListener;
```

The **activation** event received by this listener when the rules of the Document Type Association match a document opened in the Author editor mode, should be used to perform custom initializations and to register listeners like `ro.sync.ecss.extensions.api.AuthorListener`, `ro.sync.ecss.extensions.api.AuthorMouseListener` or `ro.sync.ecss.extensions.api.AuthorCaretListener`.

```
public void activated(AuthorAccess authorAccess) {
    // Get the value of the option.
    String option = authorAccess.getOptionsStorage().getOption(
        "sdf.custom.option.key", "");
    // Use the option for some initializations...

    // Add an option listener.
    authorAccess.getOptionsStorage().addOptionListener(sdfOptionListener);

    // Add author document listeners.
    sdfAuthorDocumentListener = new SDFAuthorListener();
    authorAccess.getDocumentController().addAuthorListener(
        sdfAuthorDocumentListener);

    // Add mouse listener.
    sdfMouseListener = new SDFAuthorMouseListener();
    authorAccess.getEditorAccess().addAuthorMouseListener(sdfMouseListener);

    // Add caret listener.
    sdfCaretListener = new SDFAuthorCaretListener();
    authorAccess.getEditorAccess().addAuthorCaretListener(sdfCaretListener);
```

```
// Other custom initializations...
}
```

The `authorAccess` parameter received by the `activated` method can be used to gain access to Author specific actions and informations related to components like the editor, document, workspace, tables, or the change tracking manager.

If options specific to the custom developed Author extension need to be stored or retrieved, a reference to the [ro.sync.ecss.extensions.api.OptionsStorage](#) can be obtained by calling the `getOptionsStorage` method from the author access. The same object can be used to register [ro.sync.ecss.extensions.api.OptionListener](#) listeners. An option listener is registered in relation with an option **key** and will be notified about the value changes of that option.

An `AuthorListener` can be used if events related to the Author document modifications are of interest. The listener can be added to the [ro.sync.ecss.extensions.api.AuthorDocumentController](#). A reference to the document controller is returned by the `getDocumentController` method from the author access. The document controller can also be used to perform operations involving document modifications.

To provide access to Author editor component related functionality and information, the author access has a reference to the [ro.sync.ecss.extensions.api.access.AuthorEditorAccess](#) that can be obtained when calling the `getEditorAccess` method. At this level `AuthorMouseListener` and `AuthorCaretListener` can be added which will be notified about mouse and caret events occurring in the Author editor mode.

The **deactivation** event is received when another framework is activated for the same document, the user switches to another editor mode or the editor is closed. The `deactivate` method is typically used to unregister the listeners previously added on the `activate` method and to perform other actions. For example, options related to the deactivated author extension can be saved at this point.

```
public void deactivated(AuthorAccess authorAccess) {
    // Store the option.
    authorAccess.getOptionsStorage().setOption(
        "sdf.custom.option.key", optionValue);

    // Remove the option listener.
    authorAccess.getOptionsStorage().removeOptionListener(sdfOptionListener);

    // Remove document listeners.
    authorAccess.getDocumentController().removeAuthorListener(
        sdfAuthorDocumentListener);

    // Remove mouse listener.
    authorAccess.getEditorAccess().removeAuthorMouseListener(sdfMouseListener);

    // Remove caret listener.
    authorAccess.getEditorAccess().removeAuthorCaretListener(sdfCaretListener);

    // Other actions...
}
```

## Implementing an Author Schema Aware Editing Handler

To implement your own handler for actions like typing, deleting, or pasting, provide an implementation of [ro.sync.ecss.extensions.api.AuthorSchemaAwareEditingHandler](#). For this handler to be called, the **Schema Aware Editing** option must be set to **On**, or **Custom**. The handler can either resolve a specific case, let the default implementation take place, or reject the edit entirely by throwing an `InvalidEditException`.

 **Note:** The Javadoc documentation of the Author API used in the example files is [available on the Oxygen XML Editor website](#). Also it can be downloaded as a [zip archive from the website](#).

```
package simple.documentation.framework.extensions;

/**
 * Specific editing support for SDF documents.
 * Handles typing and paste events inside section and tables.
 */
public class SDFSchemaAwareEditingHandler implements AuthorSchemaAwareEditingHandler {
```

Typing events can be handled using the `handleTyping` method. For example, the `SDFSchemaAwareEditingHandler` checks if the schema is not a learned one, was loaded successfully and *Smart Paste* is active. If these conditions are met, the event will be handled.

```
/**
 * @see ro.sync.ecss.extensions.api.AuthorSchemaAwareEditingHandler#handleTyping(int, char,
 * ro.sync.ecss.extensions.api.AuthorAccess)
 */
public boolean handleTyping(int offset, char ch, AuthorAccess authorAccess)
throws InvalidEditException {
    boolean handleTyping = false;
    AuthorSchemaManager authorSchemaManager = authorAccess.getDocumentController().getAuthorSchemaManager();
    if (!authorSchemaManager.isLearnSchema() &&
        !authorSchemaManager.hasLoadingErrors() &&
        authorSchemaManager.getAuthorSchemaAwareOptions().isEnabledSmartTyping()) {
        try {
            AuthorDocumentFragment characterFragment =
                authorAccess.getDocumentController().createNewDocumentTextFragment(String.valueOf(ch));
            handleTyping = handleInsertionEvent(offset, new AuthorDocumentFragment[] {characterFragment}, authorAccess);
        } catch (AuthorOperationException e) {
            throw new InvalidEditException(e.getMessage(), "Invalid typing event: " + e.getMessage(), e, false);
        }
    }
    return handleTyping;
}
```

Implementing the `AuthorSchemaAwareEditingHandler` gives the possibility to handle other events like: the keyboard delete event at the given offset (using Delete or Backspace keys), delete element tags, delete selection, join elements or paste fragment.

 **Note:** The complete source code can be found in the Simple Documentation Framework project, included in the *Oxygen Author SDK zip* available for download [on the Oxygen XML Editor website](#).

## Configuring a Content Completion Handler

You can filter or contribute to items offered for content completion by implementing the `ro.sync.contentcompletion.xml.SchemaManagerFilter` interface.

 **Note:** The Javadoc documentation of the Author API used in the example files is [available on the Oxygen XML Editor website](#). Also it can be downloaded as a [zip archive from the website](#).

```
import java.util.List;

import ro.sync.contentcompletion.xml.CIAttribute;
import ro.sync.contentcompletion.xml.CIElement;
import ro.sync.contentcompletion.xml.CIValue;
import ro.sync.contentcompletion.xml.Context;
import ro.sync.contentcompletion.xml.SchemaManagerFilter;
import ro.sync.contentcompletion.xml.WhatAttributesCanGoHereContext;
import ro.sync.contentcompletion.xml.WhatElementsCanGoHereContext;
import ro.sync.contentcompletion.xml.WhatPossibleValuesHasAttributeContext;

public class SDFSchemaManagerFilter implements SchemaManagerFilter {
```

You can implement the various callbacks of the interface either by returning the default values given by Oxygen XML Editor or by contributing to the list of proposals. The filter can be applied on elements, attributes or on their values. Attributes filtering can be implemented using the `filterAttributes` method and changing the default content completion list of `ro.sync.contentcompletion.xml.CIAttribute` for the element provided by the current `ro.sync.contentcompletion.xml.WhatAttributesCanGoHereContext` context. For example, the `SDFSchemaManagerFilter` checks if the element from the current context is the `table` element and adds the `frame` attribute to the `table` list of attributes.

```
/**
 * Filter attributes of the "table" element.
 */
public List<CIAttribute> filterAttributes(List<CIAttribute> attributes,
    WhatAttributesCanGoHereContext context) {
    // If the element from the current context is the 'table' element add the
    // attribute named 'frame' to the list of default content completion proposals
    if (context != null) {
        ContextElement contextElement = context.getParentElement();
        if ("table".equals(contextElement.getQName())) {
```

```

        CIAttribute frameAttribute = new CIAttribute();
        frameAttribute.setName("frame");
        frameAttribute.setRequired(false);
        frameAttribute.setFixed(false);
        frameAttribute.setDefaultValue("void");
        if (attributes == null) {
            attributes = new ArrayList<CIAttribute>();
        }
        attributes.add(frameAttribute);
    }
}
return attributes;
}

```

The elements that can be inserted in a specific context can be filtered using the `filterElements` method. The `SDFSchemaManagerFilter` uses this method to replace the `td` child element with the `th` element when `header` is the current context element.

```

public List<CIElement> filterElements(List<CIElement> elements,
    WhatElementsCanGoHereContext context) {
    // If the element from the current context is the 'header' element remove the
    // 'td' element from the list of content completion proposals and add the
    // 'th' element.
    if (context != null) {
        Stack<ContextElement> elementStack = context.getElementStack();
        if (elementStack != null) {
            ContextElement contextElement = context.getElementStack().peek();
            if ("header".equals(contextElement.getQName())) {
                if (elements != null) {
                    for (Iterator<CIElement> iterator = elements.iterator(); iterator.hasNext(); ) {
                        CIElement element = iterator.next();
                        // Remove the 'td' element
                        if ("td".equals(element.getQName())) {
                            elements.remove(element);
                            break;
                        }
                    }
                }
            } else {
                elements = new ArrayList<CIElement>();
            }
            // Insert the 'th' element in the list of content completion proposals
            CIElement thElement = new SDFElement();
            thElement.setName("th");
            elements.add(thElement);
        }
    }
    return elements;
}

```

The elements or attributes values can be filtered using the `filterElementValues` or `filterAttributeValues` methods.

 **Note:** The complete source code can be found in the Simple Documentation Framework project, included in the *Oxygen Author SDK zip* available for download [on the Oxygen XML Editor website](#).

## Configuring a Link target element finder

The link target reference finder represents the support for finding references from links which indicate specific elements inside an XML document. This support will only be available if a schema is associated with the document type.

If you do not define a custom link target reference finder, the `DefaultElementLocatorProvider` implementation will be used by default. The interface which should be implemented for a custom link target reference finder is [`ro.sync.ecss.extensions.api.link.ElementLocatorProvider`](#). As an alternative, the [`ro.sync.ecss.extensions.commons.DefaultElementLocatorProvider`](#) implementation can also be extended.

The used `ElementLocatorProvider` will be queried for an [`ElementLocator`](#) when a link location must be determined (when a link is clicked). Then, to find the corresponding (linked) element, the obtained `ElementLocator` will be queried for each element from the document.

 **Note:** The Javadoc documentation of the Author API used in the example files is [available on the Oxygen XML Editor website](#). Also it can be downloaded as a [zip archive from the website](#).

## The DefaultElementLocatorProvider implementation

The DefaultElementLocatorProvider implementation offers support for the most common types of links:

- links based on ID attribute values
- XPointer element() scheme

The method getElementLocator determines what ElementLocator should be used. In the default implementation it checks if the link is an XPointer element() scheme otherwise it assumes it is an ID. A non-null IDTypeVerifier will always be provided if a schema is associated with the document type.

The link string argument is the "anchor" part of the of the URL which is composed from the value of the link property specified for the link element in the CSS.

```
public ElementLocator getElementLocator(IDTypeVerifier idVerifier,
    String link) {
    ElementLocator elementLocator = null;
    try {
        if(link.startsWith("element(")){
            // xpointer element() scheme
            elementLocator = new XPointerElementLocator(idVerifier, link);
        } else {
            // Locate link element by ID
            elementLocator = new IDElementLocator(idVerifier, link);
        }
    } catch (ElementLocatorException e) {
        logger.warn("Exception when create element locator for link: "
            + link + ". Cause: " + e, e);
    }
    return elementLocator;
}
```

### The XPointerElementLocator implementation

XPointerElementLocator is an implementation of the abstract class [ro.sync.ecss.extensions.api.link.ElementLocator](#) for links that have one of the following XPointer element() scheme patterns:

<b>element(elementID)</b>	Locate the element with the specified id.
<b>element(/1/2/3)</b>	A child sequence appearing alone identifies an element by means of stepwise navigation, which is directed by a sequence of integers separated by slashes (/); each integer n locates the nth child element of the previously located element.
<b>element(elementID/3/4)</b>	A child sequence appearing after a <i>NCName</i> identifies an element by means of stepwise navigation, starting from the element located by the given name.

The constructor separates the id/integers which are delimited by slashes(/) into a sequence of identifiers (an XPointer path). It will also check that the link has one of the supported patterns of the XPointer element() scheme.

```
public XPointerElementLocator(IDTypeVerifier idVerifier, String link)
    throws ElementLocatorException {
    super(link);
    this.idVerifier = idVerifier;

    link = link.substring("element(".length(), link.length() - 1);

    StringTokenizer stringTokenizer = new StringTokenizer(link, "/", false);
    xpointerPath = new String[stringTokenizer.countTokens()];
    int i = 0;
    while (stringTokenizer.hasMoreTokens()) {
        xpointerPath[i] = stringTokenizer.nextToken();
        boolean invalidFormat = false;

        // Empty xpointer component is not supported
        if(xpointerPath[i].length() == 0){
            invalidFormat = true;
        }

        if(i > 0){
            try {
                Integer.parseInt(xpointerPath[i]);
            } catch (NumberFormatException e) {
                invalidFormat = true;
            }
        }
    }
}
```

```

    }
}

if(invalidFormat){
    throw new ElementLocatorException(
        "Only the element() scheme is supported when locating XPointer links."
        + "Supported formats: element(elementID), element(/1/2/3),
        element(elemID/2/3/4).");
}
i++;
}

if(Character.isDigit(xpointerPath[0].charAt(0))){
    // This is the case when xpointer have the following pattern /1/5/7
    xpointerPathDepth = xpointerPath.length;
} else {
    // This is the case when xpointer starts with an element ID
    xpointerPathDepth = -1;
    startWithElementID = true;
}
}
}

```

The method `startElement` will be invoked at the beginning of every element in the XML document (even when the element is empty). The arguments it takes are

<b><i>uri</i></b>	The namespace URI, or the empty string if the element has no namespace URI or if namespace processing is disabled.
<b><i>localName</i></b>	Local name of the element.
<b><i>qName</i></b>	Qualified name of the element.
<b><i>atts</i></b>	Attributes attached to the element. If there are no attributes, this argument will be empty.

The method returns `true` if the processed element is found to be the one indicated by the link.

The `XPointerElementLocator` implementation of the `startElement` will update the depth of the current element and keep the index of the element in its parent. If the `xpointerPath` starts with an element ID then the current element ID is verified to match the specified ID. If this is the case the depth of the XPointer is updated taking into account the depth of the current element.

If the XPointer path depth is the same as the current element depth then the kept indices of the current element path are compared to the indices in the XPointer path. If all of them match then the element has been found.

```

public boolean startElement(String uri, String localName,
    String name, Attr[] atts) {
    boolean linkLocated = false;
    // Increase current element document depth
    startElementDepth++;

    if (endElementDepth != startElementDepth) {
        // The current element is the first child of the parent
        currentElementIndexStack.push(new Integer(1));
    } else {
        // Another element in the parent element
        currentElementIndexStack.push(new Integer(lastIndexInParent + 1));
    }

    if (startWithElementID) {
        // This the case when xpointer path starts with an element ID.
        String xpointerElement = xpointerPath[0];
        for (int i = 0; i < atts.length; i++) {
            if (xpointerElement.equals(atts[i].getValue())) {
                if (idVerifier.hasIDType(
                    localName, uri, atts[i].getQName(), atts[i].getNamespace())) {
                    xpointerPathDepth = startElementDepth + xpointerPath.length - 1;
                    break;
                }
            }
        }
    }

    if (xpointerPathDepth == startElementDepth) {
        // check if xpointer path matches with the current element path
        linkLocated = true;
        try {
            int xpointerIdx = xpointerPath.length - 1;
            int stackIdx = currentElementIndexStack.size() - 1;
            int stopIdx = startWithElementID ? 1 : 0;

```

```

while (xpointerIdx >= stopIdx && stackIdx >= 0) {
    int xpointerIndex = Integer.parseInt(xpointerPath[xpointerIdx]);
    int currentElementIndex =
        ((Integer)currentElementIndexStack.get(stackIdx)).intValue();
    if(xpointerIndex != currentElementIndex) {
        linkLocated = false;
        break;
    }

    xpointerIdx--;
    stackIdx--;
}

} catch (NumberFormatException e) {
    logger.warn(e,e);
}
}
return linkLocated;
}

```

The method `endElement` will be invoked at the end of every element in the XML document (even when the element is empty).

The `XPointerElementLocator` implementation of the `endElement` updates the depth of the current element path and the index of the element in its parent.

```

public void endElement(String uri, String localName, String name) {
    endElementDepth = startElementDepth;
    startElementDepth --;
    lastIndexInParent = ((Integer)currentElementIndexStack.pop()).intValue();
}

```

#### *The IDElementLocator implementation*

The `IDElementLocator` is an implementation of the abstract class [ro.sync.ecss.extensions.api.link.ElementLocator](#) for links that use an **id**.

The constructor only assigns field values and the method `endElement` is empty for this implementation.

The method `startElement` checks each of the element's attribute values and when one matches the link, it considers the element found if one of the following conditions is satisfied:

- the qualified name of the attribute is `xml:id`
- the attribute type is `ID`

The attribute type is checked with the help of the method `IDTypeVerifier.hasIDType`.

```

public boolean startElement(String uri, String localName,
    String name, Attr[] atts) {
    boolean elementFound = false;
    for (int i = 0; i < atts.length; i++) {
        if (link.equals(atts[i].getValue())) {
            if ("xml:id".equals(atts[i].getQName())) {
                // xml:id attribute
                elementFound = true;
            } else {
                // check if attribute has ID type
                String attrLocalName =
                    ExtensionUtil.getLocalName(atts[i].getQName());
                String attrUri = atts[i].getNamespace();
                if (idVerifier.hasIDType(localName, uri, attrLocalName, attrUri)) {
                    elementFound = true;
                }
            }
        }
    }
    return elementFound;
}

```

#### **Creating a customized link target reference finder**

If you need to create a custom link target reference finder you can do so by creating the class which will implement the [ro.sync.ecss.extensions.api.link.ElementLocatorProvider](#) interface. As an alternative, your class could extend [ro.sync.ecss.extensions.commons.DefaultElementLocatorProvider](#), the default implementation.

 **Note:** The complete source code of the `ro.sync.ecss.extensions.commons.DefaultElementLocatorProvider`, `ro.sync.ecss.extensions.commons.IDElementLocator` or `ro.sync.ecss.extensions.commons.XPointerElementLocator` can be found in the Oxygen Default Frameworks project, included in the *Oxygen Author SDK zip* available for download [on the Oxygen XML Editor website](#).

## Configuring a custom Drag and Drop listener

Sometimes it is useful to perform various operations when certain objects are dropped from outside sources in the editing area. You can choose from three interfaces to implement depending on whether you are using the framework with the Eclipse plugin or the standalone version of the application or if you want to add the handler for the Text or Author modes.

 **Note:** The Javadoc documentation of the Author API used in the example files is [available on the Oxygen XML Editor website](#). Also it can be downloaded as a *zip archive from the website*.

**Table 3: Interfaces for the DnD listener**

Interface	Description
<code>ro.sync.xml.editor.xmleditor.pageauthor.AuthorDnDListener</code>	Receives callbacks from the standalone application for Drag And Drop in Author mode.
<code>com.oxygenxml.editor.editors.author.AuthorDnDListener</code>	Receives callbacks from the Eclipse plugin for Drag And Drop in Author mode.
<code>com.oxygenxml.editor.editors.TextDnDListener</code>	Receives callbacks from the Eclipse plugin for Drag And Drop in Text mode.

## Configuring a References Resolver

You need to provide a handler for resolving references and obtain the content they refer. In our case the element which has references is **ref** and the attribute indicating the referred resource is **location**. You will have to implement a Java extension class for obtaining the referred resources.

 **Note:** The Javadoc documentation of the Author API used in the example files is [available on the Oxygen XML Editor website](#). Also it can be downloaded as a *zip archive from the website*.

1. Create the class `simple.documentation.framework.ReferencesResolver`. This class must implement the `ro.sync.ecss.extensions.api.AuthorReferenceResolver` interface.

```
import ro.sync.ecss.extensions.api.AuthorReferenceResolver;
import ro.sync.ecss.extensions.api.AuthorAccess;
import ro.sync.ecss.extensions.api.node.AttrValue;
import ro.sync.ecss.extensions.api.node.AuthorElement;
import ro.sync.ecss.extensions.api.node.AuthorNode;

public class ReferencesResolver
    implements AuthorReferenceResolver {
```

2. The `hasReferences` method verifies if the handler considers the node to have references. It takes as argument an `AuthorNode` that represents the node which will be verified. The method will return `true` if the node is considered to have references. In our case, to be a reference the node must be an element with the name `ref` and it must have an attribute named `location`.

```
public boolean hasReferences(AuthorNode node) {
    boolean hasReferences = false;
    if (node.getType() == AuthorNode.NODE_TYPE_ELEMENT) {
        AuthorElement element = (AuthorElement) node;
        if ("ref".equals(element.getLocalName())) {
            AttrValue attrValue = element.getAttribute("location");
            hasReferences = attrValue != null;
        }
    }
}
```

```

    }
    return hasReferences;
}

```

- The method `getDisplayname` returns the display name of the node that contains the expanded referred content. It takes as argument an `AuthorNode` that represents the node for which the display name is needed. The referred content engine will ask this `AuthorReferenceResolver` implementation what is the display name for each node which is considered a reference. In our case the display name is the value of the `location` attribute from the `ref` element.

```

public String getDisplayName(AuthorNode node) {
    String displayName = "ref-fragment";
    if (node.getType() == AuthorNode.NODE_TYPE_ELEMENT) {
        AuthorElement element = (AuthorElement) node;
        if ("ref".equals(element.getLocalName())) {
            AttrValue attrValue = element.getAttribute("location");
            if (attrValue != null) {
                displayName = attrValue.getValue();
            }
        }
    }
    return displayName;
}

```

- The method `resolveReference` resolves the reference of the node and returns a `SAXSource` with the parser and the parser's input source. It takes as arguments an `AuthorNode` that represents the node for which the reference needs resolving, the `systemID` of the node, the `AuthorAccess` with access methods to the Author data model and a `SAX EntityResolver` which resolves resources that are already opened in another editor or resolve resources through the XML catalog. In the implementation you need to resolve the reference relative to the `systemID`, and create a parser and an input source over the resolved reference.

```

public SAXSource resolveReference(
    AuthorNode node,
    String systemID,
    AuthorAccess authorAccess,
    EntityResolver entityResolver) {
    SAXSource saxSource = null;

    if (node.getType() == AuthorNode.NODE_TYPE_ELEMENT) {
        AuthorElement element = (AuthorElement) node;
        if ("ref".equals(element.getLocalName())) {
            AttrValue attrValue = element.getAttribute("location");
            if (attrValue != null) {
                String attrStringVal = attrValue.getValue();
                try {
                    URL absoluteUrl = new URL(new URL(systemID),
                        authorAccess.correctURL(attrStringVal));

                    InputSource inputSource = entityResolver.resolveEntity(null,
                        absoluteUrl.toString());
                    if (inputSource == null) {
                        inputSource = new InputSource(absoluteUrl.toString());
                    }

                    XMLReader xmlReader = authorAccess.newNonValidatingXMLReader();
                    xmlReader.setEntityResolver(entityResolver);

                    saxSource = new SAXSource(xmlReader, inputSource);
                } catch (MalformedURLException e) {
                    logger.error(e, e);
                } catch (SAXException e) {
                    logger.error(e, e);
                } catch (IOException e) {
                    logger.error(e, e);
                }
            }
        }
    }

    return saxSource;
}

```

- The method `getReferenceUniqueID` should return a unique identifier for the node reference. The unique identifier is used to avoid resolving the references recursively. The method takes as argument an `AuthorNode` that

represents the node with the reference. In the implementation the unique identifier is the value of the *location* attribute from the *ref* element.

```
public String getDisplayName(AuthorNode node) {
    String displayName = "ref-fragment";
    if (node.getType() == AuthorNode.NODE_TYPE_ELEMENT) {
        AuthorElement element = (AuthorElement) node;
        if ("ref".equals(element.getLocalName())) {
            AttrValue attrValue = element.getAttribute("location");
            if (attrValue != null) {
                displayName = attrValue.getValue();
            }
        }
    }
    return displayName;
}
```

- The method `getReferenceSystemID` should return the *systemID* of the referred content. It takes as arguments an `AuthorNode` that represents the node with the reference and the `AuthorAccess` with access methods to the Author data model. In the implementation you use the value of the *location* attribute from the *ref* element and resolve it relatively to the XML base URL of the node.

```
public String getReferenceSystemID(AuthorNode node,
                                  AuthorAccess authorAccess) {
    String systemID = null;
    if (node.getType() == AuthorNode.NODE_TYPE_ELEMENT) {
        AuthorElement element = (AuthorElement) node;
        if ("ref".equals(element.getLocalName())) {
            AttrValue attrValue = element.getAttribute("location");
            if (attrValue != null) {
                String attrStringVal = attrValue.getValue();
                try {
                    URL absoluteUrl = new URL(node.getXMLBaseURL(),
                                             authorAccess.correctURL(attrStringVal));
                    systemID = absoluteUrl.toString();
                } catch (MalformedURLException e) {
                    logger.error(e, e);
                }
            }
        }
    }
    return systemID;
}
```

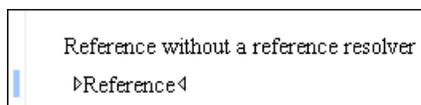


**Note:** The complete source code can be found in the Simple Documentation Framework project, included in the *Oxygen Author SDK zip* available for download [on the Oxygen XML Editor website](#).

In the listing below, the XML document contains the **ref** element:

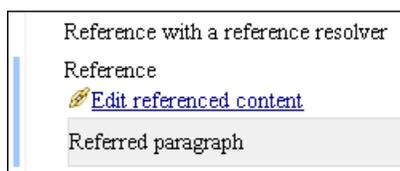
```
<ref location="referred.xml">Reference</ref>
```

When no reference resolver is specified, the reference has the following layout:



**Figure 224: Reference with no specified reference resolver**

When the above implementation is configured, the reference has the expected layout:



**Figure 225: Reference with reference resolver**

## Configuring CSS Styles Filter

You can modify the CSS styles for each `ro.sync.ecss.extensions.api.node.AuthorNode` rendered in the Author mode using an implementation of `ro.sync.ecss.extensions.api.StylesFilter`. You can implement the various callbacks of the interface either by returning the default value given by Oxygen XML Editor or by contributing to the value. The received styles `ro.sync.ecss.css.Styles` can be processed and values can be overwritten with your own. For example you can override the `KEY_BACKGROUND_COLOR` style to return your own implementation of `ro.sync.exml.view.graphics.Color` or override the `KEY_FONT` style to return your own implementation of `ro.sync.exml.view.graphics.Font`.

 **Note:** The Javadoc documentation of the Author API used in the example files is [available on the Oxygen XML Editor website](#). Also it can be downloaded as a [zip archive from the website](#).

For instance in our simple document example the filter can change the value of the `KEY_FONT` property for the `table` element:

```
package simple.documentation.framework;

import ro.sync.ecss.css.Styles;
import ro.sync.ecss.extensions.api.StylesFilter;
import ro.sync.ecss.extensions.api.node.AuthorNode;
import ro.sync.exml.view.graphics.Font;

public class SDFStylesFilter implements StylesFilter {

    public Styles filter(Styles styles, AuthorNode authorNode) {
        if (AuthorNode.NODE_TYPE_ELEMENT == authorNode.getType()
            && "table".equals(authorNode.getName())) {
            styles.setProperty(Styles.KEY_FONT, new Font(null, Font.BOLD, 12));
        }
        return styles;
    }
}
```

## Configuring a Table Column Width Provider

In the documentation framework the `table` element as well as the table columns can have specified widths. In order for these widths to be considered by Author we need to provide the means to determine them. As explained in the [Styling the Table Element](#) section which describes the CSS properties needed for defining a table, if you use the `table` element attribute `width` Oxygen XML Editor can determine the table width automatically. In this example the table has `col` elements with `width` attributes that are not recognized by default. You will need to implement a Java extension class to determine the column widths.

 **Note:** The Javadoc documentation of the Author API used in the example files is [available on the Oxygen XML Editor website](#). Also it can be downloaded as a [zip archive from the website](#).

1. Create the class `simple.documentation.framework.TableColumnWidthProvider`. This class must implement the `ro.sync.ecss.extensions.api.AuthorTableColumnWidthProvider` interface.

```
import ro.sync.ecss.extensions.api.AuthorAccess;
import ro.sync.ecss.extensions.api.AuthorOperationException;
import ro.sync.ecss.extensions.api.AuthorTableColumnWidthProvider;
import ro.sync.ecss.extensions.api.WidthRepresentation;
import ro.sync.ecss.extensions.api.node.AuthorElement;

public class TableColumnWidthProvider
    implements AuthorTableColumnWidthProvider {
```

2. Method `init` is taking as argument an `ro.sync.ecss.extensions.api.node.AuthorElement` that represents the XML table element. In our case the column widths are specified in `col` elements from the `table` element. In such cases you must collect the span information by analyzing the `table` element.

```
public void init(AuthorElement tableElement) {
    this.tableElement = tableElement;
    AuthorElement[] colChildren = tableElement.getElementsByLocalName("customcol");
    if (colChildren != null && colChildren.length > 0) {
        for (int i = 0; i < colChildren.length; i++) {
            AuthorElement colChild = colChildren[i];
            if (i == 0) {
```



```

        "width",
        new AttrValue(newWidth),
        tableElement);
    } else {
        throw new AuthorOperationException("Cannot find the element representing the table.");
    }
}
}
}

public void commitColumnWidthModifications(AuthorDocumentController authorDocumentController,
WidthRepresentation[] colWidths, String tableCellsTagName) throws AuthorOperationException {
    if ("td".equals(tableCellsTagName)) {
        if (colWidths != null && tableElement != null) {
            if (colsStartOffset >= 0 && colsEndOffset >= 0 && colsStartOffset < colsEndOffset) {
                authorDocumentController.delete(colsStartOffset,
                    colsEndOffset);
            }
            String xmlFragment = createXMLFragment(colWidths);
            int offset = -1;
            AuthorElement[] header = tableElement.getElementsByLocalName("header");
            if (header != null && header.length > 0) {
                // Insert the cols elements before the 'header' element
                offset = header[0].getStartOffset();
            }
            if (offset == -1) {
                throw new AuthorOperationException("No valid offset to insert the columns width specification.");
            }
            authorDocumentController.insertXMLFragment(xmlFragment, offset);
        }
    }
}

private String createXMLFragment(WidthRepresentation[] widthRepresentations) {
    StringBuffer fragment = new StringBuffer();
    String ns = tableElement.getNamespace();
    for (int i = 0; i < widthRepresentations.length; i++) {
        WidthRepresentation width = widthRepresentations[i];
        fragment.append("<customcol");
        String strRepresentation = width.getWidthRepresentation();
        if (strRepresentation != null) {
            fragment.append(" width=\"" + width.getWidthRepresentation() + "\"");
        }
        if (ns != null && ns.length() > 0) {
            fragment.append(" xmlns=\"" + ns + "\"");
        }
        fragment.append(">");
    }
    return fragment.toString();
}
}
}
}

```

7. The following three methods are used to determine what type of column width specifications the table column width provider support. In our case all types of specifications are allowed:

```

public boolean isAcceptingFixedColumnWidths(String tableCellsTagName) {
    return true;
}

public boolean isAcceptingPercentageColumnWidths(String tableCellsTagName) {
    return true;
}

public boolean isAcceptingProportionalColumnWidths(String tableCellsTagName) {
    return true;
}
}
}
}

```



**Note:** The complete source code can be found in the Simple Documentation Framework project, included in the [Oxygen Author SDK zip](#) available for download [on the Oxygen XML Editor website](#).

In the listing below, the XML document contains the table element:

```

<table width="300">
  <customcol width="50.0px"/>
  <customcol width="1"/>
  <customcol width="2"/>
  <customcol width="20%"/>
  <header>
    <td>C1</td>
    <td>C2</td>
    <td>C3</td>
  </header>
</table>

```

```

        <td>C4</td>
    </header>
    <tr>
        <td>cs=1, rs=1</td>
        <td>cs=1, rs=1</td>
        <td row_span="2">cs=1, rs=2</td>
        <td row_span="3">cs=1, rs=3</td>
    </tr>
    <tr>
        <td>cs=1, rs=1</td>
        <td>cs=1, rs=1</td>
    </tr>
    <tr>
        <td colspan="3">cs=3, rs=1</td>
    </tr>
</table>

```

When no table column width provider is specified, the table has the following layout:

C1	C2	C3	C4
cs=1, rs=1	cs=1, rs=1	cs=1, rs=2	cs=1, rs=3
cs=1, rs=1	cs=1, rs=1		
cs=3, rs=1			

**Figure 226: Table layout when no column width provider is specified**

When the above implementation is configured, the table has the correct layout:

C1	C2	C3	C4
cs=1, rs=1	cs=1, rs=1	cs=1, rs=2	cs=1, rs=3
cs=1, rs=1	cs=1, rs=1		
cs=3, rs=1			

**Figure 227: Columns with custom widths**

### Configuring a Table Cell Span Provider

In the documentation framework the `table` element can have cells that span over multiple columns and rows. As explained in the *Styling the Table Element* section which describes the CSS properties needed for defining a table, you need to indicate Oxygen XML Editor a method to determine the cell spanning. If you use the cell element attributes **rowspan** and **colspan** or **rows** and **cols**, Oxygen XML Editor can determine the cell spanning automatically. In our example the `td` element uses the attributes **row\_span** and **column\_span** that are not recognized by default. You will need to implement a Java extension class for defining the cell spanning.

 **Note:** The Javadoc documentation of the Author API used in the example files is [available on the Oxygen XML Editor website](#). Also it can be downloaded as a [zip archive from the website](#).

1. Create the class `simple.documentation.framework.TableCellSpanProvider`. This class must implement the `ro.sync.ecss.extensions.api.AuthorTableCellSpanProvider` interface.

```
import ro.sync.ecss.extensions.api.AuthorTableCellSpanProvider;
import ro.sync.ecss.extensions.api.node.AttrValue;
import ro.sync.ecss.extensions.api.node.AuthorElement;

public class TableCellSpanProvider
    implements AuthorTableCellSpanProvider {
```

2. The `init` method is taking as argument the `ro.sync.ecss.extensions.api.node.AuthorElement` that represents the XML `table` element. In our case the cell span is specified for each of the cells so you leave this method empty. However there are cases like the table CALS model when the cell spanning is specified in the `table` element. In such cases you must collect the span information by analyzing the `table` element.

```
public void init(AuthorElement table) {
}
```

3. The `getColSpan` method is taking as argument the table cell. The table layout engine will ask this `AuthorTableSpanSupport` implementation what is the column span and the row span for each XML element from the table that was marked as cell in the CSS using the property `display:table-cell`. The implementation is simple and just parses the value of `column_span` attribute. The method must return `null` for all the cells that do not change the span specification.

```
public Integer getColSpan(AuthorElement cell) {
    Integer colSpan = null;

    AttrValue attrValue = cell.getAttribute("column_span");
    if(attrValue != null) {
        // The attribute was found.
        String cs = attrValue.getValue();
        if(cs != null) {
            try {
                colSpan = new Integer(cs);
            } catch (NumberFormatException ex) {
                // The attribute value was not a number.
            }
        }
    }
    return colSpan;
}
```

4. The row span is determined in a similar manner:

```
public Integer getRowSpan(AuthorElement cell) {
    Integer rowSpan = null;

    AttrValue attrValue = cell.getAttribute("row_span");
    if(attrValue != null) {
        // The attribute was found.
        String rs = attrValue.getValue();
        if(rs != null) {
            try {
                rowSpan = new Integer(rs);
            } catch (NumberFormatException ex) {
                // The attribute value was not a number.
            }
        }
    }
    return rowSpan;
}
```

5. The method `hasColumnSpecifications` always returns `true` considering column specifications always available.

```
public boolean hasColumnSpecifications(AuthorElement tableElement) {
    return true;
}
```



**Note:** The complete source code can be found in the Simple Documentation Framework project, included in the [Oxygen Author SDK zip](#) available for download [on the Oxygen XML Editor website](#).

6. In the listing below, the XML document contains the table element:

```
<table>
  <header>
    <td>C1</td>
    <td>C2</td>
    <td>C3</td>
    <td>C4</td>
  </header>
  <tr>
    <td>cs=1, rs=1</td>
    <td column_span="2" row_span="2">cs=2, rs=2</td>
    <td row_span="3">cs=1, rs=3</td>
  </tr>
  <tr>
    <td>cs=1, rs=1</td>
  </tr>
  <tr>
    <td column_span="3">cs=3, rs=1</td>
  </tr>
</table>
```

When no table cell span provider is specified, the table has the following layout:

The screenshot shows a window titled "#document article section para" with a text area containing the following text:

Table showing different values for the column and row span when no span provider is specified.

C1	C2	C3	C4
cs=1, rs=1	cs=2, rs=2	cs=1, rs=3	
cs=1, rs=1			
cs=3, rs=1			

At the bottom of the window, there are tabs for "Text", "Grid", and "Author".

**Figure 228: Table layout when no cell span provider is specified**

When the above implementation is configured, the table has the correct layout:

#document article section para

Table showing different values for the column and row span.

C1	C2	C3	C4
cs=1, rs=1	cs=2, rs=2		cs=1, rs=3
cs=1, rs=1			
cs=3, rs=1			

Text Grid Author

**Figure 229: Cells spanning multiple rows and columns.**

### Configuring an Unique Attributes Recognizer

The `ro.sync.ecss.extensions.api.UniqueAttributesRecognizer` interface can be implemented if you want to provide for your framework the following features:

**Note:** The Javadoc documentation of the Author API used in the example files is [available on the Oxygen XML Editor website](#). Also it can be downloaded as a [zip archive from the website](#).

- **Automatic ID generation** - You can automatically generate unique IDs for newly inserted elements. Implementations are already available for the DITA and Docbook frameworks. The following methods can be implemented to accomplish this: `assignUniqueIDs(int startOffset, int endOffset)`, `isAutoIDGenerationActive()`
- **Avoiding copying unique attributes when "Split" is called inside an element** - You can split the current block element by pressing the "Enter" key and then choosing "Split". This is a very useful way to create new paragraphs, for example. All attributes are by default copied on the new element but if those attributes are IDs you sometimes want to avoid creating validation errors in the editor. Implementing the following method, you can decide whether an attribute should be copied or not during the split: `boolean copyAttributeOnSplit(String attrQName, AuthorElement element)`

**Tip:**

The `ro.sync.ecss.extensions.commons.id.DefaultUniqueAttributesRecognizer` class is an implementation of the interface which can be extended by your customization to provide easy assignment of IDs in your framework. You can also check out the DITA and Docbook implementations of `ro.sync.ecss.extensions.api.UniqueAttributesRecognizer` to see how they were implemented and connected to the extensions bundle.

### Configuring an XML Node Renderer Customizer

You can use this API extension to customize the way an XML node is rendered in the **Author Outline** view, **Author** breadcrumb navigation bar, **Text** mode **Outline** view, content completion assistant window or **DITA Maps Manager** view.

**Note:** Oxygen XML Editor uses XMLNodeRendererCustomizer implementations for the following frameworks: DITA, DITAMap, Docbook 4, Docbook 5, TEI P4, TEI P5, XHTML, XSLT, and XML Schema.

 **Note:** The Javadoc documentation of the Author API used in the example files is [available on the Oxygen XML Editor website](#). Also it can be downloaded as a [zip archive from the website](#).

There are two methods to provide an implementation of

`ro.sync.ecxml.workspace.api.node.customizer.XMLNodeRendererCustomizer`:

- as a part of a bundle - returning it from the `createXMLNodeCustomizer()` method of the *ExtensionsBundle* associated with your document type in the **Document type** dialog, **Extensions** tab, **Extensions bundle** field.
- as an individual extension - associated with your document type in the **Document type** dialog, **Extensions** tab, **Individual extensions** section, **XML node renderer customizer** field.

### Styling the `table` Element.

There are standard CSS properties used to indicate what elements are tables, table rows and table cells. What CSS is missing is the possibility to indicate the cell spanning. Oxygen XML Editor Author offers support for adding an extension to solve this problem. This will be presented in the next chapters.

The table in this example is a simple one. The header must be formatted in a different way than the ordinary rows, so it will have a background color.

```
table{
  display:table;
  border:1px solid navy;
  margin:1em;
  max-width:1000px;
  min-width:150px;
}

table[width]{
  width:attr(width, length);
}

tr, header{
  display:table-row;
}

header{
  background-color: silver;
  color:inherit
}

td{
  display:table-cell;
  border:1px solid navy;
  padding:1em;
}
```

Because in the schema the `td` tag has the attributes **row\_span** and **column\_span** that are not automatically recognized by Oxygen XML Editor Author, a Java extension will be implemented which will provide information about the cell spanning. See the section [Configuring a Table Cell Span Provider](#).

Because the column widths are specified by the attributes **width** of the elements `customcol` that are not automatically recognized by Oxygen XML Editor Author, it is necessary to implement a Java extension which will provide information about the column widths. See the section [Configuring a Table Column Width Provider](#).

### Sample project reference

 **Note:** The complete source code can be found in the Simple Documentation Framework project, included in the *Oxygen Author SDK zip* available for download [on the Oxygen XML Editor website](#).

 **Note:** The complete source code of the `ro.sync.ecss.extensions.commons.DefaultElementLocatorProvider`, `ro.sync.ecss.extensions.commons.IDElementLocator` or `ro.sync.ecss.extensions.commons.XPointerElementLocator` can be found in the Oxygen Default Frameworks project, included in the *Oxygen Author SDK zip* available for download [on the Oxygen XML Editor website](#).

 **Note:** The Javadoc documentation of the Author API used in the example files is [available on the Oxygen XML Editor website](#). Also it can be downloaded as a [zip archive from the website](#).

## Customizing the Default CSS of a Document Type

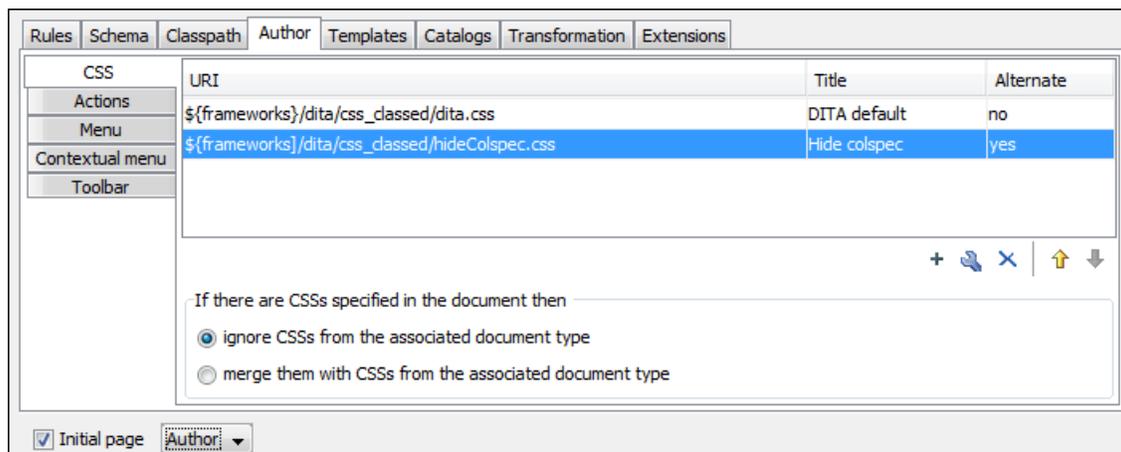
The easiest way of customizing the default CSS stylesheet of a document type is to create a new CSS stylesheet in the same folder as the customized one, import the customized CSS stylesheet and set the new stylesheet as the default CSS of the document type. For example let us customize the default CSS for DITA documents by changing the background color of the *task* and *topic* elements to red.

1. First you create a new CSS stylesheet called `my_dita.css` in the folder `${frameworks}/dita/css_classed` where the default stylesheet called `dita.css` is located. `${frameworks}` is the subfolder `frameworks` of the Oxygen XML Editor Editor. The new stylesheet `my_dita.css` contains:

```
@import "dita.css";

task, topic{
    background-color:red;
}
```

2. To set the new stylesheet as the default CSS stylesheet for DITA documents first open the Document Type Association preferences panel from menu **Options > Preferences > Document Type Association**. Select the DITA document type and start editing it by pressing the Edit button. In the Author tab of the document type edit dialog change the URI of the default CSS stylesheet from `${frameworks}/dita/css_classed/dita.css` to `${frameworks}/dita/css_classed/my_dita.css`.



**Figure 230: Set the location of the default CSS stylesheet**

3. Press OK in all the dialogs to validate the changes. Now you can start editing DITA documents based on the new CSS stylesheet. You can edit the new CSS stylesheet itself at any time and see the effects on rendering DITA XML documents in the Author mode by running the *Refresh* action available on the Author toolbar and on the DITA menu.

## Document Type Sharing

Oxygen has support for allowing you to share the customizations for a specific XML type by creating your own *Document Type* in the **Document Type Association** preferences page.

A document type can be shared between authors in two ways:

- Save it externally in a separate framework folder in the `OXYGEN_INSTALL_DIR/frameworks` directory.



**Important:** In order for this approach to work you will need to have the application installed to a folder with full write access.

Please follow the following steps:

1. Create a new directory in the `OXYGEN_INSTALL_DIR/frameworks` for your new framework. This directory will contain resources for your framework (CSS files, new file templates, schemas used for validation, catalogs). See the **Docbook** framework structure from the `OXYGEN_INSTALL_DIR/frameworks/docbook` as an example.

2. Create your new custom document type and save it external in the newly created framework directory (with a name like `custom.framework`).
  3. Configure the custom document type according to your needs, take special care to make all file references relative to the `OXYGEN_INSTALL_DIR/frameworks` directory by using the `frameworks` editor variable. The [Author Developer Guide](#) contains all details necessary for creating and configuring a new document type.
  4. If everything went fine then you should have a new configuration file saved in: `OXYGEN_INSTALL_DIR/frameworks/your_framework_dir/custom.framework` after the Preferences are saved.
  5. You can then share the new framework directory with other users (have them copy it to their `OXYGEN_INSTALL_DIR/frameworks` directory) and the new document type will be available in the list of Document Types when the application is started.
- Save the document type at project level in the **Document Type Association** preferences page.

Please see the following steps:

1. Create a new directory with full write access somewhere on your local drive which will contain the Oxygen project file and associated document type resources (CSS files, new file templates, schemas used for validation, catalogs).
2. From the Oxygen [Project view](#) create a new project and save it in the newly created directory.
3. In the **Document Type Association** preferences page switch the radio button at the bottom of the page to **Project Options**.
4. Create your new custom document type using the default **internal** storage for it. It will actually be saved in the previously chosen Oxygen XML Editor project `.xpr` file.
5. Configure the custom document type according to your needs, take special care to make all file references relative to the project directory by using the `pd` editor variable. The [Author Developer Guide](#) contains all details necessary for creating and configuring a new document type.
6. You can then share the new project directory with other users and if they open in the [Project view](#) the customized project then the new document type will be available in the list of Document Types.

## Adding Custom Persistent Highlights

The Author API allows you to create or remove custom persistent highlights, set their properties, and customize their appearance. They get serialized in the XML document as processing instructions, having the following format:

```
<?oxy_custom_start prop1="val1"...?> xml content <?oxy_custom_end?>
```

The functionality is available in the `AuthorPersistentHighlighter` class, accessible through `AuthorEditorAccess#getPersistentHighlighter()` method. For more information, see JavaDoc online at: <http://www.oxygenxml.com/InstData/Editor/SDK/javadoc/index.html>

## CSS Support in Author

Author editing mode supports most CSS 2.1 selectors, a lot of CSS 2.1 properties and a few CSS 3 selectors. Also some custom functions and properties that extend the W3C CSS specification and are useful for URL and string manipulation are available to the developer who creates an Author editing framework.

### Supported CSS Selectors

Expression	Name	Description / Example
*	Universal selector	Matches any element
E	Type selector	Matches any E element (i. e. an element with the local name E)

Expression	Name	Description / Example
<code>E F</code>	Descendant selector	Matches any <code>F</code> element that is a descendant of an <code>E</code> element.
<code>E &gt; F</code>	Child selectors	Matches any <code>F</code> element that is a child of an element <code>E</code> .
<code>E:first-child</code>	The <code>:first-child</code> pseudo-class	Matches element <code>E</code> when <code>E</code> is the first child of its parent.
<code>E:lang(c)</code>	The <code>:lang()</code> pseudo-class	Matches element of type <code>E</code> if it is in (human) language <code>c</code> (the document language specifies how language is determined).
<code>E + F</code>	Adjacent selector	Matches any <code>F</code> element immediately preceded by a sibling element <code>E</code> .
<code>E[foo]</code>	Attribute selector	Matches any <code>E</code> element with the <code>"foo"</code> attribute set (whatever the value).
<code>E[foo="warning"]</code>	Attribute selector	Matches any <code>E</code> element whose <code>"foo"</code> attribute value is exactly equal to <code>"warning"</code> .
<code>E[foo~="warning"]</code>	Attribute selector	Matches any <code>E</code> element whose <code>"foo"</code> attribute value is a list of space-separated values, one of which is exactly equal to <code>"warning"</code> .
<code>E[lang ="en"]</code>	Attribute selector	Matches any <code>E</code> element whose <code>"lang"</code> attribute has a hyphen-separated list of values beginning (from the left) with <code>"en"</code> .
<code>E:before</code> and <code>E:after</code>	Pseudo elements	The <code>'before'</code> and <code>'after'</code> pseudo-elements can be used to insert generated content before or after an element's content.
<code>E[att^="val"]</code>	CSS 3 attribute selector	An <code>E</code> element whose <code>att</code> attribute value begins exactly with the string <code>val</code> .
<code>E[att\$="val"]</code>	CSS 3 attribute selector	An <code>E</code> element whose <code>att</code> attribute value ends exactly with the string <code>val</code> .
<code>E[att*="val"]</code>	CSS 3 attribute selector	An <code>E</code> element whose <code>att</code> attribute value contains the substring <code>val</code> .
<code>E:root</code>	CSS 3 pseudo-class	Matches the root element of the document. In HTML, the root element is always the HTML element.

Expression	Name	Description / Example
E:empty	CSS 3 pseudo element	An E element which has no text or child elements.

## CSS 2.1 Features

This section enumerates the CSS 2.1 features that Oxygen XML Editor supports.

### CSS 2.1 Properties

Oxygen XML Editor validates all CSS 2.1 properties, but does not render in Author mode *aural* and *paged* categories properties, as well as some of the values of the *visual* category, listed below under the **Ignored Values** column.

Name	Rendered Values	Ignored Values
'background-attachment'		ALL
'background-color'	<color>   inherit	transparent
'background-image'	<uri>   none   inherit	
'background-position'	top   right   bottom   left   center	<percentage>   <length>
'background-repeat'	repeat   repeat-x   repeat-y   no-repeat   inherit	
'background'		ALL
'border-collapse'		ALL
'border-color'	<color>   inherit	transparent
'border-spacing'		ALL
'border-style'	<border-style>   inherit	
'border-top' 'border-right' 'border-bottom' 'border-left'	[ <border-width>    <border-style>    'border-top-color' ]   inherit	
'border-top-color' 'border-right-color' 'border-bottom-color' 'border-left-color'	<color>   inherit	transparent
'border-top-style' 'border-right-style' 'border-bottom-style' 'border-left-style'	<border-style>   inherit	
'border-top-width' 'border-right-width' 'border-bottom-width' 'border-left-width'	<border-width>   inherit	
'border-width'	<border-width>   inherit	
'border'	[ <border-width>    <border-style>	

Name	Rendered Values	Ignored Values
	'border-top-color' ]   inherit	
'bottom'		ALL
'caption-side'		ALL
'clear'		ALL
'clip'		ALL
'color'	<color>   inherit	
'content'	normal   none   [ <string>   <URI>   <counter>   attr( <identifier> )   open-quote   close-quote ]+   inherit	no-open-quote   no-close-quote
'counter-increment'	[ <identifier> <integer> ? ]+   none   inherit	
'counter-reset'	[ <identifier> <integer> ? ]+   none   inherit	
'cursor'		ALL
'direction'	ltr	rtl   inherit
'display'	inline   block   list-item   table   table-row-group   table-header-group   table-footer-group   table-row   table-column-group   table-column   table-cell   table-caption   none   inherit	run-in   inline-block   inline-table - considered block
'empty-cells'	show   hide   inherit	
'float'		ALL
'font-family'	[[ <family-name>   <generic-family> ] [, <family-name>   <generic-family> ]* ]   inherit	
'font-size'	<absolute-size>   <relative-size>   <length>   <percentage>   inherit	
'font-style'	normal   italic   oblique   inherit	
'font-variant'		ALL
'font-weight'	normal   bold   bolder   lighter   100   200   300   400   500   600   700   800   900   inherit	

Name	Rendered Values	Ignored Values
'font'	[ [ 'font-style'    'font-weight' ]? 'font-size' [ / 'line-height' ]? 'font-family' ]   inherit	'font-variant' 'line-height' caption   icon   menu   message-box   small-caption   status-bar
'height'		ALL
'left'		ALL
'letter-spacing'		ALL
'line-height'	normal   <number>   <length>   <percentage>   inherit	
'list-style-image'		ALL
'list-style-position'		ALL
'list-style-type'	disc   circle   square   decimal   lower-roman   upper-roman   lower-latin   upper-latin   lower-alpha   upper-alpha   -oxy-lower-cyrillic-ru   -oxy-lower-cyrillic-uk   -oxy-upper-cyrillic-ru   -oxy-upper-cyrillic-uk   box   diamond   check   hyphen   none   inherit	lower-greek   armenian   georgian
'list-style'	[ 'list-style-type' ]   inherit	'list-style-position'    'list-style-image'
'margin-right' 'margin-left'	<margin-width>   inherit   auto	
'margin-top' 'margin-bottom'	<margin-width>   inherit	
'margin'	<margin-width>   inherit   auto	
'max-height'		ALL
'max-width'	<length>   <percentage>   none   inherit - supported for inline, block-level, and replaced elements, e.g. images, tables, table cells.	
'min-height'		ALL
'min-width'	<length>   <percentage>   inherit - supported for inline, block-level, and replaced elements, e.g. images, tables, table cells.	
'outline-color'		ALL
'outline-style'		ALL

Name	Rendered Values	Ignored Values
'outline-width'		ALL
'outline'		ALL
'overflow'		ALL
'padding-top' 'padding-right' 'padding-bottom' 'padding-left'	<padding-width>   inherit	
'padding'	<padding-width>   inherit	
'position'		ALL
'quotes'		ALL
'right'		ALL
'table-layout'	auto	fixed   inherit
'text-align'	left   right   center   inherit	justify
'text-decoration'	none   [ underline    overline    line-through ]   inherit	blink
'text-indent'		ALL
'text-transform'	ALL	
'top'		ALL
'unicode-bidi'		ALL
'vertical-align'	baseline   sub   super   top   text-top   middle   bottom   text-bottom   inherit	<percentage>   <length>
'visibility'	visible   hidden   inherit   -oxy-collapse-text	collapse
'white-space'	normal   pre   nowrap   pre-wrap   pre-line	
'width'	<length>   <percentage>   auto   inherit - supported for inline, block-level, and replaced elements, e.g. images, tables, table cells.	
'word-spacing'		ALL
'z-index'		ALL

## CSS 3 Features

This section enumerates the CSS 3 features that Oxygen XML Editor supports.

## CSS 3 Selectors

### Namespace Selectors

In the CSS 2.1 standard the element selectors are ignoring the namespaces of the elements they are matching. Only the local name of the elements are considered in the selector matching process.

Oxygen XML Editor Author uses a different approach similar to the CSS Level 3 specification. If the element name from the CSS selector is not preceded by a namespace prefix it is considered to match an element with the same local name as the selector value and ANY namespace, otherwise the element must match both the local name and the namespace.

In CSS up to version 2.1 the name tokens from selectors are matching all elements from ANY namespace that have the same local name. Example:

```
<x:b xmlns:x="ns_x"/>
<y:b xmlns:y="ns_y"/>
```

Are both matched by the rule:

```
b {font-weight:bold}
```

Starting with CSS Level 3 you can create selectors that are namespace aware.

#### Defining both prefixed namespaces and the default namespace

Given the namespace declarations:

```
@namespace sync "http://sync.example.org";
@namespace "http://example.com/foo";
```

In a context where the default namespace applies:

<b>sync A</b>	represents the name A in the <code>http://sync.example.org</code> namespace.
<b> B</b>	represents the name B that belongs to NO NAMESPACE.
<b>* C</b>	represents the name C in ANY namespace, including NO NAMESPACE.
<b>D</b>	represents the name D in the <code>http://example.com/foo</code> namespace.

#### Defining only prefixed namespaces

Given the namespace declaration:

```
@namespace sync "http://sync.example.org";
```

Then:

<b>sync A</b>	represents the name A in the <code>http://sync.example.org</code> namespace.
<b> B</b>	represents the name B that belongs to NO NAMESPACE.
<b>* C</b>	represents the name C in ANY namespace, including NO NAMESPACE.
<b>D</b>	represents the name D in ANY namespace, including NO NAMESPACE.

## Transparent Colors

CSS3 supports RGBA colors. The RGBA declaration allows you to set opacity (via the Alpha channel) as part of the color value. A value of 0 corresponds to a completely transparent color, while a value of 1 corresponds to a completely opaque color. To specify a value, you can use either a *real* number between 0 and 1, or a percent.

**RGBA color**

```

personnel:before {
  display:block;
  padding: 1em;
  font-size: 1.8em;
  content: "Employees";
  font-weight: bold;
  color:#EEEEEE;
  background-color: rgba(50, 50, 50, 0.6);
}

```

**The attr() Function: Properties Values Collected from the Edited Document.**

In CSS Level 2.1 you may collect attribute values and use them as content *only* for the pseudo-elements. For instance the :before pseudo-element can be used to insert some content before an element. This is valid in CSS 2.1:

```

title:before{
  content: "Title id=(" attr(id) ")";
}

```

If the title element from the XML document is:

```
<title id="title12">My title.</title>
```

Then the title will be displayed as:

```
Title id=(title12) My title.
```

In Oxygen XML Editor Author the use of attr() function is available not only for the content property, but also for any other property. This is similar to the CSS Level 3 working draft:

<http://www.w3.org/TR/2006/WD-css3-values-20060919/#functional>. The arguments of the function are:

```
attr( attribute_name , attribute_type , default_value )
```

**attribute\_name** The attribute name. This argument is required.

**attribute\_type** The attribute type. This argument is optional. If it is missing, argument's type is considered string. This argument indicates what is the meaning of the attribute value and helps to perform conversions of this value. Oxygen XML Editor Author accepts one of the following types:

- |                   |   |
|-------------------|---|
| <b>color</b>      | The value represents a color. The attribute may specify a color in different formats. Oxygen XML Editor Author supports colors specified either by name: red, blue, green, etc. or as an RGB hexadecimal value #FFEEEE.                                   |
| <b>url</b>        | The value is an URL pointing to a media object. Oxygen XML Editor Author supports only images. The attribute value can be a complete URL, or a relative one to the XML document. Please note that this URL is also resolved through the catalog resolver. |
| <b>integer</b>    | The value must be interpreted as an integer.  |
| <b>number</b>     | The value must be interpreted as a float number.  |
| <b>length</b>     | The value must be interpreted as an integer.  |
| <b>percentage</b> | The value must be interpreted relative to another value (length, size) expressed in percents.   |
| <b>em</b>         | The value must be interpreted as a size. 1 em is equal to the <i>font-size</i> of the relevant font.  |
| <b>ex</b>         | The value must be interpreted as a size. 1 ex is equal to the <i>height</i> of the x character of the relevant font.  |

<b>px</b>	The value must be interpreted as a size expressed in pixels relative to the viewing device.
<b>mm</b>	The value must be interpreted as a size expressed in millimeters.
<b>cm</b>	The value must be interpreted as a size expressed in centimeters.
<b>in</b>	The value must be interpreted as a size expressed in inches. 1 inch is equal to 2.54 centimeters.
<b>pt</b>	The value must be interpreted as a size expressed in points. The points used by CSS2 are equal to 1/72th of an inch.
<b>pc</b>	The value must be interpreted as a size expressed in picas. 1 pica is equal to 12 points.

**default\_value** This argument specifies a value that is used by default if the attribute value is missing. This argument is optional.

### Usage samples for the attr() function

Consider the following XML instance:

```
<sample>
  <para bg_color="#AAAAFF">Blue paragraph.</para>
  <para bg_color="red">Red paragraph.</para>
  <para bg_color="red" font_size="2">Red paragraph with large font.</para>
  <para bg_color="#00AA00" font_size="0.8" space="4">
    Green paragraph with small font and margin.</para>
</sample>
```

The `para` elements have `bg_color` attributes with RGB color values like `#AAAAFF`. You can use the `attr()` function to change the elements appearance in the editor based on the value of this attribute:

```
background-color:attr(bg_color, color);
```

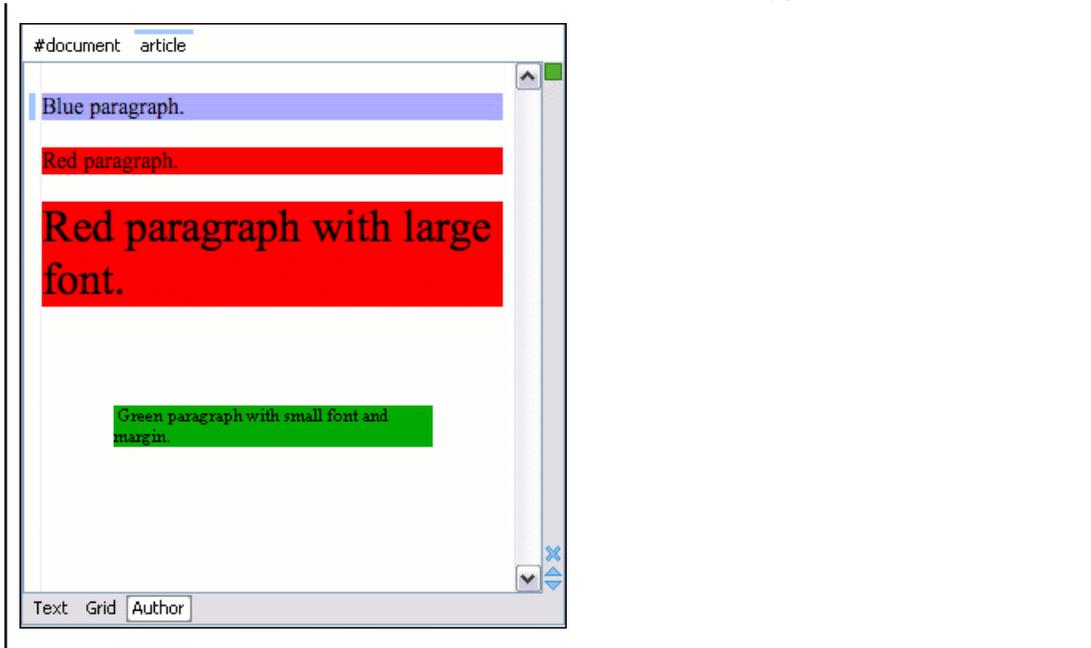
The attribute `font_size` represents the font size in *em* units. You can use this value to change the style of the element:

```
font-size:attr(font_size, em);
```

The complete CSS rule is:

```
para{
  display:block;
  background-color:attr(bg_color, color);
  font-size:attr(font_size, em);
  margin:attr(space, em);
}
```

The document is rendered as:



### The @font-face at-rule

Oxygen XML Editor allows you to use custom fonts in the Author mode by specifying them in the CSS using the @font-face media type. Only the src and font-family CSS properties can be used for this media type.

```
@font-face{
  font-family:"Baroque Script";
  /*The location of the loaded TTF font must be relative to the CSS*/
  src:url("BaroqueScript.ttf");
}
```

### Styling Elements from other Namespace

In the CSS Level 1, 2, and 2.1 there is no way to specify if an element X from the namespace Y should be presented differently from the element X from the namespace Z. In the upcoming CSS Level 3, it is possible to differentiate elements by their namespaces. Oxygen XML Editor Author supports this CSS Level 3 functionality. For more information see the [Namespace Selectors](#) section.

To match the def element its namespace will be declared, bind it to the abs prefix, and then write a CSS rule:

```
@namespace abs "http://www.oxygenxml.com/sample/documentation/abstracts";

abs|def{
  font-family:monospace;
  font-size:smaller;
}
abs|def:before{
  content:"Definition:";
  color:gray;
}
```

### Additional Custom Selectors

Oxygen XML Editor Author provides support for selecting additional types of nodes. These custom selectors apply to: *document*, *doctype sections*, *processing-instructions*, *comments*, *CDATA sections*, *reference sections*, and *entities*.

 **Note:** The custom selectors are presented in the default CSS for Author mode and all of their properties are marked with an *!important* flag. For this reason, you have to set the *!important* flag on each property of the custom selectors from your CSS to be applicable.

In order for the custom selectors to work in your CSSs, declare the Author extensions namespace at the beginning of the stylesheet documents:

```
@namespace oxy url('http://www.oxygenxml.com/extensions/author');
```

- The *oxy/document* selector matches the entire document:

```
oxy|document {
  display:block !important;
}
```

- The following example changes the rendering of doctype sections:

```
oxy|doctype {
  display:block !important;
  color:blue !important;
  background-color:transparent !important;
}
```

- To match the processing instructions, you can use the *oxy/processing-instruction* selector:

```
oxy|processing-instruction {
  display:block !important;
  color:purple !important;
  background-color:transparent !important;
}
```

- The XML comments display in Author mode can be changed using the *oxy/comment* selector:

```
oxy|comment {
  display:block !important;
  color:green !important;
  background-color:transparent !important;
}
```

- The *oxy/cdata* selector matches CDATA sections:

```
oxy|cdata{
  display:block !important;
  color:gray !important;
  background-color:transparent !important;
}
```

- The *oxy/entity* selector matches the entities content:

```
oxy|entity {
  display:morph !important;
  editable:false !important;
  color:orange !important;
  background-color:transparent !important;
}
```

- The *references to entities*, *XInclude*, and *DITA conrefs* are expanded by default in Author mode and *the referred content is displayed*. The referred resources are loaded and displayed inside the element or entity that refers them.

- You can use the *reference* property to customize the way these references are rendered in Author mode:

```
oxy|reference {
  border:1px solid gray !important;
}
```

In Author mode, content is highlighted when parts of text contain:

- *comments*;
- changes and *Track Changes* was active when the content was modified.

If this content is referred, the Author mode does not display the highlighted areas in the new context. If you want to mark the existence of this comments and changes you can use the *oxy/reference[comments]*, *oxy/reference[changeTracking]*, and *oxy/reference[changeTracking][comments]* selectors.

-  **Note:** Two artificial attributes (*comments* and *changeTracking*) are set on the reference node, containing information about the number of comments and track changes in the content.

- The following example represents the customization of the reference fragments that contain comments:

```
oxy|reference[comments]:before {
  content: "Comments: " attr(comments) !important;
}
```

- To match reference fragments based on the fact that they contain change tracking inside, use the `oxy|reference[changeTracking]` selector.

```
oxy|reference[changeTracking]:before {
  content: "Change tracking: " attr(changeTracking) !important;
}
```

- Here is an example of how you can set a custom color to the reference containing both track changes and comments:

```
oxy|reference[changeTracking][comments]:before {
  content: "Change tracking: " attr(changeTracking) " and comments: " attr(comments) !important;
}
```

A sample document rendered using these rules:



```

root
<!DOCTYPE SAMPLE [
<!ENTITY ent "Some entity">
<!ENTITY % xinclude SYSTEM "http://www.docbook.org/xml/4.4/xinclude.mod" >
%xinclude;
]>
xml-stylesheet type="text/css" href="sample.css"
Some Text
▶Some entity ◀
▶ Comment ◀
▶CDATA section ◀
🔗 sample1.xml reffered
Reffered text.
🔗 sample1.xml reffered-with-comment
Comments: 2
Reffered text with comments.
🔗 sample1.xml reffered-with-track-changes
Change tracking: 2
Reffered text with changes.
🔗 sample1.xml reffered-with-comment-and-track-changes
Change tracking: 1 and comments: 1
Reffered text with comments and changes.

```

## Oxygen CSS Extensions

CSS stylesheets provide support mainly for displaying documents. When editing documents some extensions of the W3C CSS specification are useful, for example:

- property for marking foldable elements in large files

- enforcing a display mode for the XML tags regardless of the current mode selected by the author user
- construct a URL from a relative path location
- string processing functions

### Media Type `oxygen`

The style sheets can specify how a document is to be presented on different media: on the screen, on paper, speech synthesizer, etc. You can specify that some of the features of your CSS stylesheet should be taken into account only in the Oxygen XML Editor Author and ignored in the rest. This can be accomplished by using the media type `oxygen`.

For instance using the following CSS:

```
b{
  font-weight:bold;
  display:inline;
}

@media oxygen{
  b{
    text-decoration:underline;
  }
}
```

would make a text bold if the document was opened in a web browser that does not recognize `@media oxygen` and bold and underlined in Oxygen XML Editor Author.

You can use this media type to group specific Oxygen XML Editor CSS features and also to hide them when opening the documents with other viewers.

### Folding Elements: `-oxy-foldable`, `-oxy-not-foldable-child` and `-oxy-folded` properties

Oxygen XML Editor Author allows you to declare some elements to be *foldable* (collapsible). This is especially useful when working with large documents organized in logical blocks, editing a large DocBook article or book for instance. Oxygen XML Editor marks the foldable content with a small blue triangle. When you hover with your mouse pointer over this marker, a dotted line borders the collapsible content. The following contextual actions are available:

-  **Close Other Folds (Ctrl+NumPad+)** - Folds all the elements except the current element.
-  **Collapse Child Folds (Ctrl+Decimal)** - Folds the elements indented with one level inside the current element.
-  **Expand Child Folds (Ctrl+Equals)**- Unfolds all child elements of the currently selected element.
-  **Expand All (Ctrl+NumPad+\*)** - Unfolds all elements in the current document.
-  **Toggle Fold** - Toggles the state of the current fold.

To define the element whose content can be folded by the user, you must use the property: `-oxy-foldable:true;`. To define the elements that are folded by default, use the `-oxy-folded:true` property.

 **Note:** The `-oxy-folded` property works in conjunction with the `-oxy-foldable` property. Thus, the `folded` property is ignored if the `-oxy-foldable` property is not set on the same element.

When collapsing an element, it is useful to keep some of its content visible, like a short description of the collapsed region. The property `-oxy-not-foldable-child` is used to identify the child elements that are kept visible. It accepts as value an element name or a list of comma separated element names. If the element is marked as *foldable* (`-oxy-foldable:true;`) but it doesn't have the property `-oxy-not-foldable-child` or none of the specified non-foldable children exists, then the element is still foldable. In this case the element kept visible when folded will be the `before` pseudo-element.

 **Note:** Deprecated properties `foldable`, `not-foldable-child`, and `folded` are also supported.

### Folding DocBook Elements

All the elements below can have a `title` child element and are considered to be logical sections. You mark them as being *foldable* leaving the `title` element visible.

```
set,
book,
part,
reference,
chapter,
preface,
article,
sect1,
sect2,
sect3,
sect4,
section,
appendix,
figure,
example,
table {
  -oxy-foldable:true;
  -oxy-not-foldable-child: title;
}
```

### Placeholders for empty elements: `-oxy-show-placeholder` and `-oxy-placeholder-content` properties

Oxygen XML Editor Author displays the element name as pseudo-content for empty elements, if the [Show placeholders for empty elements](#) option is enabled and there is no before or after content set is CSS for this type of element.

To control the displayed pseudo-content for empty elements, you can use the `-oxy-placeholder-content` CSS property.

The `-oxy-show-placeholder` property allows you to decide whether the placeholder must be shown. The possible values are:

- `always` - Always display placeholders.
- `default` - Always display placeholders if before or after content are not set is CSS.
- `inherit` - The placeholders are displayed according to **Show placeholders for empty elements** option (if before and after content is not declared).

 **Note:** Deprecated properties `show-placeholder` and `placeholder-content` are also supported.

### Read-only elements: `-oxy-editable` property

If you want to inhibit editing a certain element content, you can set the `-oxy-editable` (deprecated property `editable` is also supported) CSS property to `false`.

### Display Elements: `-oxy-morph` value

Oxygen XML Editor Author allows you to specify that an element has a `-oxy-morph` display type (deprecated `morph` property is also supported), meaning that the element is inline if all its children are inline.

### The whitespace property: `-oxy-trim-when-ws-only` value

Oxygen XML Editor Author allows you to set the `whitespace` property to `-oxy-trim-when-ws-only`, meaning that the leading and trailing whitespaces are removed.

### The visibility property: `-oxy-collapse-text`

Oxygen XML Editor Author allows you to set the value of the `visibility` property to `-oxy-collapse-text`, meaning that the text content of that element is not rendered.

## The `list-style-type` Cyrillic values

Oxygen XML Editor Author allows you to set the value of the `list-style-type` property to `-oxy-lower-cyrillic-ru`, `-oxy-lower-cyrillic-uk`, `-oxy-upper-cyrillic-ru` or `-oxy-upper-cyrillic-uk`, meaning that you can have Russian and Ukrainian counters.

## Link Elements

Oxygen XML Editor Author allows you to declare some elements to be *links*. This is especially useful when working with many documents which refer each other. The links allow for an easy way to get from one document to another. Clicking on the link marker will open the referred resource in an editor.

To define the element which should be considered a link, you must use the property `link` on the before or after pseudo element. The value of the property indicates the location of the linked resource. Since links are usually indicated by the value of an attribute in most cases it will have a value similar to `attr(href)`

### Docbook Link Elements

All the elements below are defined to be links on the before pseudo element and their value is defined by the value of an attribute.

```
*[href]:before{
  link:attr(href);
  content: "Click " attr(href) " for opening" ;
}

ulink[url]:before{
  link:attr(url);
  content: "Click to open: " attr(url);
}

olink[targetdoc]:before{
  link: attr(targetdoc);
  content: "Click to open: " attr(targetdoc);
}
```

## Display Tag Markers

Oxygen XML Editor Author allows you to choose whether tag markers of an element should never be presented or the current display mode should be respected. This is especially useful when working with `:before` and `:after` pseudo-elements in which case the element range is already visually defined so the tag markers are redundant.

The property is named `-oxy-display-tags`, with the following possible values:

- *none* - Tags markers must not be presented regardless of the current *Display mode*.
- *default* - The tag markers will be created depending on the current *Display mode*.
- *inherit* - The value of the property is inherited from an ancestor element.

```
-oxy-display-tags
Value: none | default | inherit
Initial: default
Applies to: all nodes(comments, elements, CDATA, etc)
Inherited: false
Media: all
```

### Docbook Para elements

In this example the `para` element from Docbook is using an `:before` and `:after` element so you don't want its tag markers to be visible.

```
para:before{
  content: "{";
}

para:after{
  content: "}";
}
```









- **@attribute\_name** - specifies that the presented/edited value is the value of an attribute;
  - **#text** - specifies that the presented/edited value is the simple text value of an element.
-  **Note:** You can set the value of the `visibility` property to `-oxy-collapse-text` to render the text only in the form control that the `oxy_editor` function specifies.

You can use a number of built-in form controls through the `type` property. The following values are recognized:

- **text** - a text field with optional content completion capabilities is used to present and edit a value;
- **combo** - a combo-box is used to present and edit a value;
- **check** - a single check box or multiple check boxes are used to present and edit a value;
- **popupSelection** - a pop-up with single/multiple selection is used as form control;
- **button** - a button that invokes an author action is used as form control;
- **urlChooser** - a text field with a browse button is used as form control.
- **datePicker** - a text field with a calendar browser button is used as form control.

### The Text Field Form Control

A text field with optional content completion capabilities is used to present and edit the value of an attribute or an element. This type of form control supports the following properties:

- **type** - this property specifies the built-in form control you are using. For the Text form control, its value has to be `text`;
- **columns** - controls the width of the form control. The unit size is the width of the `w` character;
- **fontInherit** - this value specifies whether the form control inherits its font from its parent element. The values of this property can be `true`, or `false`. To make the pop-up form control inherit its font from its parent element, set the **fontInherit** property to `true`;
- **values** - specifies the values that populate the content completion list of proposals. In case these values are not specified, they are collected from the associated schema;
- **tooltips** - specifies a tooltip for the form control. The values of this property are a list of tooltips separated by commas. In case you want the tooltip to display a comma, use the `#{comma}` variable;
- **color** - specifies the foreground color of the form control. In case the value of the `color` property is `inherit`, the form control has the same color as the element in which it is inserted.

#### Text Field Form Control

```
element {
  content: "Label: "
  oxy_editor(
    type, text,
    edit, "@my_attr",
    values, "value1, value2"
    columns, 40);
}
```

The `oxy_editor` function acts as a proxy that allows you to insert any of the supported form controls. Alternatively, you can use the `oxy_textfield` dedicated function.

```
element {
  content: "Label: "
  oxy_textfield(
    edit, "@my_attr",
    values, "value1, value2"
    columns, 40);
}
```

### The Combo Box Form Control

A combo box is used to present and edit the value of an attribute or an element. This type of form control supports the following properties:

- **type** - this property specifies the built-in form control you are using. For the Combo box form control, its value has to be `combo`;

- **columns** - controls the width of the form control. The unit size is the width of the **w** character;
- **editable** - this property accepts the **true** and **false** values. The **true** value generates an editable combo-box that allows you to insert other values than the proposed ones. The **false** value generates a combo-box that only accepts the proposed values;
- **tooltips** - specifies a tooltip for the form control. The values of this property are a list of tooltips separated by commas. In case you want the tooltip to display a comma, use the `#{comma}` variable;
- **values** - specifies the values that populate the content completion list of proposals. In case these values are not specified, they are collected from the associated schema;
- **fontInherit** - this value specifies whether the form control inherits its font from its parent element. The values of this property can be **true**, or **false**. To make the pop-up form control inherit its font from its parent element, set the **fontInherit** property to **true**;
- **labels** - this property must have the same number of items as the **values** property. Each item provides a literal description of the items listed in the **values** property;
- **color** - specifies the foreground color of the form control. In case the value of the **color** property is **inherit**, the form control has the same color as the element in which it is inserted.

### Combo Box Form Control

```
comboBox:before {
  content: "A combo box that edits an attribute value. The possible values are provided from
  CSS:"
  oxy_editor(
    type, combo,
    edit, "@attribute",
    editable, true,
    values, "value1, value2, value3",
    labels, "Value no1, Value no2, Value no3");
}
```

The `oxy_editor` function acts as a proxy that allows you to insert any of the supported form controls. Alternatively, you can use the `oxy_combobox` dedicated function.

```
comboBox:before {
  content: "A combo box that edits an attribute value. The possible values are provided from
  CSS:"
  oxy_combobox(
    edit, "@attribute",
    editable, true,
    values, "value1, value2, value3",
    labels, "Value no1, Value no2, Value no3");
}
```

### The Check Box Form Control

A single check-box or multiple check-boxes are used to present and edit the value on an attribute or element. This type of form control supports the following properties:

- **type** - this property specifies the built-in form control you are using. For the Check Box form control, its value has to be **check**;
- **resultSeparator** - in case multiple check-boxes are used, the separator is used to compose the final result;
- **tooltips** - specifies a tooltip for the form control. The values of this property are a list of tooltips separated by commas. In case you want the tooltip to display a comma, use the `#{comma}` variable;
- **values** - specifies the values that are committed when the check-boxes are selected;
- **fontInherit** - this value specifies whether the form control inherits its font from its parent element. The values of this property can be **true**, or **false**. To make the pop-up form control inherit its font from its parent element, set the **fontInherit** property to **true**;
- **uncheckedValues** - specifies the values that are committed when the check-boxes are not selected;
- **labels** - specifies the label associated with each button. In case this property is not specified, the **values** property is used as label;
- **columns** - specifies the number of columns of the layout;
- **color** - specifies the foreground color of the form control. In case the value of the **color** property is **inherit**, the form control has the same color as the element in which it is inserted.

### Single Check-box Form Control

```
checkbox[attribute]:before {
  content: "A check box editor that edits a two valued attribute (On/Off).
           The values are specified in the CSS:"
oxy_editor(
  type, check,
  edit, "@attribute",
  values, "On",
  uncheckedValues, "Off",
  labels, "On/Off");
```

### Multiple Check-boxes Form Control

```
multipleCheckBox[attribute]:before {
  content: "Multiple checkboxes editor that edits an attribute value.
           Depending whether the check-box is selected a different value is committed:"
oxy_editor(
  type, check,
  edit, "@attribute",
  values, "true, yes, on",
  uncheckedValues, "false, no, off",
  resultSeparator, ",",
  labels, "Present, Working, Started");
```

The `oxy_editor` function acts as a proxy that allows you to insert any of the supported form controls. Alternatively, you can use the `oxy_checkbox` dedicated function.

```
multipleCheckBox[attribute]:before {
  content: "Multiple checkboxes editor that edits an attribute value.
           Depending whether the check-box is selected a different value is committed:"
oxy_checkbox(
  edit, "@attribute",
  values, "true, yes, on",
  uncheckedValues, "false, no, off",
  resultSeparator, ",",
  labels, "Present, Working, Started");
```

### The Pop-up Form Control

A pop-up with single or multiple selection is used as a form control. This type of form control supports the following properties:

- **type** - this property specifies the built-in form control you are using. For the Pop-up form control, its value has to be `popupSelection`;
  - **rows** - this property specifies the number of rows that the form control presents;
-  **Note:** In case the value of the **rows** property is not specified, the default value of `12` is used.
- **color** - specifies the foreground color of the form control. In case the value of the `color` property is `inherit`, the form control has the same color as the element in which it is inserted;
  - **tooltips** - specifies a tooltip for the form control. The values of this property are a list of tooltips separated by commas. In case you want the tooltip to display a comma, use the `$(comma)` variable;
  - **values** - specifies the values that are committed when the check-boxes are selected;
  - **resultSeparator** - if multiple values are allowed, the separator is used to compose the final result;

 **Note:** The value of the **resultSeparator** property cannot exceed one character.

- **selectionMode** - specifies whether the form control allows the selection of a single value or of multiple values. The predefined values of this property are **single** and **multiple**;
- **labels** - specifies the label associated with each entry used for presentation. In case this property is not specified, the **values** property is used as label;
- **columns** - controls the width of the form control. The unit size is the width of the `w` character. This property is used for the visual representation of the form control;
- **renderSort** - allows you to sort the values rendered in a pop-up form control;
- **renderSeparator** - defines a separator used when multiple values are rendered;

- **fontInherit** - this value specifies whether the form control inherits its font from its parent element. The values of this property can be **true**, or **false**. To make the pop-up form control inherit its font from its parent element, set the **fontInherit** property to **true**.



**Tip:** In the below example, the value of the **fontInherit** property is **true**, meaning that the pop-up form control inherits the font size of 30px from the **font-size** property.

### Pop-up Form Control

```
popupWithMultipleSelection:before {
  content: " This editor edits an attribute value. The possible values are      specified
  inside the CSS: "
  oxy_editor(
    type, popupSelection,
    edit, "@attribute",
    values, "value1, value2, value3, value4, value5",
    labels, "Value no1, Value no2, Value no3, Value no4, Value no5",
    resultSeparator, "|",
    columns, 10,
    selectionMode, "multiple",
    fontInherit, true);
  font-size:30px;
}
```

The `oxy_editor` function acts as a proxy that allows you to insert any of the supported form controls. Alternatively, you can use the `oxy_popup` dedicated function.

```
popupWithMultipleSelection:before {
  content: " This editor edits an attribute value. The possible values are      specified
  inside the CSS: "
  oxy_popup(
    edit, "@attribute",
    values, "value1, value2, value3, value4, value5",
    labels, "Value no1, Value no2, Value no3, Value no4, Value no5",
    resultSeparator, "|",
    columns, 10,
    selectionMode, "multiple",
    fontInherit, true);
  font-size:30px;
}
```

### The Button Form Control

This form control contributes a button that invokes a *custom Author action* (defined in the associated Document Type) using its defined ID. The following properties are supported:

- **type** - this property specifies the built-in form control you are using. For the Button form control the value of the **type** property is `button`;
- **fontInherit** - this value specifies whether the form control inherits its font from its parent element. The values of this property can be **true**, or **false**. To make the pop-up form control inherit its font from its parent element, set the **fontInherit** property to **true**;
- **color** - specifies the foreground color of the form control. In case the value of the `color` property is `inherit`, the form control has the same color as the element in which it is inserted;
- **actionID** - the ID of the action specified in *Author actions*, that is invoked when you click the button;



**Note:** The element that contains the `Button` form control represents the context where the action is invoked.

- **transparent** - flattens the aspect of the button form control, removing its border and background.

### Button Form Control

```
button:before {
  content: "Label:"
  oxy_editor(
    type, button,
    /* This action is declared in the document type associated with the XML document.
  */
    actionID, "insert.popupWithMultipleSelection");
}
```

The `oxy_editor` function acts as a proxy that allows you to insert any of the supported form controls. Alternatively, you can use the `oxy_button` dedicated function.

```
button:before {
  content: "Label:"
  oxy_button(
    /* This action is declared in the document type associated with the XML document.
  */
    actionID, "insert.popupWithMultipleSelection");
}
```

### The URL Chooser Form Control

A field that allows you to select local and remote resources is used as a form control. The inserted reference will be made relative to the current opened editor's URL. This type of editor supports the following properties:

- **type** - this property specifies the built-in editor you are using. For the URL Chooser editor, its value has to be `urlChooser`;
- **columns** - controls the width of the form control. The unit size is the width of the `w` character;
- **color** - specifies the foreground color of the form control. In case the value of the `color` property is `inherit`, the form control has the same color as the element in which it is inserted;
- **fontInherit** - this value specifies whether the form control inherits its font from its parent element. The values of this property can be **true**, or **false**. To make the pop-up form control inherit its font from its parent element, set the **fontInherit** property to **true**.

#### URL Chooser Form Control

```
urlChooser[file]:before {
  content: "An URL chooser editor that allows browsing for a URL. The selected URL is made
relative to the currently edited file:"
  oxy_editor(
    type, urlChooser,
    edit, "@file",
    columns 25);
}
```

The `oxy_editor` function acts as a proxy that allows you to insert any of the supported form controls. Alternatively, you can use the `oxy_urlChooser` dedicated function.

```
urlChooser[file]:before {
  content: "An URL chooser editor that allows browsing for a URL. The selected URL is made
relative to the currently edited file:"
  oxy_urlChooser(
    edit, "@file",
    columns 25);
}
```

### The Date Picker Form Control

A text field with a calendar browser is used as a form control. The browse button shows a date chooser allowing you to easily choose a certain date. This type of form control supports the following properties:

- **type** - this property specifies the built-in editor you are using. For the date picker form control, its value has to be `datePicker`;
- **columns** - controls the width of the form control. The unit size is the width of the `w` character;
- **color** - specifies the foreground color of the form control. In case the value of the `color` property is `inherit`, the form control has the same color as the element in which it is inserted;
- **format** - this property specifies the format of the inserted date. The pattern value must be a valid Java date (or date-time) format. If missing, the type of the date is determined from the associated schema.

#### Date Picker Form Control

```
date {
  content:
  oxy_label(text, "Date time attribute with format defined in CSS: ", width, 300px)
  oxy_editor(
```

```

        type, datePicker,
        columns, 16,
        edit, "@attribute",
        format, "yyyy-MM-dd");
    }

```

The `oxy_editor` function acts as a proxy that allows you to insert any of the supported form controls. Alternatively, you can use the `oxy_datePicker` dedicated function.

```

date {
    content:
        oxy_label(text, "Date time attribute with format defined in CSS: ", width, 300px)
        oxy_datePicker(
            columns, 16,
            edit, "@attribute",
            format, "yyyy-MM-dd");
}

```

### Editing PIs Using Form Controls

Oxygen XML Editor allows you to edit *processing instructions*, *comments*, and *cdata* using the built-in editors.

 **Note:** You can edit both the content and the attribute value from a *processing instruction*.

### Editing an Attribute from a Processing Instruction

#### PI content

```
<?pi_target attr="val"??>
```

#### CSS

```

oxy|processing-instruction:before {
    display:inline;
    content:
        "EDIT attribute: " oxy_textfield(edit, '@attr', columns, 15);
    visibility:visible;
}
oxy|processing-instruction{
    visibility:-oxy-collapse-text;
}

```

### Implementing Custom Form Controls

In case the built-in form controls are not enough, you can implement custom form controls in Java and specify them using the following properties:

- **rendererClassName** - the name of the class that draws the edited value. It must be an implementation of `ro.sync.ecss.extensions.api.editor.InplaceRenderer`. The renderer has to be a SWING implementation and can be used both in the standalone and Eclipse distributions;
- **swingEditorClassName** - you can use this property for the standalone (**Swing**-based) distribution to specify the name of the class used for editing. It is a **Swing** implementation of `ro.sync.ecss.extensions.api.editor.InplaceEditor`;
- **swtEditorClassName** - you can use this property for the Eclipse plug-in distribution to specify the name of the class used for editing. It is a **SWT** implementation of the `ro.sync.ecss.extensions.api.editor.InplaceEditor`;
- **classpath** - you can use this property to specify the location of the classes used for a custom form control. The value of the **classpath** property is an enumeration of URLs separated by comma;
- **edit** - in case your form control edits the value of an attribute, or the text value of an element, you can use the **@attribute\_name** and **#text** predefined values and oxygen will perform the commit logic by itself. You can use the **custom** value to perform the commit logic yourself.



**Note:** If the custom form control chooses to perform the commit by itself, it must do so after it triggers the `ro.sync.ecss.extensions.api.editor.InplaceEditingListener.editingStopped(EditingE notification)`.

If the custom form control is intended to work in the Oxygen XML Editor standalone distribution, the declaration of `swtEditorClassName` is not required. The *renderer* (the class that draws the value) and the *editor* (the class that edits the value) have different properties because you can present a value in one way and edit it in another way.

The custom form controls can use any of the predefined properties of the `oxy_editor` function, as well as specified custom properties. This is an example of how to specify a custom form control:

```
myElement {
  content: oxy_editor(
    rendererClassName, "com.custom.editors.CustomRenderer",
    swingEditorClassName, "com.custom.editors.SwingCustomEditor",
    swtEditorClassName, "com.custom.editors.SwtCustomEditor",
    edit, "@my_attr"
    customProperty1, "customValue1",
    customProperty2, "customValue2"
  )
}
```



**Note:** Add these custom **Java** implementations in the *classpath* of the document type associated with the document you are editing. To get you started the Java sources for the `SimpleURLChooserEditor` are available in the Author SDK.

The `oxy_editor` function can receive other functions as parameters for obtaining complex behaviors.

The following example shows how the combo box editor can obtain its values from the current XML file by calling the `oxy_xpath` function:

```
link:before{
  content: "Managed by:"
  oxy_editor(
    type, combo,
    edit, "@manager",
    values, oxy_xpath('string-join(//@id , ",") ');
  )
}
```

### The `oxy_label()` Function

This function can be used in conjunction with the CSS `content` property to change the style of generated text. The arguments of the function are *property name - property value* pairs. The following properties are supported:

- **text** - specifies the generated content;
- **width** - specifies the horizontal space reserved for the content. The value of this property has the same format as the value of the CSS `width` property;
- **color** - specifies the foreground color of the form control. In case the value of the `color` property is `inherit`, the form control has the same color as the element in which it is inserted;
- **background-color** - specifies the background color of the form control. In case the value of the `background-color` property is `inherit`, the form control has the same color as the element in which it is inserted;
- **text-align** - specifies the alignment of the generated content in its reserved space. This property has three possible values:
  - **left;**
  - **right;**
  - **center.**

```
element {
  content:
    oxy_label(label, "Label1:", width, 20em, text-align, center)
    oxy_label(label, "Label2:", width, 100px, text-align, right)
}
```

You can use the `oxy_editor()` and `oxy_label()` functions together to create a form control based layout.

## The oxy\_link-text() Function

You can use the `oxy_link-text()` function on the CSS `content` property to obtain a text description from the source of a reference. By default, the `oxy_link-text()` function resolves DITA and DocBook references. For further details about how you can also extend this functionality to other frameworks, go to [Configuring an Extensions Bundle](#).

### DITA Support

For DITA, the `oxy_link-text()` function resolves the `xref` element and the elements that have a `keyref` attribute. The text description is the same as the one presented in the final output for those elements.

### DocBook Support

For DocBook, the `oxy_link-text()` function resolves the `xref` element that defines a link in the same document. The text description is the same as the one presented in the final output for those elements.

For the following XML and associated CSS fragments the `oxy_link-text()` function is resolved to the value of the `xreflabel` attribute.

```
<para><code id="para.id" xreflabel="The reference label">my code</code></para>
<para><xref linkend="para.id"/></para>
```

```
xref {
  content: oxy_link-text();
}
```

## Arithmetic Functions

You can use any of the arithmetic functions implemented in the `java.lang.Math` class: <http://download.oracle.com/javase/6/docs/api/java/lang/Math.html>.

In addition to that, the following functions are available:

Syntax	Details
<code>oxy_add(param1, ..., paramN, 'returnType')</code>	Adds the values of all parameters from <code>param1</code> to <code>paramN</code> .
<code>oxy_subtract(param1, ..., paramN, 'returnType')</code>	Subtracts the values of parameters <code>param2</code> to <code>paramN</code> from <code>param1</code> .
<code>oxy_multiply(param1, ..., paramN, 'returnType')</code>	Multiplies the values of parameters from <code>param1</code> to <code>paramN</code> .
<code>oxy_divide(param1, param2, 'returnType')</code>	Performs the division of <code>param1</code> to <code>param2</code> .
<code>oxy_modulo(param1, param2, 'returnType')</code>	Returns the remainder of the division of <code>param1</code> to <code>param2</code> .

 **Note:** The `returnType` can be `'integer'`, `'number'`, or any of the supported CSS measuring types.

## Custom colors for element tags

By default Oxygen XML Editor does not display element tags. You can use this button  from the **Author** tool bar to control the amount of [displayed markup](#).

To configure the default background and foreground colors of the tags, go to **Editor > Edit modes > Author**. The `-oxy-tags-background-color` and `-oxy-tags-color` properties allow you to control the background and foreground colors for any particular XML element.

```
para {
  -oxy-tags-color:white;
  -oxy-tags-background-color:green;
}
title {
  -oxy-tags-color:yellow;
  -oxy-tags-background-color:black;
}
```

## Example Files Listings - The Simple Documentation Framework Files

This section lists the files used in the customization tutorials: the XML Schema, CSS files, XML files, XSLT stylesheets.

### XML Schema files

#### `sdf.xsd`

This sample file can also be found in the *Author SDK distribution* in the "oxygenAuthorSDK\samples\Simple Documentation Framework - SDF\framework\schema" directory.

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
  targetNamespace="http://www.oxygenxml.com/sample/documentation"
  xmlns:doc="http://www.oxygenxml.com/sample/documentation"
  xmlns:abs="http://www.oxygenxml.com/sample/documentation/abstracts"
  elementFormDefault="qualified">

  <xs:import
    namespace="http://www.oxygenxml.com/sample/documentation/abstracts"
    schemaLocation="abs.xsd"/>

  <xs:element name="book" type="doc:sectionType"/>
  <xs:element name="article" type="doc:sectionType"/>
  <xs:element name="section" type="doc:sectionType"/>

  <xs:complexType name="sectionType">
    <xs:sequence>
      <xs:element name="title" type="xs:string"/>
      <xs:element ref="abs:def" minOccurs="0"/>
      <xs:choice>
        <xs:sequence>
          <xs:element ref="doc:section"
            maxOccurs="unbounded"/>
        </xs:sequence>
        <xs:choice maxOccurs="unbounded">
          <xs:element ref="doc:para"/>
          <xs:element ref="doc:ref"/>
          <xs:element ref="doc:image"/>
          <xs:element ref="doc:table"/>
        </xs:choice>
      </xs:choice>
    </xs:sequence>
  </xs:complexType>

  <xs:element name="para" type="doc:paragraphType"/>

  <xs:complexType name="paragraphType" mixed="true">
    <xs:choice minOccurs="0" maxOccurs="unbounded">
      <xs:element name="b"/>
      <xs:element name="i"/>
      <xs:element name="link"/>
    </xs:choice>
  </xs:complexType>

  <xs:element name="ref">
    <xs:complexType>
      <xs:attribute name="location" type="xs:anyURI"
        use="required"/>
    </xs:complexType>
  </xs:element>

  <xs:element name="image">
```

```

    <xs:complexType>
      <xs:attribute name="href" type="xs:anyURI"
        use="required"/>
    </xs:complexType>
  </xs:element>

  <xs:element name="table">
    <xs:complexType>
      <xs:sequence>
        <xs:element name="customcol" maxOccurs="unbounded">
          <xs:complexType>
            <xs:attribute name="width" type="xs:string"/>
          </xs:complexType>
        </xs:element>
        <xs:element name="header">
          <xs:complexType>
            <xs:sequence>
              <xs:element name="td"
                maxOccurs="unbounded"
                type="doc:paragraphType"/>
            </xs:sequence>
          </xs:complexType>
        </xs:element>
        <xs:element name="tr" maxOccurs="unbounded">
          <xs:complexType>
            <xs:sequence>
              <xs:element name="td"
                type="doc:tdType"
                maxOccurs="unbounded"/>
            </xs:sequence>
          </xs:complexType>
        </xs:element>
      </xs:sequence>
      <xs:attribute name="width" type="xs:string"/>
    </xs:complexType>
  </xs:element>

  <xs:complexType name="tdType">
    <xs:complexContent>
      <xs:extension base="doc:paragraphType">
        <xs:attribute name="row_span"
          type="xs:integer"/>
        <xs:attribute name="column_span"
          type="xs:integer"/>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
</xs:schema>

```

### abs.xsd

This sample file can also be found in the [Author SDK distribution](#) in the "oxygenAuthorSDK\samples\Simple Documentation Framework - SDF\framework\schema" directory.

```

<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
  targetNamespace=
    "http://www.oxygenxml.com/sample/documentation/abstracts">
  <xs:element name="def" type="xs:string"/>
</xs:schema>

```

## CSS Files

### sdf.css

This sample file can also be found in the [Author SDK distribution](#) in the oxygenAuthorSDK\samples\Simple Documentation Framework - SDF\framework\css directory.

```

/* Element from another namespace */
@namespace abs "http://www.oxygenxml.com/sample/documentation/abstracts";

abs|def{
  font-family:monospace;
  font-size:smaller;
}
abs|def:before{
  content:"Definition:";
  color:gray;
}

```

```

/* Vertical flow */
book,
section,
para,
title,
image,
ref {
    display:block;
}

/* Horizontal flow */
b,i {
    display:inline;
}

section{
    margin-left:1em;
    margin-top:1em;
}

section{
    -oxy-foldable:true;
    -oxy-not-foldable-child: title;
}

link[href]:before{
    display:inline;
    link:attr(href);
    content: "Click to open: " attr(href);
}

/* Title rendering*/
title{
    font-size: 2.4em;
    font-weight:bold;
}

* * title{
    font-size: 2.0em;
}
* * * title{
    font-size: 1.6em;
}
* * * * title{
    font-size: 1.2em;
}

book,
article{
    counter-reset:sect;
}
book > section,
article > section{
    counter-increment:sect;
}
book > section > title:before,
article > section > title:before{
    content: "Section: " counter(sect) " ";
}

/* Inlines rendering*/
b {
    font-weight:bold;
}

i {
    font-style:italic;
}

/*Table rendering */
table{
    display:table;
    border:1px solid navy;
    margin:1em;
    max-width:1000px;
    min-width:150px;
}

table[width]{
    width:attr(width, length);
}

tr, header{
    display:table-row;
}

header{
    background-color: silver;
    color:inherit
}

```

```

}

td{
  display:table-cell;
  border:1px solid navy;
  padding:1em;
}

image{
  display:block;
  content: attr(href, url);
  margin-left:2em;
}

```

## XML Files

### sdf\_sample.xml

This sample file can also be found in the *Author SDK distribution* in the "oxygenAuthorSDK\samples\Simple Documentation Framework - SDF\framework" directory.

```

<?xml version="1.0" encoding="UTF-8"?>
<book xmlns="http://www.oxygenxml.com/sample/documentation"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:abs="http://www.oxygenxml.com/sample/documentation/abstracts">
  <title>My Technical Book</title>
  <section>
    <title>XML</title>
    <abs:def>Extensible Markup Language</abs:def>
    <para>In this section of the book I will explain
      different XML applications.</para>
  </section>
  <section>
    <title>Accessing XML data.</title>
    <section>
      <title>XSLT</title>
      <abs:def>Extensible stylesheet language
        transformation (XSLT) is a language for
        transforming XML documents into other XML
        documents.</abs:def>
      <para>A list of XSL elements and what they do..</para>
      <table>
        <thead>
          <tr>
            <th>XSLT Elements</th>
            <th>Description</th>
          </tr>
        </thead>
        <tbody>
          <tr>
            <td>
              <b>xsl:stylesheet</b>
            </td>
            <td>The <i>xsl:stylesheet</i> element is
              always the top-level element of an
              XSL stylesheet. The name
              <i>xsl:transform</i> may be used
              as a synonym.</td>
          </tr>
          <tr>
            <td>
              <b>xsl:template</b>
            </td>
            <td>The <i>xsl:template</i> element has
              an optional mode attribute. If this
              is present, the template will only
              be matched when the same mode is
              used in the invoking
              <i>xsl:apply-templates</i>
              element.</td>
          </tr>
          <tr>
            <td>
              <b>for-each</b>
            </td>
            <td>The xsl:for-each element causes
              iteration over the nodes selected by
              a node-set expression.</td>
          </tr>
          <tr>
            <td colspan="2">End of the list</td>
          </tr>
        </tbody>
      </table>
    </section>
    <section>
      <title>XPath</title>
      <abs:def>XPath (XML Path Language) is a terse

```

```

        (non-XML) syntax for addressing portions of
        an XML document. </abs:def>
<para>Some of the XPath functions.</para>
<table>
  <thead>
    <tr>
      <th>Function</th>
      <th>Description</th>
    </tr>
  </thead>
  <tbody>
    <tr>
      <td>format-number</td>
      <td>The <i>format-number</i> function
        converts its first argument to a
        string using the format pattern
        string specified by the second
        argument and the decimal-format
        named by the third argument, or the
        default decimal-format, if there is
        no third argument</td>
    </tr>
    <tr>
      <td>current</td>
      <td>The <i>current</i> function returns
        a node-set that has the current node
        as its only member.</td>
    </tr>
    <tr>
      <td>generate-id</td>
      <td>The <i>generate-id</i> function
        returns a string that uniquely
        identifies the node in the argument
        node-set that is first in document
        order.</td>
    </tr>
  </tbody>
</table>
</section>
</section>
<section>
  <title>Documentation frameworks</title>
  <para>One of the most important documentation
    frameworks is Docbook.</para>
  <image
    href="http://www.xmlhack.com/images/docbook.png"/>
  <para>The other is the topic oriented DITA, promoted
    by OASIS.</para>
  <image
href="http://www.oasis-open.org/images/standards/oasis_standard.jpg"
/>
  </section>
</book>

```

## XSL Files

### sdf.xsl

This sample file can also be found in the [Author SDK distribution](#) in the "oxygenAuthorSDK\samples\Simple Documentation Framework - SDF\framework\xsl" directory.

```

<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet
  xmlns:xsl="http://www.w3.org/1999/XSL/Transform" version="2.0"
  xpath-default-namespace=
  "http://www.oxygenxml.com/sample/documentation">

  <xsl:template match="/">
    <html><xsl:apply-templates/></html>
  </xsl:template>

  <xsl:template match="section">
    <xsl:apply-templates/>
  </xsl:template>

  <xsl:template match="image">
    
  </xsl:template>

  <xsl:template match="para">
    <p>
      <xsl:apply-templates/>
    </p>
  </xsl:template>

  <xsl:template match="abs:def"
    xmlns:abs=
    "http://www.oxygenxml.com/sample/documentation/abstracts">

```

```

        <p>
            <u><xsl:apply-templates/></u>
        </p>
    </xsl:template>

    <xsl:template match="title">
        <h1><xsl:apply-templates/></h1>
    </xsl:template>

    <xsl:template match="b">
        <b><xsl:apply-templates/></b>
    </xsl:template>

    <xsl:template match="i">
        <i><xsl:apply-templates/></i>
    </xsl:template>

    <xsl:template match="table">
        <table frame="box" border="1px">
            <xsl:apply-templates/>
        </table>
    </xsl:template>

    <xsl:template match="header">
        <tr>
            <xsl:apply-templates/>
        </tr>
    </xsl:template>

    <xsl:template match="tr">
        <tr>
            <xsl:apply-templates/>
        </tr>
    </xsl:template>

    <xsl:template match="td">
        <td>
            <xsl:apply-templates/>
        </td>
    </xsl:template>

    <xsl:template match="header/header/td">
        <th>
            <xsl:apply-templates/>
        </th>
    </xsl:template>
</xsl:stylesheet>

```

## Author Component

---

The Author Component was designed as a separate product to provide the functionality of the standard Author mode. Recently (in version 14.2), the component API was extended to also allow multiple edit modes like **Text** and **Grid**. The component can be embedded either in a third-party standalone Java application or customized as a Java Web Applet to provide WYSIWYG-like XML editing directly in your web browser of choice.

The Author Component Startup Project for Java/Swing integrations is available online on the Oxygen XML Editor website: <http://www.oxygenxml.com/demo/AuthorDemoApplet/author-component-sample.zip>

## Licensing

The licensing terms and conditions for the Author Component are defined in the **<oxygen/> XML Editor SDK License Agreement**. You can contact our support team at [support@oxygenxml.com](mailto:support@oxygenxml.com) to obtain it as well as more information about licensing. You may also obtain a free of charge evaluation license key for development purposes. Any development work using the Author Component is also subject to the terms of the SDK agreement.

There are two main categories of Author Component integrations:

### 1. Integrations for internal use.

You develop an application which embeds the Author Component to be used internally (in your company or by you). You can buy and use *oxygen XML Author standard licenses* (either user-based or floating) to enable the Author Component in your application.

### 2. Integrations for external use.

You create using the Author Component an application that you distribute to other users, outside your company (with a CMS for example). In this case you need to contact us to apply for a Value Added Reseller (VAR) partnership.

From a technical point of view the Author Component provides the Java API to:

- Inject floating license server details in the Java code. The following link provides details about how to configure a floating license servlet or server:[http://www.oxygenxml.com/license\\_server.html](http://www.oxygenxml.com/license_server.html).

```
AuthorComponentFactory.getInstance().init(
    frameworkZips, optionsZipURL, codeBase, appletID,
    //The servlet URL
    "http://www.host.com/servlet",
    //The HTTP credentials user name
    "userName",
    //The HTTP credentials password
    "password");
```

- Inject the licensing information key (for example the evaluation license key) directly in the component's Java code.

```
AuthorComponentFactory.getInstance().init(
    frameworkZips, optionsZipURL, codeBase, appletID,
    //The license key if it is a fixed license.
    licenseKey);
```

- Display the license registration dialog to the end user. This is the default behavior in case a null license key is set using the API, this transfers the licensing responsibility to the end-user. The user can license an Author component using standard Oxygen XML Editor Editor/Author license keys. The license key will be saved to the local user's disk and on subsequent runs the user will not be asked anymore.

```
AuthorComponentFactory.getInstance().init(
    frameworkZips, optionsZipURL, codeBase, appletID,
    //Null license key, will ask the user.
    null);
```

## Installation Requirements

Running the Author component as a Java applet requires:

- Oracle (Sun) Java JRE version 1.6 update 10 or newer;
- At least 100 MB disk space and 100MB free memory;
- The applet needs to be signed with a valid certificate and will request full access to the user machine, in order to store customization data (like options and framework files);
- A table of supported browsers can be found here:[Supported browsers and operating systems](#) on page 467.

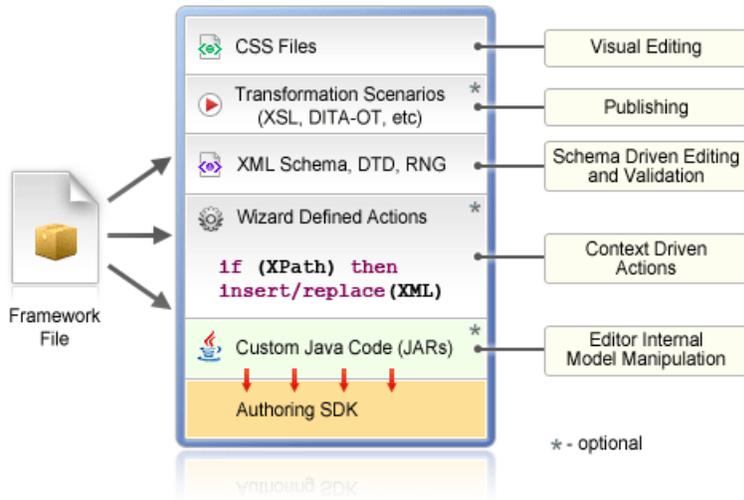
Running the Author component embedded in a third-party Java/Swing application requires:

- Oracle (Sun) Java JRE version 1.6 or newer;
- At least 100 MB disk space and 100MB free memory;

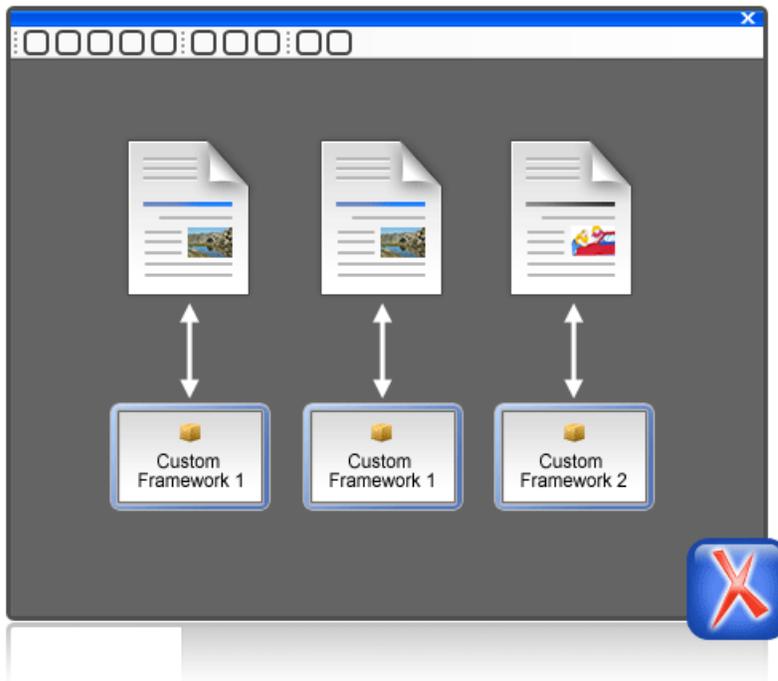
## Customization

For a special type of XML, you can create a custom framework (which also works in an Oxygen standalone version). Oxygen XML Editor already has frameworks for editing DocBook, DITA, TEI, and so on. Their sources are available in [the Author SDK](#). This custom framework is then packed in a zip archive and used to deploy the component.

The following diagram shows the components of a custom framework.



More than one framework can coexist in the same component and can be used at the same time for editing XML documents.



You can add on your custom toolbar all actions available in the standalone Oxygen XML Editor application for editing in the Author mode. You can also add custom actions defined in the framework customized for each XML type.

The Author component can also provide the *Outline*, *Model*, *Elements* and *Attributes* views which can be added to your own developed containers.

## Packing a fixed set of options

The Author Component shares a common internal architecture with the standalone application although it does not have a **Preferences** dialog. But the Author Component Applet can be configured to use a fixed set of user options on startup.

The sample project contains a resource called `APPLET_PROJECT/resources/options.zip.jar`. The JAR contains a ZIP archive which contains a file called `options.xml`. Such an XML file can be obtained by exporting to an XML format from a standalone application.

To create an *options file* in the standalone application, follow these steps:

- make sure the options that you want to set are not *stored at project level* stored at project level;
- set the values you want to impose as defaults in the *Preferences pages*;
- select **Options > Export Global Options**.

## Deployment

The Author Component Java API allows you to use it in your Java application or as a Java applet. The JavaDoc for the API can be found in the *sample project* in the `lib/apiSrc.zip` archive. The sample project also comes with Java sources (`ro/sync/ecss/samples/AuthorComponentSample.java`) demonstrating how the component is created, licensed and used in a Java application.

### Web Deployment

The Author Component can be deployed as a Java Applet using the new Applet with JNLP Java technology, available in Oracle (Sun) Java JRE version 1.6 update 10 or newer.

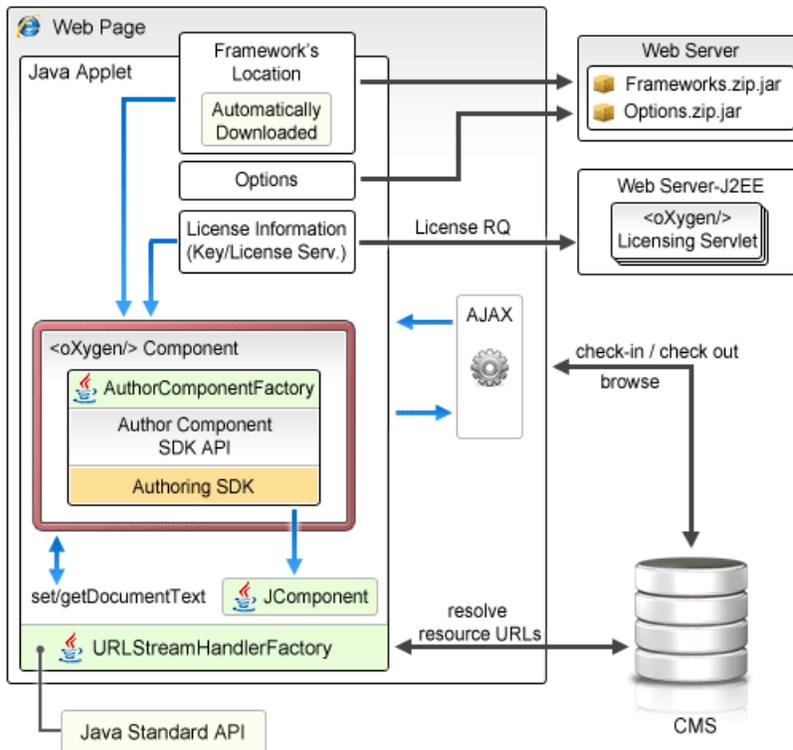
The *sample project* demonstrates how the Author component can be distributed as an applet.

Here are the main steps you need to follow in order to deploy the Author component as a Java Applet:

- Unpack the sample project archive and look for Java sources of the sample Applet implementation. They can be customized to fit your requirements.
- The `default.properties` configuration file must first be edited to specify your custom certificate information used to sign the applet libraries. You also have to specify the code base from where the applet will be downloaded.
- You can look inside the `author-component-dita.html` and `author-component-dita.js` sample Web resources to see how the applet is embedded in the page and how it can be controlled using Javascript (to set and get XML content from it).
- The sample Applet `author-component-dita.jnlp` JNLP file can be edited to add more libraries. The packed frameworks and options are delivered using the JNLP file as JAR archives:

```
<jar href="resources/frameworks.zip.jar"/>
<jar href="resources/options.zip.jar"/>
```

- The sample frameworks and options JAR archives can be found in the `resources` directory.
- Use the `build.xml` ANT build file to pack the component. The resulting applet distribution is copied in the `dist` directory. From this on, you can copy the applet files on your web server.



**Figure 231: Oxygen XML Editor Author Component deployed as a Java applet**

### Generate a Testing Certificate For Signing an Applet

All jar files of an applet deployed on a remote Web server must be signed with the same certificate before the applet is deployed. The following steps describe how to generate a test certificate for signing the jar files. We will use the tool called **keytool** which is included in the Oracle's Java Development Kit.

1. Create a keystore with a RSA encryption key.

Invoke the following in a command line terminal:

```
keytool -genkey -alias myAlias -keystore keystore.pkcs -storetype PKCS12
-keyalg RSA -keysize 2048 -dname "cn=your name here, ou=organization unit
name, o=organization name, c=US"
```

This command creates a keystore file called `keystore.pkcs`. The certificate attributes are specified in the *dname* parameter: common name of the certificate, organization unit name (for example *Purchasing* or *Sales Department*), organization name, country.

2. Generate a self-signed certificate.

Invoke the following in a command line terminal:

```
keytool -selfcert -alias myAlias -keystore keystore.pkcs -storetype PKCS12
```

3. Optionally display the certificate details in a human readable form.

First, the certificate must be exported to a separate file with the following command:

```
keytool -export -alias myAlias -keystore keystore.pkcs -storetype PKCS12 -file certfile.cer
```

The certificate details are displayed with the command:

```
keytool -printcert -file certfile.cer
```

- Edit the default `.properties` file and fill-in the parameters that hold the path to `keystore.pkcs` file (`keystore` parameter), keystore type (`storetype` parameter, with `JSK` or `PKCS12` as possible values), alias (`alias` parameter) and password (`password` parameter).
- Sign the jar files using the certificate by running the `sign` Ant task available in *the applet project*.

### Supported browsers and operating systems

The applet was tested for compatibility with the following browsers:

	IE 7	IE 8 (32bit)	IE 9 (64bit)	Firefox 3	Firefox 4	Firefox 6	Safari 5	Chrome	Opera
Windows XP	Passed	Passed	-	Passed	Passed	Passed	-	Passed	Passed
Vista	Failed	Passed	Failed	Passed	Passed	Passed	Failed	Passed	Passed
Windows 7	-	-	Passed	Passed	Passed	Passed	-	Passed	Passed
Mac OS X 10.6	-	-	-	Failed	Passed	Passed	Passed	Failed	Passed
Mac OS X Lion	-	-	-	Failed	Passed	Passed	Passed	Failed	Passed
Linux Ubuntu 10	-	-	-	Failed	-	Passed	-	Failed	Passed

### Communication between the Web Page and Java Applet

Using the Java 1.6 *LiveConnect* technology, applets can communicate with Javascript code which runs in the Web Page. Javascript code can call an applet's Java methods and from the Java code you can invoke Javascript code from the web page.

You are not limited to displaying only Swing dialogs from the applet. From an applet's operations you can invoke Javascript API which shows a web page and then obtains the data which has been filled by the user.

### Troubleshooting

When the applet fails to start:

- Make sure that your web browser really runs the next generation Java plug-in and not the legacy Java plug-in.

For Windows and Mac OSX the procedure is straight forward. Some steps are given below for installing the Java plug-in on Linux.

Manual Installation and Registration of Java Plugin for Linux:

<http://www.oracle.com/technetwork/java/javase/manual-plugin-install-linux-136395.html>

- Refresh the web page.
- Remove the Java Webstart cache from the local drive and try again.
  - On Windows this folder is located in: `%APPDATA%\LocalLow\Sun\Java\Deployment\cache;`
  - On Mac OSX this folder is located in: `/Users/user_name/Library/Caches/Java/cache;`
  - On Linux this folder is located in: `/home/user/.java/deployment/cache.`
- Remove the Author Applet Frameworks cache from the local drive and try again:
  - On Windows Vista or 7 this folder is located in: `%APPDATA%\Roaming\com.oxygenxml.author.component;`
  - On Windows XP this folder is located in: `%APPDATA%\com.oxygenxml.author.component;`

- On Mac OSX this folder is located in:  
/Users/user\_name/Library/Preferences/com.oxygenxml.author.component;
  - On Linux this folder is located in: /home/user/.com.oxygenxml.author.component.
5. Problems sometimes occur after upgrading the web browser and/or the JavaTM runtime. Redeploy the applet on the server by running ANT in your Author Component project. However, doing this does not always fix the problem, which often lies in the web browser and/or in the Java plug-in itself.
  6. Sometimes when the HTTP connection is slow on first time uses the JVM would simply shut down while the jars were being pushed to the local cache (i.e., first time uses). This shut down typically occurs while handling oxygen.jar. One of the reasons could be that some browsers (Firefox for example) implement some form of "Plugin hang detector" See [https://developer.mozilla.org/en/Plugins/Out\\_of\\_process\\_plugins/The\\_plugin\\_hang\\_detector](https://developer.mozilla.org/en/Plugins/Out_of_process_plugins/The_plugin_hang_detector).

Enable JavaWebstart logging on your computer to get additional debug information:

1. Open a console and run `javaws -viewer`;
2. In the **Advanced** tab, expand the **Debugging** category and check all boxes.
3. Expand the **Java console** category and choose **Show console**.
4. Save settings.
5. After running the applet, you will find the log files in:
  - On Windows this folder is located in: %APPDATA%\LocalLow\Sun\Java\Deployment\log;
  - On Mac OSX this folder is located in: /Users/user\_name/Library/Caches/Java/log;
  - On Linux this folder is located in: /home/user/.java/deployment/log.

### Avoiding Resource Caching

A Java plugin installed in a web browser caches access to all HTTP resources that the applet uses. This is useful in order to avoid downloading all the libraries each time the applet is run. However, this may have undesired side-effects when the applet presents resources loaded via HTTP. If such a resource is modified on the server and the browser window is refreshed, you might end-up with the old content of the resource presented in the applet.

To avoid such a behaviour, you need to edit the `ro.sync.ecss.samples.AuthorComponentSampleApplet` class and set a custom `URLConnectionHandlerFactory` implementation. A sample usage is already available in the class, but it is commented-out for increased flexibility:

```
//THIS IS THE WAY IN WHICH YOU CAN REGISTER YOUR OWN PROTOCOL HANDLER TO THE JVM.
//THEN YOU CAN OPEN YOUR CUSTOM URLs IN THE APPLLET AND THE APPLLET WILL USE YOUR HANDLER
URL.setURLConnectionHandlerFactory(new URLURLConnectionHandlerFactory() {
    public URLURLConnectionHandler createURLConnectionHandler(String protocol) {
        if("http".equals(protocol) || "https".equals(protocol)) {
            return new URLURLConnectionHandler() {
                @Override
                protected URLConnection openConnection(URL u) throws IOException {
                    URLURLConnection connection = new HttpURLConnection(u, null);
                    if(!u.toString().endsWith(".jar")) {
                        //Do not cache HTTP resources other than JARS
                        //By default the Java HTTP connection caches content for
                        //all URLs so if one URL is modified and then re-loaded in the
                        //applet the applet will show the old content.
                        connection.setDefaultUseCaches(false);
                    }
                    return connection;
                }
            };
        }
        return null;
    }
});
```

### Adding MathML support in the Author Component Web Applet

By default the Author Component Web Applet project does not come with the libraries necessary for viewing and editing MathML equations in the Author page. You can view and edit MathML equations either by adding support for *JEuclid* or by adding support for *MathFlow*.

### Adding MathML support using JEuclid

In the `author-component-dita.jnlp` JNLP file, refer additional libraries necessary for the JEuclid library to parse MathML equations:

```
<jar href="lib/jcip-annotations.jar"/>
<jar href="lib/jeuclid-core.jar"/>
<jar href="lib/batik-all-1.7.jar"/>
<jar href="lib/commons-io-1.3.1.jar"/>
<jar href="lib/commons-logging-1.0.4.jar"/>
<jar href="lib/xmlgraphics-commons-1.4.jar"/>
```

Copy these additional libraries to the component project `lib` directory from an `OXYGEN_INSTALLATION_DIRECTORY/lib` directory.

To edit specialized DITA Composite with MathML content, include the entire `OXYGEN_INSTALLATION_DIRECTORY/frameworks/mathml2` Mathml2 framework directory in the frameworks bundled with the component `frameworks.zip.jar`. This directory is used to solve references to MathML DTDs.

### Adding MathML support using MathFlow

In the `author-component-dita.jnlp` JNLP file, refer additional libraries necessary for the MathFlow library to parse MathML equations:

```
<jar href="lib/MFComposer.jar"/>
<jar href="lib/MFExtraSymFonts.jar"/>
<jar href="lib/MFSimpleEditor.jar"/>
<jar href="lib/MFStructureEditor.jar"/>
<jar href="lib/MFStyleEditor.jar"/>
```

Copy these additional libraries from the MathFlow SDK.

In addition, you must obtain fixed MathFlow license keys for editing and composing MathML equations and register them using these API methods: `AuthorComponentFactory.setMathFlowFixedLicenseKeyForEditor` and `AuthorComponentFactory.setMathFlowFixedLicenseKeyForComposer`.

To edit specialized DITA Composite with MathML content, include the entire `OXYGEN_INSTALLATION_DIRECTORY/frameworks/mathml2` Mathml2 framework directory in the frameworks bundled with the component `frameworks.zip.jar`. This directory is used to solve references to MathML DTDs.

### Using Plugins with the Author Component

To bundle Workspace Access plugins, that are developed for standalone application with the Author Component, follow these steps:

- The content that is bundled to form the `frameworks.zip.jar` must contain the additional plugin directories, besides the framework directories. The content must also contain a `plugin.dtd` file.

#### Note:

Copy the `plugin.dtd` file from an `OXYGEN_INSTALL_DIR\plugins` folder.

- In the class which instantiates the `AuthorComponentFactory`, for example the `ro.sync.ecss.samples.AuthorComponentSample` class, call the methods `AuthorComponentFactory.getPluginToolbarCustomizers()`, `AuthorComponentFactory.getPluginViewCustomizers()` and `AuthorComponentFactory.getMenubarCustomizers()`, obtain the customizers which have been added by the plugins and call them to obtain the custom swing components that they contribute. There is a commented-out example for this in the `AuthorComponentSample.reconfigureActionsToolbar()` method for adding the toolbar from the **Acrolinx** plugin.

-  **Important:** As the Author Component is just a subset of the entire application, there is no guarantee that all the functionality of the plugin works.

## Frequently asked questions

### Installation and licensing

1. What hosting options are available for applet delivery and licensing services (i.e., Apache, IIS, etc.)?

For applet delivery any web server. We currently use Apache to deploy the sample on our site. For the floating license server you would need a J2EE server, like Tomcat if you want to restrict the access to the licenses.

If you do not need the access restrictions that are possible with a J2EE server you can simplify the deployment of the floating license server by using the standalone version of this server. The standalone license server is a simple Java application that communicates with Author Component by TCP/IP connections.

2. Are there any client requirements beyond the Java VM and (browser) Java Plug-In Technology?

Oracle (formerly Sun) Java JRE version 1.6 update 10 or newer. At least 200 MB disk space and 200MB free memory would be necessary for the Author Applet component.

3. Are there any other client requirements or concerns that could make deployment troublesome (i.e., browser security settings, client-side firewalls and AV engines, etc.)?

The applet is signed and will request access to the user machine, in order to store customization data (frameworks). The applet needs to be signed by you with a valid certificate.

4. How sensitive is the applet to the automatic Java VM updates, which are typically on by default (i.e., could automatic updates potentially "break" the run-time)?

The component should work well with newer Java versions but we cannot guarantee this.

5. How and when are "project" related files deployed to the client (i.e., applet code, DTD, styling files, customizations, etc.)?

Framework files are downloaded on the first load of the applet. Subsequent loads will re-use the cached customization files and will be much faster.

6. For on-line demo (<http://www.oxygenxml.com/demo/AuthorDemoApplet/author-component-dita.html>), noted a significant wait during initial startup. Any other mechanisms to enhance startup time?

See explanation above.

7. Does the XML Author component support multiple documents being open simultaneously? What are the licensing ramifications?

A single `AuthorComponentFactory` instance can create multiple `EditorComponentProvider` editors which can then be added and managed by the developer who is customizing the component in a `Swing JTabbedPane`. A single license (floating or user-based) is enough for this.

If you need to run multiple Java Applets or distinct Java processes using the Author component, the current floating license model allows for now only two concurrent components from the same computer when using the license servlet. An additional started component will take an extra license seat.

Another licensing technique would be to embed the license key in one of the jar libraries used by the applet. But you would need to implement your own way of determining how many users are editing using the Author applet.

8. Is there any internet traffic during an editing session (user actively working on the content, on the client side, in the XML Author component)?

No.

### Functionality

1. How and when are saves performed back to the hosting server?

What you can see on our web site is just an example of the Author component (which is a Java Swing component) used in an Applet.

This applet is just for demonstration purposes. It's source can be at most a starting point for a customization. You should implement, sign and deploy your custom applet implementation.

The save operation could be implemented either in Javascript by requesting the XML content from the Applet or in Java directly working with the Author component. You would be responsible to send the content back to the CMS.

2. Is there a particular XML document size (or range) when the Author applet would start to exhibit performance problems?

The applet has a total amount of used memory specified in the JNLP JavaWebstart configuration file which can be increased if necessary. By default it is 156 Mb. It should work comfortably with documents of 1-3 megabytes.

3. What graphic formats can be directly rendered in the XML Author component?

GIF, JPEG, PNG, BMP and SVG.

4. Can links be embedded to retrieve (from the server) and "play" other types of digital assets, such as audio or video files?

You could add listeners to intercept clicks and open the clicked links. This would require a good knowledge of the Author SDK. The Author component can only render static images (no GIF animations).

5. Does the XML Author component provide methods for uploading ancillary files (new graphics, for instance) to the hosting server?

No.

6. Does the XML Author component provide any type of autosave functionality?

By default no but you could customize the applet that contains the author component to save its content periodically to a file on disk.

7. Assuming multiple documents can be edited simultaneously, can content be copied, cut and pasted from one XML Author component "instance" to another?

Yes.

8. Does the XML Author component support pasting content from external sources (such as a web page or a Microsoft Word document and, if so, to what extent?

If no customizations are available the content is pasted as simple text. We provide customizations for the major frameworks (DITA, Docbook, TEI, etc) which use a conversion XSLT stylesheet to convert HTML content from clipboard to the target XML.

9. Can UTF-8 characters (such as Greeks, mathematical symbols, etc.) be inserted and rendered?

Any UTF-8 character can be inserted and rendered as long as the font used for editing supports rendering the characters. The font can be changed by the developers but not by the users. When using a logical font (which by default is *Serif* for the Author component) the JVM will know how to map all characters to glyphs. There is no character map available but you could implement one

## Customization

1. Please describe, in very general terms, the menus, toolbars, context menu options, "helper panes", etc. that are available for the XML Author component "out of the box".

You can mount on your custom toolbar all actions available in the standalone Oxygen application for editing in the Author page. This includes custom actions defined in the framework customized for each XML type.

The Author component also can provide the *Outline*, *Model*, *Elements* and *Attributes* views which can be added to your own panels (see sample applet).

2. Please describe, in general terms, the actions, project resources (e.g., DTD/Schema for validation purposes, CSS/XSL for styling, etc.) and typical level of effort that would be required to deploy a XML Author component solution for a customer with a proprietary DTD.

The Author internal engine uses CSS to render XML.

For a special type of XML you can create a custom framework (which also works in an Oxygen standalone version) which would also contain default schemas and custom actions. A simple framework would probably need 2-3 weeks development time. For a complex framework with many custom actions it could take a couple of months. Oxygen already has frameworks for editing Docbook, DITA, TEI, etc. Sources for them are available in [the Author SDK](#).

More than one framework can coexist in the same Oxygen instance (the desktop standalone version or the applet version) and can be used at the same time for editing XML documents.

3. Many customers desire a very simplistic interface for contributors (with little or no XML expertise) but a more robust XML editing environment for editors (or other users with more advanced XML savviness). How well does the XML Author component support varying degrees of user interface complexity and capability?

- *Showing/hiding menus, toolbars, helpers, etc.*

All the UI parts from the Author component are assembled by you. You could provide two applet implementations: one for advanced/power users and one for technical writers.

- *Forcing behaviors (i.e., ensuring change tracking is on and preventing it from being shut down)*

You could avoid placing the change tracking toolbar actions in the custom applet. You could also use API to turn change tracking ON when the content has been loaded.

- *Preventing access to "privileged" editor processes (i.e., accept/reject changes)*

You can remove the change tracking actions completely in a custom applet implementation. Including the ones from the contextual menu.

- *Presenting and/or describing XML constructs (i.e., tags) in "plain-English"*

Using our API you can customize what the Outline or Breadcrumb presents for each XML tag. You can also customize the in-place content completion list.

- *Presenting a small subset of the overall XML tag set (rather than the full tag set) for use by contributors (i.e., allowing an author to only insert Heading, Para and inline emphasis) Could varying "interfaces", with different mixes these capabilities and customizations, be developed and pushed to the user based on a "role" or a similar construct?*

The API allows for a content completion filter which also affects the *Elements* view.

4. Does the XML Author component's API provide access to the XML document, for manipulation purposes, using common XML syntax such as DOM, XPath, etc.?

Yes, using the Author API.

5. Can custom dialogs be developed and launched to collect information in a "form" (with scripting behind to push tag the collection information and embed it in the XML document)?

Yes.

6. Can project resources, customizations, etc. be readily shared between the desktop and component versions of your XML Author product line?

A framework developed for the Desktop Oxygen application can then be bundled with an Author component in a custom applet. For example the Author demo applet from our web site is DITA-aware using the same framework as the Oxygen standalone distribution.

A custom version of the applet that includes one or more customized frameworks and user options can be built and deployed for non-technical authors by a technical savvy user using a built-in tool of Oxygen. All the authors that load the deployed applet from the same server location will share the same frameworks and options.

A custom editing solution can deploy one or more frameworks that can be used at the same time.

## Creating and Running Automated Tests

If you have developed complex custom plugins and/or document types the best way to test your implementation and insure that further changes will not interfere with the current behavior is to make automated tests for your customization.

An Oxygen XML Editor installation standalone (Author or Editor) comes with a main `oxygen.jar` library located in the `OXYGEN_INSTALLATION_DIRECTORY`. That JAR library contains a base class for testing developer customizations named `ro.sync.exml.workspace.api.PluginWorkspaceTCBase`.

Please see below some steps in order to develop JUnit tests for your customizations using the **Eclipse** workbench:

1. Create a new Eclipse Java project and copy to it the entire contents of the `OXYGEN_INSTALLATION_DIRECTORY`.
2. Add to the **Java Build Path->Libraries** tab all JAR libraries present in the `OXYGEN_INSTALLATION_DIRECTORY/lib` directory. Make sure that the main JAR library `oxygen.jar` or `oxygenAuthor.jar` is the first one in the Java classpath by moving it up in the **Order and Export** tab.
3. Download and add to the Java build path the additional JUnit libraries `jfcunit.jar` and `junit.jar`.
4. Create a new Java class which extends `ro.sync.exml.workspace.api.PluginWorkspaceTCBase`.
5. Pass on to the constructor of the super class the following parameters:
  - File `frameworksFolder` The file path to the frameworks directory. It can point to a custom frameworks directory where the custom framework resides.
  - File `pluginsFolder` The file path to the plugins directory. It can point to a custom plugins directory where the custom plugins resides.
  - String `licenseKey` The license key used to license the test class.
6. Create test methods which use the API in the base class to open XML files and perform different actions on them. Your test class could look something like:

```
public class MyTestClass extends PluginWorkspaceTCBase {
    /**
     * Constructor.
     */
    public MyTestClass() throws Exception {
        super(new File("frameworks"), new File("plugins"),
            "-----START-LICENSE-KEY-----\n" +
            "\n" +
            "Registration_Name=Developer\n" +
            "\n" +
            "Company=\n" +
            "\n" +
            "Category=Enterprise\n" +
            "\n" +
            "Component=XML-Editor, XSLT-Debugger, Saxon-SA\n" +
            "\n" +
            "Version=14\n" +
            "\n" +
            "Number_of_Licenses=1\n" +
            "\n" +
            "Date=09-04-2012\n" +
            "\n" +
            "Trial=31\n" +
            "\n" +
            "SGN=MCwCFGNoEGJSeiC3XCyIyalvjzHhGhhqAhrNRDpEu8RIWb8icCJO7HqfVP4++A\\=\n" +
            "\n" +
            "-----END-LICENSE-KEY-----");
    }

    /**
     * <p><b>Description:</b> TC for opening a file and using the bold operation</p>
     * <p><b>Bug ID:</b> EXM-20417</p>
     *
     * @author radu_coravu
     *
     * @throws Exception
     */
    public void testOpenFileAndBoldEXM_20417() throws Exception {
        WSEditor ed = open(new File("D:/projects/exml/test/authorExtensions/dita/sampleSmall.xml").toURL());
        //Move caret
        moveCaretRelativeTo("Context", 1, false);
    }
}
```

```

//Insert <b>
invokeAuthorExtensionActionForID("bold");
assertEquals("<?xml version=\"1.0\" encoding=\"utf-8\"?>\n" +
"<!DOCTYPE task PUBLIC \"-//OASIS//DTD DITA Task//EN\"
\"http://docs.oasis-open.org/dita/v1.1/OS/dtd/task.dtd\">\n" +
"<task id=\"taskId\">\n" +
"  <title>Task <b>title</b></title>\n" +
"  <prolog/>\n" +
"  <taskbody>\n" +
"    <context>\n" +
"      <p>Context for the current task</p>\n" +
"    </context>\n" +
"    <steps>\n" +
"      <step>\n" +
"        <cmd>Task step.</cmd>\n" +
"      </step>\n" +
"    </steps>\n" +
"  </taskbody>\n" +
"</task>\n" +
"", getCurrentEditorXMLContent());
}
}

```

---

# Chapter 9

---

## API Frequently Asked Questions (API FAQ)

---

### Topics:

- [Difference Between a Document Type \(Framework\) and a Plugin Extension](#)
- [Dynamically Modify the Content Inserted by the Writer](#)
- [Split Paragraph on Enter \(Instead of Showing Content Completion List\)](#)
- [Impose Custom Options for Writers](#)
- [Highlight Content](#)
- [How Do I Add My Custom Actions to the Contextual Menu?](#)
- [Adding Custom Callouts](#)
- [Change the DOCTYPE of an Opened XML Document](#)
- [Customize the Default Application Icons for Toolbars/Menus](#)
- [Disable Context-Sensitive Menu Items for Custom Author Actions](#)
- [Dynamic Open File in Oxygen XML Editor Distributed via JavaWebStart](#)
- [Change the Default Track Changes \(Review\) Author Name](#)
- [Multiple Rendering Modes for the Same Author Document](#)
- [Obtain a DOM Element from an AuthorNode or AuthorElement](#)
- [Print Document Within the Author Component](#)
- [Running XSLT or XQuery Transformations](#)
- [Use Different Rendering Styles for Entity References, Comments or Processing Instructions](#)
- [Insert an Element with all the Required Content](#)

This section contains answers to common questions regarding the Oxygen XML Editor customisations using the [Author SDK](#), [Author Component](#), or [Plugins](#).

For additional questions, [contact us](#). The preferred approach is via email because API questions must be analysed thoroughly. We also provide code snippets in case they are required.

To stay up-to-date with the latest API changes, discuss issues and ask for solutions from other developers working with the Oxygen XML Editor SDK, register to the [oXygen-SDK mailing list](#).

- [\*Obtain the Current Selected Element Using the Author API\*](#)

## Difference Between a Document Type (Framework) and a Plugin Extension

---

### Question

What is the difference between a Document Type (Framework) and a Plugin Extension?

### Answer

Two ways of customising the application are possible:

#### 1. Implementing a plugin.

A plugin serves a general purpose and influences any type of XML file that you open in Oxygen XML Editor.

For the Oxygen XML EditorPlugins API, Javadoc, samples, and documentation, go to [http://www.oxygenxml.com/oxygen\\_sdk.html#Developer\\_Plugins](http://www.oxygenxml.com/oxygen_sdk.html#Developer_Plugins)

#### 2. Creating or modifying the document type which is associated to your specific XML vocabulary.

This document type is used to provide custom actions for your type of XML files and to mount them on the toolbar, menus, and contextual menus.

For example, if the application end users are editing DITA, all the toolbar actions which are specific for DITA are provided by the DITA Document Type. If you look in the Oxygen Preferences->"Document Type Association" there is a "DITA" document type.

If you *edit that document type* in Oxygen XML Editor you will see that it has an `Author` tab in which it defines all custom DITA actions and adds them to the toolbars, main menus, contextual menus.

We have a special chapter in our user manual which explains how such document types are constructed and modified:

<http://www.oxygenxml.com/doc/ug-oxygen/index.html?q=/doc/ug-oxygen/topics/author-devel-guide-intro.html>

If you look on disk in the:

```
OXYGEN_INSTALL_DIR\frameworks\dita
```

folder there is a file called `dita.framework`. That file gets updated when you edit a document type from the Oxygen Preferences. Then you can share that updated file with all users.

The same folder contains some JAR libraries. These libraries contain custom complex Java operations which are called when the user presses certain toolbar actions.

If you want to add a custom action this topic explains how:

<http://www.oxygenxml.com/doc/ug-oxygen/index.html?q=/doc/ug-oxygen/tasks/addCustomActionHowTo.html>

We have an Author SDK which contains the Java sources from all the DITA Java customizations:

[http://www.oxygenxml.com/oxygen\\_sdk.html#XML\\_Editor\\_Authoring\\_SDK](http://www.oxygenxml.com/oxygen_sdk.html#XML_Editor_Authoring_SDK)

## Dynamically Modify the Content Inserted by the Writer

---

### Question

Is there a way to insert typographic quotation marks instead of double quotes?

### Answer

By using the API you can set a document filter to change the text that is inserted in the Author document. You can use this method to change the insertion of double quotes with the typographic quotes.

Here is some sample code:

```
authorAccess.getDocumentController().setDocumentFilter(new AuthorDocumentFilter() {
    /**
     * @see
     * ro.sync.ecss.extensions.api.AuthorDocumentFilter#insertText(ro.sync.ecss.extensions.api.AuthorDocumentFilterBypass,
     * int, java.lang.String)
     */
    @Override
    public void insertText(AuthorDocumentFilterBypass filterBypass, int offset, String toInsert) {
        if(toInsert.length() == 1 && "\"".equals(toInsert)) {
            //User typed a quote but he actually needs a smart quote.
            //So we either have to add \u201E (start smart quote)
            //Or we add \u201C (end smart quote)
            //Depending on whether we already have a start smart quote inserted in the current paragraph.

            try {
                AuthorNode currentNode = authorAccess.getDocumentController().getNodeAtOffset(offset);
                int startofTextInCurrentNode = currentNode.getStartOffset();
                if(offset > startofTextInCurrentNode) {
                    Segment seg = new Segment();
                    authorAccess.getDocumentController().getChars(startofTextInCurrentNode, offset -
startofTextInCurrentNode, seg);
                    String previosTextInNode = seg.toString();
                    boolean insertStartQuote = true;
                    for (int i = previosTextInNode.length() - 1; i >= 0; i--) {
                        char ch = previosTextInNode.charAt(i);
                        if('\u201C' == ch) {
                            //Found end of smart quote, so yes, we should insert a start one
                            break;
                        } else if('\u201E' == ch) {
                            //Found start quote, so we should insert an end one.
                            insertStartQuote = false;
                            break;
                        }
                    }

                    if(insertStartQuote) {
                        toInsert = "\u201E";
                    } else {
                        toInsert = "\u201C";
                    }
                }
            } catch (BadLocationException e) {
                e.printStackTrace();
            }
        }
        System.err.println("INSERT TEXT |" + toInsert + "|");
        super.insertText(filterBypass, offset, toInsert);
    }
});
```

You can find the online Javadoc for AuthorDocumentFilter API here:

<http://www.oxygenxml.com/InstData/Editor/SDK/javadoc/ro/sync/ecss/extensions/api/AuthorDocumentFilter.html>

An alternative to using a document filtering is the use of a `ro.sync.ecss.extensions.api.AuthorSchemaAwareEditingHandlerAdapter` which has clear callbacks indicating the source from where the API is called (Paste, Drag and Drop, Typing).

## Split Paragraph on Enter (Instead of Showing Content Completion List)

---

### Question

How to split the paragraph on Enter instead of showing the content completion list?

### Answer

To obtain this behaviour, *edit your Document Type* and in the Author tab, Actions tab, add your own split action. This action must have the **Enter** shortcut key associated and must trigger your own custom operation which handles the split.

So, when you press **Enter**, your Java operation is invoked and it will be your responsibility to split the paragraph using the current API (probably creating a document fragment from the caret offset to the end of the paragraph, removing the content and then inserting the created fragment after the paragraph).

This solution has as a drawback. Oxygen XML Editor hides the content completion window when you press **Enter**. If you want to show allowed child elements at that certain offset, implement your own content proposals window using the `ro.sync.ecss.extensions.api.AuthorSchemaManager` API to use information from the associated schema.

## Impose Custom Options for Writers

---

### Question

How to enable **Track Changes** at startup?

### Answer

There are two ways to enable **Track Changes** for every document that you open:

1. You could *customise the default options* which are used by your writers and set the Track Changes *Initial State option* to Always On.
2. Use the API to toggle the Track Changes state after a document is opened in Author mode:

```
// Check the current state of Track Changes
boolean trackChangesOn = authorAccess.getReviewController().isTrackingChanges();
if (!trackChangesOn) {
    // Set Track Changes state to On
    authorAccess.getReviewController().toggleTrackChanges();
}
```

## Highlight Content

---

### Question

How can we add custom highlights to the Author document content?

### Answer

There are two types of highlights you can add:

1. Not Persistent Highlights. Such highlights are removed when the document is closed and then re-opened.

You can use the following API method:

```
ro.sync.exml.workspace.api.editor.page.author.WSAuthorEditorPageBase.getHighlighter()
```

to obtain an *AuthorHighlighter* which allows you to add a highlight between certain offsets with a certain painter.

For example you can use this support to implement your custom spell checker.

2. Persistent Highlights. Such highlights are saved in the XML content as processing instructions.

You can use the following API method:

```
ro.sync.exml.workspace.api.editor.page.author.WSAuthorEditorPageBase.getPersistentHighlighter()
```

to obtain an *AuthorPersistentHighlighter* which allows you to add a persistent highlight between certain offsets and containing certain custom properties and render it with a certain painter.

For example you can use this support to implement your own way of adding review comments.

## How Do I Add My Custom Actions to the Contextual Menu?

The API methods `WSAuthorEditorPageBase.addPopUpMenuCustomizer` and `WSTextEditorPage.addPopUpMenuCustomizer` allow you to customize the contextual menu shown either in the Author or in the Text modes. The API is available both in the standalone application and in the Eclipse plugin.

Here's an elegant way to add from your Eclipse plugin extension actions to the Author page:

### 1. Create a pop-up menu customizer implementation:

```
import org.eclipse.jface.action.ContributionManager;
import org.eclipse.ui.PlatformUI;
import org.eclipse.ui.menus.IMenuService;
import ro.sync.ecss.extensions.api.AuthorAccess;
import ro.sync.ecss.extensions.api.structure.AuthorPopupMenuCustomizer;
/**
 * This class is used to create the possibility to attach certain
 * menuContributions to the {@link ContributionManager}, which is used for the
 * popup menu in the Author Page of the Oxygen Editor.<br />
 * You just need to use the org.eclipse.ui.menus extension and add a
 * menuContribution with the locationURI: <b>menu:oxygen.authorpage</b>
 */
public class OxygenAuthorPagePopupMenuCustomizer implements
    AuthorPopupMenuCustomizer {

    @Override
    public void customizePopUpMenu(Object menuManagerObj,
        AuthorAccess authoraccess) {
        if (menuManagerObj instanceof ContributionManager) {
            ContributionManager contributionManager = (ContributionManager) menuManagerObj;
            IMenuService menuService = (IMenuService) PlatformUI.getWorkbench()
                .getActiveWorkbenchWindow().getService(IMenuService.class);

            menuService.populateContributionManager(contributionManager,
                "menu:oxygen.authorpage");
            contributionManager.update(true);
        }
    }
}
```

### 2. Add a workbench listener and add the pop-up customizer when an editor is opened in the Author page:

```
Workbench.getInstance().getActiveWorkbenchWindow().getPartService().addPartListener(
    new IPartListener() {
        @Override
        public void partOpened(IWorkbenchPart part) {
            if (part instanceof ro.sync.exml.workspace.api.editor.WSEditor) {
                WSEditorPage currentPage = ((WSEditor)part).getCurrentPage();
                if (currentPage instanceof WSAuthorEditorPage) {
                    ((WSAuthorEditorPage)currentPage).addPopUpMenuCustomizer(new OxygenAuthorPagePopupMenuCustomizer());
                }
            }
        }
    });
```

### 3. Implement the extension point in your plugin.xml:

```
<extension
    point="org.eclipse.ui.menus">
    <menuContribution
        allPopups="false"
        locationURI="menu:oxygen.authorpage">
        <command
            commandId="eu.doccenter.kgu.client.tagging.removeTaggingFromOxygen"
            style="push">
        </command>
    </menuContribution>
</extension>
```

## Adding Custom Callouts

### Question

I'd like to highlight validation errors, instead of underlining them, for example changing the text background color to light red (or yellow). Also I like to let oxygen write a note about the error type into the author view directly at the error position, like "[value "text" not allowed for attribute "type"]". Is this possible using the API?

### Answer

The Plugins API allows setting a `ValidationProblemsFilter` which gets notified when automatic validation errors are available. Then you can map each of the problems to an offset range in the Author page using the API `WSTextBasedEditorPage.getStartEndOffsets(DocumentPositionedInfo)`. For each of those offsets you can add either persistent or non-persistent highlights. If you add persistent highlights you can also customize callouts to appear for each of them, the downside is that they need to be removed before the document gets saved. The end result would look something like:

**Keywords:**  
z  
hard drive  
configure

**Context:**  
First check the documentation that came with your storage device. If the device requires configuring, follow the steps below.

**Step 1**

**Step 2**  
Otherwise, your drive should come with software. Use this software to format and partition your drive.

**Step 3**  
Once your drive is configured, restart the system. Just for fun. But be sure to remove any vendor software from your system before doing so.

**Problem** The content of element type "step" is incomplete, it must match "((note|hazardstatement)\*, cmd, (choices|choicetable|info|itemgroup|stepxmp|substeps|tutorialinfo)\*,stepresult?)".

**Problem** Attribute "a" must be declared for element type "step".

Here is a small working example:

```
/**
 * Plugin extension - workspace access extension.
 */
public class CustomWorkspaceAccessPluginExtension
    implements WorkspaceAccessPluginExtension {

    /**
     * @see ro.sync.exml.plugin.workspace.WorkspaceAccessPluginExtension
     * #applicationStarted(ro.sync.exml.workspace.api.standalone.StandalonePluginWorkspace)
     */
    public void applicationStarted(final StandalonePluginWorkspace pluginWorkspaceAccess) {
        pluginWorkspaceAccess.addEditorChangeListener(new WSEditorChangeListener() {
            /**
             * @see ro.sync.exml.workspace.api.listeners.WSEditorChangeListener#editorOpened(java.net.URL)
             */
            @Override
            public void editorOpened(URL editorLocation) {
                final WSEditor currentEditor = pluginWorkspaceAccess.getEditorAccess(editorLocation,
                    StandalonePluginWorkspace.MAIN_EDITING_AREA);
                WSEditorPage currentPage = currentEditor.getCurrentPage();
                if (currentPage instanceof WSAuthorEditorPage) {
                    final WSAuthorEditorPage currentAuthorPage = (WSAuthorEditorPage)currentPage;
                    currentAuthorPage.getPersistentHighlighter().setHighlightRenderer(new PersistentHighlightRenderer()
                {
                    @Override
                    public String getTooltip(AuthorPersistentHighlight highlight) {
                        return highlight.getClonedProperties().get("message");
                    }
                });
                @Override
            }
        });
    }
}
```

```

public HighlightPainter getHighlightPainter(AuthorPersistentHighlight highlight) {
    //Depending on severity could have different color.
    ColorHighlightPainter painter = new ColorHighlightPainter(Color.COLOR_RED, -1, -1);
    painter.setBgColor(Color.COLOR_RED);
    return painter;
}
});
currentAuthorPage.getReviewController()
    .getAuthorCalloutsController().setCalloutsRenderingInformationProvider(
        new CalloutsRenderingInformationProvider() {
            @Override
            public boolean shouldRenderAsCallout(AuthorPersistentHighlight highlight) {
                //All custom highlights are ours
                return true;
            }
            @Override
            public AuthorCalloutRenderingInformation getCalloutRenderingInformation(
                final AuthorPersistentHighlight highlight) {
                return new AuthorCalloutRenderingInformation() {
                    @Override
                    public long getTimestamp() {
                        //Not interesting
                        return -1;
                    }
                    @Override
                    public String getContentFromTarget(int limit) {
                        return "";
                    }
                    @Override
                    public String getComment(int limit) {
                        return highlight.getClonedProperties().get("message");
                    }
                    @Override
                    public Color getColor() {
                        return Color.COLOR_RED;
                    }
                    @Override
                    public String getCalloutType() {
                        return "Problem";
                    }
                    @Override
                    public String getAuthor() {
                        return "";
                    }
                    @Override
                    public Map<String, String> getAdditionalData() {
                        return null;
                    }
                };
            }
        });
currentEditor.addValidationProblemsFilter(new ValidationProblemsFilter() {
    List<int[]> lastStartEndOffsets = new ArrayList<int[]>();
    /**
     * @see ro.sync.exml.workspace.api.editor.validation.ValidationProblemsFilter
     * #filterValidationProblems(ro.sync.exml.workspace.api.editor.validation.ValidationProblems)
     */
    @Override
    public void filterValidationProblems(ValidationProblems validationProblems) {
        List<int[]> startEndOffsets = new ArrayList<int[]>();
        List<DocumentPositionedInfo> problemsList = validationProblems.getProblemsList();
        if(problemsList != null) {
            for (int i = 0; i < problemsList.size(); i++) {
                try {
                    startEndOffsets.add(currentAuthorPage.getStartEndOffsets(problemsList.get(i)));
                } catch (BadLocationException e) {
                    e.printStackTrace();
                }
            }
        }
        if(lastStartEndOffsets.size() != startEndOffsets.size()) {
            //Continue
        } else {
            boolean equal = true;
            for (int i = 0; i < startEndOffsets.size(); i++) {
                int[] o1 = startEndOffsets.get(i);
                int[] o2 = lastStartEndOffsets.get(i);
                if(o1 == null && o2 == null) {
                    //Continue
                } else if(o1 != null && o2 != null
                    && o1[0] == o2[0] && o1[1] == o2[1]){
                    //Continue
                } else {
                    equal = false;
                    break;
                }
            }
            if(equal) {

```

```

        //Same list of problems already displayed.
        return;
    }
}
//Keep last used offsets.
lastStartEndOffsets = startEndOffsets;
try {
    if(! SwingUtilities.isEventDispatchThread()) {
        SwingUtilities.invokeAndWait(new Runnable() {
            @Override
            public void run() {
                //First remove all custom highlights.
                currentAuthorPage.getPersistentHighlighter().removeAllHighlights();
            }
        });
    }
} catch (InterruptedException e1) {
    e1.printStackTrace();
} catch (InvocationTargetException e1) {
    e1.printStackTrace();
}
}
if(problemsList != null) {
    for (int i = 0; i < problemsList.size(); i++) {
        //A reported problem (could be warning, could be error).
        DocumentPositionedInfo dpi = problemsList.get(i);
        try {
            final int[] currentOffsets = startEndOffsets.get(i);
            if(currentOffsets != null) {
                //These are offsets in the Author content.
                final LinkedHashMap<String, String> highlightProps = new LinkedHashMap<String,
String>();
                highlightProps.put("message", dpi.getMessage());
                highlightProps.put("severity", dpi.getSeverityAsString());
                if(! SwingUtilities.isEventDispatchThread()) {
                    SwingUtilities.invokeAndWait(new Runnable() {
                        @Override
                        public void run() {
                            currentAuthorPage.getPersistentHighlighter().addHighlight(
                                currentOffsets[0], currentOffsets[1] - 1, highlightProps);
                        }
                    });
                }
            }
        } catch (InterruptedException e) {
            e.printStackTrace();
        } catch (InvocationTargetException e) {
            e.printStackTrace();
        }
    }
}
});
currentEditor.addEditorListener(new WSEditorListener() {
    /**
     * @see ro.sync.exml.workspace.api.listeners.WSEditorListener#editorAboutToBeSavedVeto(int)
     */
    @Override
    public boolean editorAboutToBeSavedVeto(int operationType) {
        try {
            if(! SwingUtilities.isEventDispatchThread()) {
                SwingUtilities.invokeAndWait(new Runnable() {
                    @Override
                    public void run() {
                        //Remove all persistent highlights before saving
                        currentAuthorPage.getPersistentHighlighter().removeAllHighlights();
                    }
                });
            }
        } catch (InterruptedException e) {
            e.printStackTrace();
        } catch (InvocationTargetException e) {
            e.printStackTrace();
        }
    }
    return true;
});
}, StandalonePluginWorkspace.MAIN_EDITING_AREA);
}

/**
 * @see ro.sync.exml.plugin.workspace.WorkspaceAccessPluginExtension#applicationClosing()
 */
public boolean applicationClosing() {
    return true;
}
}
}

```

## Change the DOCTYPE of an Opened XML Document

---

### Question

How to change the DOCTYPE of a document opened in the Author mode?

### Answer

The following API:

```
ro.sync.ecss.extensions.api.AuthorDocumentController.getDoctype()
```

allows you to get the DOCTYPE of the current XML file opened in the Author page.

There is also an API method available which would allow you to set the DOCTYPE back to the XML:

```
ro.sync.ecss.extensions.api.AuthorDocumentController.setDoctype(AuthorDocumentType)
```

Here is an example of how this solution would work:

```
AuthorDocumentType dt = new AuthorDocumentType("article", "testSystemID", "testPublicID",
    "<!DOCTYPE article PUBLIC \"testPublicID\" \"testSystemID\">");
docController.setDoctype(dt);
```

Basically you could take the entire content from the existing DOCTYPE,

```
ro.sync.ecss.extensions.api.AuthorDocumentType.getContent()
```

modify it to your needs, and create another `AuthorDocumentType` object with the new content and with the same public, system IDs.

For example you could use this API if you want to add unparsed entities in the XML DOCTYPE.

## Customize the Default Application Icons for Toolbars/Menus

---

### Question

How can we change the default icons used for the application built-in actions?

### Answer

If you look inside the main JAR library `OXYGEN_INSTALL_DIR\lib\oxygen.jar` or `OXYGEN_INSTALL_DIR\lib\author.jar` it contains an `images` folder in which all the images which we use for our buttons, menus, and toolbars exist.

In order to overwrite them with your own creations:

1. In the `OXYGEN_INSTALL_DIR\lib` directory create a folder called `endorsed`;
2. In the `endorsed` folder create another folder called `images`;
3. Add your own images in the `images` folder.

You can use this mechanism to overwrite any kind of resource located in the main Oxygen JAR library. The folder structure in the `endorsed` directory and in the main Oxygen JAR must be identical.

## Disable Context-Sensitive Menu Items for Custom Author Actions

---

### Question

Is there a way to disable menu items for custom Author actions depending on the cursor context?

### Answer

By default Oxygen does not toggle the enabled/disabled states for actions based on whether the activation XPath expressions for that certain Author action are fulfilled. This is done because the actions can be many and evaluating XPath expression on each caret move can lead to performance problems. But if you have your own `ro.sync.ecss.extensions.api.ExtensionsBundle` implementation you can overwrite the method:

```
ro.sync.ecss.extensions.api.ExtensionsBundle.createAuthorExtensionStateListener()
```

and when the extension state listener gets activated you can use the API like:

```
/**
 * @see
 * ro.sync.ecss.extensions.api.AuthorExtensionStateListener#activated(ro.sync.ecss.extensions.api.AuthorAccess)
 */
public void activated(final AuthorAccess authorAccess) {

    //Add a caret listener to enable/disable extension actions:
    authorAccess.getEditorAccess().addAuthorCaretListener(new AuthorCaretListener() {
        @Override
        public void caretMoved(AuthorCaretEvent caretEvent) {
            try {
                Map<String, Object> authorExtensionActions =
                authorAccess.getEditorAccess().getActionsProvider().getAuthorExtensionActions();
                //Get the action used to insert a paragraph. It's ID is "paragraph"
                AbstractAction insertParagraph = (AbstractAction) authorExtensionActions.get("paragraph");
                //Evaluate an XPath expression in the context of the current node in which the caret is located
                Object[] evaluateXPath = authorAccess.getDocumentController().evaluateXPath(".[ancestor-or-self::p]",
                false, false, false);
                if(evaluateXPath != null && evaluateXPath.length > 0 && evaluateXPath[0] != null) {
                    //We are inside a paragraph, disable the action.
                    insertParagraph.setEnabled(false);
                } else {
                    //Enable the action
                    insertParagraph.setEnabled(true);
                }
            } catch (AuthorOperationException e) {
                e.printStackTrace();
            }
        }
    });
}
```

When the extension is deactivated you should remove the caret listener in order to avoid adding multiple caret listeners which perform the same functionality.

## Dynamic Open File in Oxygen XML Editor Distributed via JavaWebStart

---

### Question

How can we dynamically open a file in an Oxygen XML Editor distributed via JWS?

### Answer

The JWS packager ANT build file which comes with Oxygen signs by default the JNLP file (this means that a copy of it is included in the main JAR library) in this step:

```
<copy file="${outputDir}/${packageName}/${productName}.jnlp" tofile="${home}/JNLP-INF/APPLICATION.JNLP" />
```

Signing the JNLP file indeed means that it is impossible to automatically generate a JNLP file containing some dynamic arguments.

But the JNLP does not need to be signed. Indeed the user probably receives this information when launching the application but at least in this way you should be able to dynamically generate a JNLP file via a PHP script based on the URL which was clicked by the user.

The generated JNLP would then take as argument the URL which needs to be opened when Oxygen starts.

Maybe a different approach (more complicated though) would be to have the JNLP file signed and always refer as a URL argument a location like this:

```
http://path/to/server/redirectEditedURL.php
```

When the URL gets clicked on the client side you would also call a PHP script on the server side which would update the redirect location for `redirectEditedURL.php` to point to the clicked XML resource. Then the opened Oxygen would try to connect to the redirect PHP and be redirected to open the XML.

## Change the Default Track Changes (Review) Author Name

---

### Question

How can we change the default author name used for Track Changes in the Author Component?

### Answer

The Track Changes (Review) Author name is determined in the following order:

1. **API** - The review user name can be imposed through the following API:

```
ro.sync.ecss.extensions.api.AuthorReviewController.setReviewerAuthorName(String)
```

2. **Options** - If the author name was not imposed from the API, it is determined from the `Author` option set from the following Preferences page: [Editor / Edit modes / Author / Review](#).
3. **System properties** - If the author name was not imposed from the API or from the application options then the following system property is used:

```
System.getProperty("user.name")
```

So, to impose the Track Changes author, use one of the following approaches:

1. Use the API to impose the reviewer Author name. Here is the online Javadoc of this method: [http://www.oxygenxml.com/InstData/Editor/SDK/javadoc/ro/sync/ecss/extensions/api/AuthorReviewController.html#setReviewerAuthorName\(java.lang.String\)](http://www.oxygenxml.com/InstData/Editor/SDK/javadoc/ro/sync/ecss/extensions/api/AuthorReviewController.html#setReviewerAuthorName(java.lang.String))
2. [Customise the default options](#) and set a specific value for the reviewer Author name option.
3. Set the value of `user.name` system property when the applet is initialising and before any document is loaded.

## Multiple Rendering Modes for the Same Author Document

---

### Question

How can we add multiple buttons, each showing different visualisation mode of the same Author document (by associating additional/different CSS style sheet)?

### Answer

In the toolbar of the Author mode there is a drop-down button which contains alternative CSS styles for the same document. To add an alternative CSS stylesheet go to Oxygen XML Editor Preferences->Document Type Association page, select the document type associated with your documents and press `Edit`. In the Document Type dialog that appears go to "Author" tab, "CSS" tab and add there references to alternate CSS stylesheets.

For example, one of the alternate CSSs that we offer for DITA document type is located here:

```
OXYGEN_INSTALL_DIR/frameworks/dita/css_classed/hideColspec.css
```

If you open it, you will see that it imports the main CSS and then adds selectors of its own.

## Obtain a DOM Element from an AuthorNode OR AuthorElement

---

### Question

Can a DOM Element be obtained from an AuthorNode or an AuthorElement?

### Answer

No, a DOM Element cannot be obtained from an AuthorNode or an AuthorElement. The AuthorNode structure is also hierarchical but the difference is that all the text content is kept in a single text buffer instead of having individual text nodes.

We have an image in the Javadoc which explains the

situation: <http://www.oxygenxml.com/InstData/Editor/SDK/javadoc/ro/sync/ecss/extensions/api/node/AuthorDocumentFragment.html>

## Print Document Within the Author Component

---

### Question

Can a document be printed within the Author Component?

### Answer

You can use the following API method to either print the Author document content to the printer or to show the Print Preview dialog, depending on the `preview` parameter value:

```
AuthorComponentProvider.print(boolean preview)
```

Here is the online Javadoc for this method:

[http://www.oxygenxml.com/InstData/Editor/SDK/javadoc/ro/sync/ecss/extensions/api/component/AuthorComponentProvider.html#print\(boolean\)](http://www.oxygenxml.com/InstData/Editor/SDK/javadoc/ro/sync/ecss/extensions/api/component/AuthorComponentProvider.html#print(boolean))

## Running XSLT or XQuery Transformations

---

### Question

Can I run XSL 2.0 transformation with Saxon EE using the oXygen SDK?

### Answer

The API class `ro.sync.exml.workspace.api.util.XMLUtilAccess` allows you to create an XSLT Transformer which implements the JAXP interface `javax.xml.transform.Transformer`. Then this type of transformer can be used to transform XML. Here's just an example of transforming when you have an `AuthorAccess` API available:

```
InputSource is = new org.xml.sax.InputSource(URLOUtil.correct(new File("test/personal.xml")).toString());
xslSrc = new SAXSource(is);
javax.xml.transform.Transformer transformer = authorAccess.getXMLUtilAccess().createXSLTTransformer(xslSrc,
null, AuthorXMLUtilAccess.TRANSFORMER_SAXON_ENTERPRISE_EDITION);
transformer.transform(new StreamSource(new File("test/personal.xml")), new StreamResult(new
File("test/personal.html")));
```

If you want to create the transformer from the plugins side, you can use this method instead:

```
ro.sync.exml.workspace.api.PluginWorkspace.getXMLUtilAccess()
```

## Use Different Rendering Styles for Entity References, Comments or Processing Instructions

---

### Question

Is there a way to display entity references in the Author mode without the distinct gray background and tag markers?

### Answer

There is a built-in CSS stylesheet in the Oxygen libraries which is used when styling content in the Author mode, no matter what CSS you use. This CSS has the following content:

```
@namespace oxy url('http://www.oxygenxml.com/extensions/author');
@namespace xi "http://www.w3.org/2001/XInclude";
@namespace xlink "http://www.w3.org/1999/xlink";
@namespace svg "http://www.w3.org/2000/svg";
@namespace mml "http://www.w3.org/1998/Math/MathML";

oxy|document {
  display:block !important;
}

oxy|cdata {
  display:morph !important;
  white-space:pre-wrap !important;
  border-width:0px !important;
  margin:0px !important;
  padding: 0px !important;
}

oxy|processing-instruction {
  display:block !important;
  color: rgb(139, 38, 201) !important;
  white-space:pre-wrap !important;
  border-width:0px !important;
  margin:0px !important;
  padding: 0px !important;
}

oxy|comment {
  display:morph !important;
  color: rgb(0, 100, 0) !important;
  background-color:rgb(255, 255, 210) !important;
  white-space:pre-wrap !important;
  border-width:0px !important;
  margin:0px !important;
  padding: 0px !important;
}

oxy|reference:before,
oxy|entity[href]:before{
  link: attr(href) !important;
  text-decoration: underline !important;
  color: navy !important;

  margin: 2px !important;
  padding: 0px !important;
}

oxy|reference:before {
  display: morph !important;
  content: url(..images/editContent.gif) !important;
}

oxy|entity[href]:before{
  display: morph !important;
  content: url(..images/editContent.gif) !important;
}

oxy|reference,
oxy|entity {
  editable:false !important;
  background-color: rgb(240, 240, 240) !important;
  margin:0px !important;
  padding: 0px !important;
}
```

```

oxy|reference {
  display:morph !important;
}

oxy|entity {
  display:morph !important;
}

oxy|entity[href] {
  border: 1px solid rgb(175, 175, 175) !important;
  padding: 0.2em !important;
}

xi|include {
  display:block !important;
  margin-bottom: 0.5em !important;
  padding: 2px !important;
}
xi|include:before,
xi|include:after{
  display:inline !important;
  background-color:inherit !important;
  color:#444444 !important;
  font-weight:bold !important;
}

xi|include:before {
  content:url(..images/link.gif) attr(href) !important;
  link: attr(href) !important;
}
xi|include[xpointer]:before {
  content:url(..images/link.gif) attr(href) " " attr(xpointer) !important;
  link: oxy_concat(attr(href), "#", attr(xpointer)) !important;
}

xi|fallback {
  display:morph !important;
  margin: 2px !important;
  border: 1px solid #CB0039 !important;
}

xi|fallback:before {
  display:morph !important;
  content:"XInclude fallback: " !important;
  color:#CB0039 !important;
}

oxy|doctype {
  display:block !important;
  background-color: transparent !important;
  color:blue !important;
  border-width:0px !important;
  margin:0px !important;
  padding: 2px !important;
}

oxy|error {
  display:morph !important;
  editable:false !important;
  white-space:pre !important;
  color: rgb(178, 0, 0) !important;
  font-weight:bold !important;
}

*[xlink|href]:before {
  content:url(..images/link.gif);
  link: attr(xlink|href) !important;
}

/*No direct display of the MathML and SVG images.*/
svg|svg{
  display:inline !important;
  white-space: trim-when-ws-only;
}
svg|svg svg|*{
  display:none !important;
  white-space:normal;
}

mml|math{
  display:inline !important;
  white-space: trim-when-ws-only;
}
mml|math mml|*{
  display:none !important;
  white-space: normal;
}

```

In the CSS used for rendering the XML in **Author** mode do the following:

- import the special Author namespace;
- use a special selector to customize the entity node.

#### Example:

```
@namespace oxy url('http://www.oxygenxml.com/extensions/author');
oxy|entity {
  background-color: inherit !important;
  margin:0px !important;
  padding: 0px !important;
  -oxy-display-tags:none;
}
```

You can overwrite styles in the predefined CSS in order to custom style comments, processing instructions and *CData* sections. You can also customize the way in which `xi:include` elements are rendered.

## Insert an Element with all the Required Content

---

### Question

I'm inserting a DITA *image* XML element, using the Author API, which points to a certain resource and has required content. Can the required content be automatically inserted by the application?

### Answer

The API `ro.sync.ecss.extensions.api.AuthorSchemaManager` can propose valid elements which can be inserted at the specific offset. Using the method

`AuthorSchemaManager.createAuthorDocumentFragment(CIElement)` you can convert the proposed elements to document fragments (which have all the required content filled in) which can then be inserted in the document.

```
AuthorSchemaManager schemaManager = this.authorAccess.getDocumentController().getAuthorSchemaManager();
WhatElementsCanGoHereContext context =
schemaManager.createWhatElementsCanGoHereContext(this.authorAccess.getEditorAccess().getCaretOffset());
List<CIElement> possibleElementsAtCaretPosition = schemaManager.whatElementsCanGoHere(context);
loop: for (int i = 0; i < possibleElementsAtCaretPosition.size(); i++) {
  CIElement possibleElement = possibleElementsAtCaretPosition.get(i);
  List<CIAttribute> attrs = possibleElement.getAttributes();
  if(attrs != null) {
    for (int j = 0; j < attrs.size(); j++) {
      CIAttribute ciAttribute = attrs.get(j);
      if (ciAttribute.getName().equals("class")) {
        if (ciAttribute.getDefaultValue() != null
            && ciAttribute.getDefaultValue().contains(" topic/image ")) {
          //Found a CIElement for image
          //Create a fragment for it. The fragment contains all required child elements already built.
          AuthorDocumentFragment frag = schemaManager.createAuthorDocumentFragment(possibleElement);
          //Now set the @href to it.
          //Ask the user and obtain a value for the @href
          //Then:

          String href = "test.png";
          List<AuthorNode> nodes = frag.getContentNodes();
          if(!nodes.isEmpty()) {
            AuthorElement imageEl = (AuthorElement) nodes.get(0);
            imageEl.setAttribute("href", new AttrValue(href));
          }
          //And insert the fragment.

          this.authorAccess.getDocumentController().insertFragment(this.authorAccess.getEditorAccess().getCaretOffset(),
            frag);
            break loop;
          }
        }
      }
    }
  }
}
```

## Obtain the Current Selected Element Using the Author API

---

### Question

If in the Author mode, an element is fully selected, I would like to perform an action on it. If not, I would like to perform an action on the node which is located at the caret position. Is this possible via the API?

### Answer

When an element is fully selected by the user the selection start and end offsets are actually outside of the node's offset bounds. So using `AuthorDocumentController.getNodeAtOffset` will actually return the parent of the selected node. We have some special API which makes it easier for you to determine this situation:

`WSAuthorEditorPageBase.getFullySelectedNode()`.

```
AuthorDocumentController controller = authorPageAccess.getDocumentController();
AuthorAccess authorAccess = authorPageAccess.getAuthorAccess();
int caretOffset = authorAccess.getEditorAccess().getCaretOffset();

AuthorElement nodeAtCaret = (AuthorElement) authorAccess.getEditorAccess().getFullySelectedNode();
if (nodeAtCaret == null) {
    //We have no fully selected node. We can look at the caret offset.
    nodeAtCaret = (AuthorElement) authorAccess.getDocumentController().getNodeAtOffset(caretOffset);
    //Or we could look at the selection start and end, see which node is the parent of each offset and get the
    closest common ancestor.
}
```



---

# Chapter 10

---

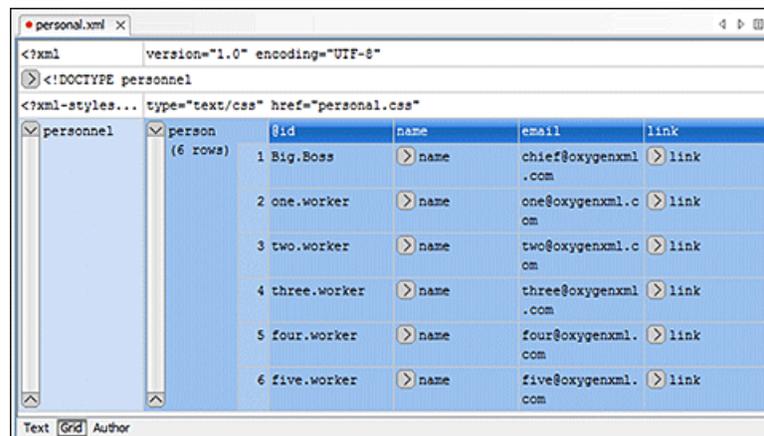
## Grid Editor

---

### Topics:

- [Layouts: Grid and Tree](#)
- [Navigating the Grid](#)
- [Specific Grid Actions](#)
- [Drag and Drop in the Grid Editor](#)
- [Copy and Paste in the Grid Editor](#)
- [Bidirectional Text Support in the Grid Editor](#)

In the **Grid** editor, the XML document is displayed as a structured grid of nested tables. A non-technical user can modify the text content without editing directly the XML tags. The tables can be expanded and collapsed with a mouse click to show or hide the elements of the document as needed. The document structure can also be changed easily with drag and drop operations on the grid components. The tables can be zoomed using **(Ctrl - +)**, **(Ctrl - -)**, **(Ctrl - 0)** or **(Ctrl - mouse wheel)**.

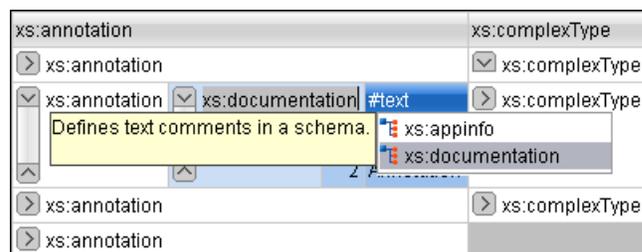


**Figure 232: The Grid Editor**

You can switch between the text tab and the grid tab of the editor panel with the buttons **Text** and **Grid** available at the bottom of the editor panel. Also the switch can be performed with the actions **Document > Edit mode > Grid** and **Document > Edit mode > Text**.

If the edited document is associated with a schema (DTD, XML Schema, Relax NG, etc.), the editor offers content completion assistant for the element and attributes names and values. If you choose to insert an element that has required content, the subtree of needed elements and attributes are automatically included.

To display the content completion popup you have to start editing, for example by double clicking the cell. Pressing **(Ctrl - Space)** also displays the popup.



**Figure 233: Content Completion in Grid Editor**

## Layouts: Grid and Tree

The grid editor has two modes for the layout. The default one is the grid layout. This smart layout detects the recurring elements in the XML document and creates tables having as columns the children (including the attributes) of these elements. This way it is possible to have tables nested in other tables, reflecting the structure of your document.

	<?xml	version="1.0" encoding="UTF-8"			
test	table	tr	@id	first	last
		(3 rows)	1	10001	Jhon Doe
			2	10002	Mark Ewing
			3	10003	Dave Flint

**Figure 234: Grid Layout**

The other layout mode is tree-like, does not create any tables and it only presents the structure of the document.

	<?xml	version="1.0" encoding="UTF-8"			
test	table	tr	@id	10001	
			first	Jhon	
			last	Doe	
		tr	@id	10002	
			first	Mark	
			last	Ewing	
		tr	@id	10003	
			first	Dave	
			last	Flint	

**Figure 235: Tree Layout**

You can switch between the two modes using the **Document > Grid Layout > Grid mode/Tree mode** menu.

## Navigating the Grid

At first the content of a document opened in the grid tab is collapsed, only the root element and its attributes being shown. The grid disposition of the node names and values is similar to a web form or a dialog. The same set of key shortcuts used to select dialog components is also available in the grid page. For instance moving to the next editable value in a table row is done using the **(Tab)** key. Moving to the previous cell employs using the **(Shift-Tab)** key. Changing a value involves pressing the **(Enter)** key or start typing the new value directly, and, when the editing is finished, pressing **(Enter)** again to commit the data into the document.

The arrow keys and the **(Page Up/Down)** keys can be used for navigation. By pressing **(Shift)** while using these keys you can create a selection zone. To add other nodes that are not close to this zone, you can use the mouse and the **(Ctrl)** key (**(Command)** on Mac OS X).

The following key combinations can be used to scroll the grid:

- Ctrl - Up scrolls the grid upwards
- Ctrl - Down scrolls the grid downwards
- Ctrl - Left scrolls the grid to the left
- Ctrl - Right scrolls the grid to the right

An arrow sign displayed to the left of the node name indicates that this node has child nodes. You can click this sign to display the children. The expand/collapse actions can be also invoked by pressing the **(NumPad Plus)** and **(NumPad Minus)** keys. The same expand/collapse actions can be accessed from the submenu **Expand/Collapse** of the contextual menu or from the menu **Document > Grid Expand/Collapse**.

The following actions are available on the **Expand/Collapse** menu:

-  **Expand All** - Expands the selection and all its children.
-  **Collapse All** - Collapses the selection and all its children.
- **Expand Children** - Expands all the children of the selection but not the selection.
- **Collapse Children** - Collapses all the children of the selection but not the selection.
- **Collapse Others** - Collapses all the siblings of the current selection but not the selection.

## Specific Grid Actions

---

In order to access these actions, you can click the column header and choose the **Table** item from the contextual menu. The same set of actions is available in the **Document** menu and on the **Grid** toolbar which is opened from menu **Window > Show Toolbar > Grid**.

### Sorting a Table Column

You can sort the table by a specific column. The sorting can be either ascending or descending.

The icons for this pair of actions are:  

The sorting result depends on the data type of the column content. It can be different in case of number (numerical sorting) or text information (alphabetical sorting). The editor analyses automatically the content and decides what type of sorting to apply. When a mixed set of values is present in the sorted column, a dialog is displayed allowing to choose the desired type of sorting between *numerical* and *alphabetical*.

### Inserting a Row in a Table

You can add a new row using the copy/paste row operation, or by invoking the  **Insert row** action from the **Table** contextual menu.

A quicker way of inserting a new row is to move the selection over the row header, and then press **Enter**. The row header is the zone in the left of the row that holds the row number. The new row is inserted below the selection.

### Inserting a Column in a Table

You can insert a column after the selected one, using the  **Insert column** action from the **Table** contextual menu.

### Clearing the Content of a Column

You can clear all the cells from a column, using the **Clear content** action from the **Table** contextual menu.

### Adding Nodes

Using the contextual menu you can add nodes before, after, or as last child of the currently selected node.

The sub-menus containing detailed actions are:

- **Insert before**
- **Insert after**
- **Append child**

### Duplicating Nodes

A quicker way of creating new nodes is to duplicate the existing ones. The action is available in the **Duplicate** contextual menu and in the **Document > Grid Edit > Duplicate** menu.

## Refresh Layout

When using drag and drop to reorganize the document, the resulted layout can be different from the expected one. For instance, the layout can contain a set of sibling tables that could be joined together. To force the layout to be recomputed, you can use the  **Refresh** action. The action is available in the **Refresh selected** contextual menu and in the **Document > Grid Edit > Refresh selected** menu.

## Start Editing a Cell Value

You can simply press **(Enter)** after you have selected the grid cell or you can use the  **Start Editing** action found in the **Document > Grid Edit** menu.

## Stop Editing a Cell Value

You stop editing a cell value when you press **(Enter)** or use the  **End Editing** action found in the **Document > Grid Edit** menu.

To cancel the editing without saving the current changes in the document, press the **(Esc)** key.

## Drag and Drop in the Grid Editor

---

Arranging different sections in your XML document in the grid editor is made easy by the drag and drop features.

Using drag and drop you can:

- Copy or move a set of nodes.
- Change the order of columns in the tables.
- Move the rows from the tables.

These operations are available for single and multiple selection. To deselect one of the selected fragments, use **Ctrl + Click**.

While dragging, the editor paints guide-lines showing locations where the nodes can be dropped.

Nodes can also be dragged outside the grid editor and text from other applications can be dropped inside the grid. See [Copy and Paste in the Grid Editor](#) for details.

## Copy and Paste in the Grid Editor

---

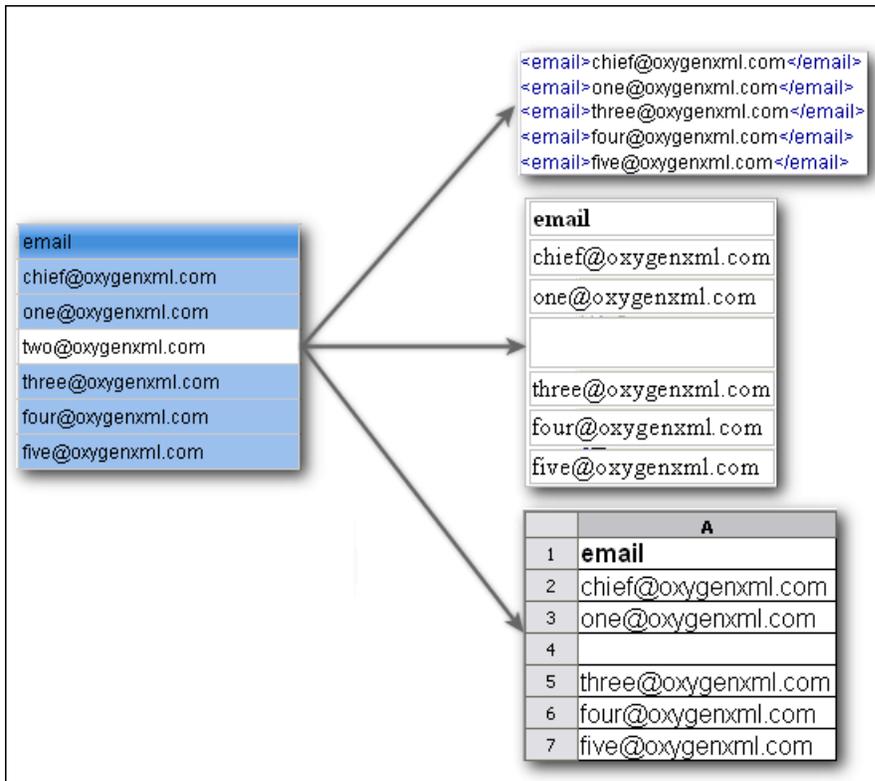
The selection in the grid is a bit complex relative to the selection in a text component. It consists of a current selected cell and additional selected cells. These additional cells are either hand picked by the user using the mouse, or are implied by the current selected cell. To be more specific, let's consider you click the name of the column - this becomes the current selected cell, but the editor automatically extends the selection so that it contains all the cells from that column. The current selected cell is painted with a color that is different from the rest of the selection.

You can select discontinuous regions of nodes and place them in the clipboard using the copy action. To deselect one of the selected fragments, use **Ctrl + Click**. Pasting these nodes relative to the current selected cell may be done in two ways: just below (after) as a brother, which is the default behavior, or as the last child of the selected cell.

The **Paste as Child** action is available in the contextual menu.

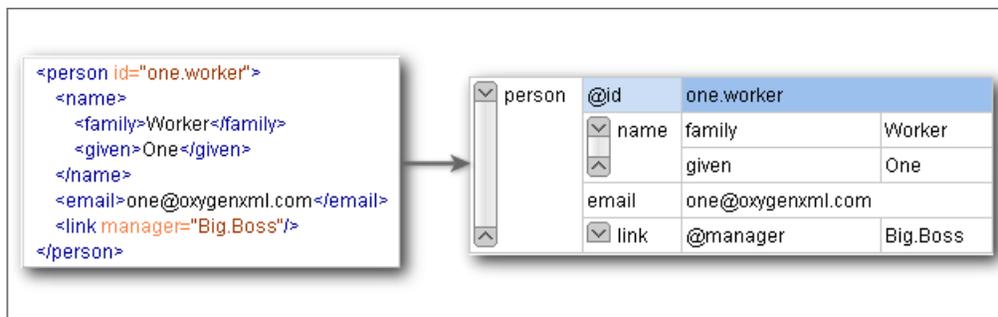
The same action can be found in the menu **Document > Grid Edit > Paste as Child**.

The copied nodes from the grid can also be pasted into the text editor or other applications. When copying from grid into the text editor or other text based applications the inserted string represents the nodes serialization. The nodes from tables can be copied using HTML or RTF in table format. The resulting cells contain only the concatenated values of the text nodes.



**Figure 236: Copying from grid to other editors**

In the grid editor you can paste wellformed xml content or tab separated values from other editors. If you paste xml content the result will be the insertion of the nodes obtained by parsing this content.



**Figure 237: Copying XML data into grid**

If the pasted text contains multiple lines of tab separated values it can be considered as a matrix of values. By pasting this matrix of values into the grid editor the result will be a matrix of cells. If the operation is performed inside existing cells, the existing values will be overwritten and new cells will be created when needed. This is useful for example when trying to transfer data from Excel like editors into the grid editor.

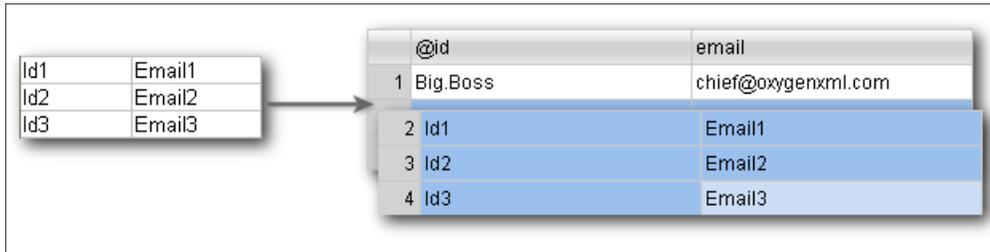


Figure 238: Copying tab separated values into grid

## Bidirectional Text Support in the Grid Editor

If you are editing documents employing a different text orientation, you can change the way the text is rendered and edited in the grid cells by using the **(Ctrl-Shift-O)** shortcut to switch from the default left to right text orientation to the right to left orientation.

 **Note:** This change applies only to the text from the cells, and not to the layout of the grid editor.

<?xml	version="1.0" encoding="UTF-8"
sample	#text
(9 rows)	
1	عندما يريد العالم أن يتكلم، فهو يتحدث بلغة يونيكود.
2	Quan el món vol conversar, parla Unicode
3	כאשר העולם רוצה לדבר, הוא מדבר ב-Unicode
4	Ha a világ beszélni akar, azt Unicode-ul mondja
5	Quando il mondo vuole comunicare, parla Unicode
6	世界的に話すなら、Unicode です。
7	세계를 향한 대화, 유니코드로 하십시오
8	Når verden vil snakke, snakker den Unicode
9	Når verda ønskjer å snakke, talar ho Unicode

Figure 239: Default left to right text orientation

<?xml	"version="1.0" encoding="UTF-8"
sample	#text
(9 rows)	
1	عندما يريد العالم أن يتكلم، فهو يتحدث بلغة يونيكود.
2	Quan el món vol conversar, parla Unicode
3	כאשר העולם רוצה לדבר, הוא מדבר ב-Unicode
4	Ha a világ beszélni akar, azt Unicode-ul mondja
5	Quando il mondo vuole comunicare, parla Unicode
6	。世界的に話すなら、Unicode です
7	세계를 향한 대화, 유니코드로 하십시오
8	Når verden vil snakke, snakker den Unicode
9	Når verda ønskjer å snakke, talar ho Unicode

Figure 240: Right to left text orientation

---

# Chapter 11

---

## Transforming Documents

---

### Topics:

- [Output Formats](#)
- [Transformation Scenario](#)
- [XSLT Processors](#)
- [XSL-FO Processors](#)

XML is mainly used to store, carry, and exchange data. When you want to view the data in a more user friendly form, you can use one of the following:

- the [Author editor page](#)
- an XML-compliant user agent
- transform it to a format that can be read by other user agents. This process is known as transformation.

## Output Formats

---

Within the current version of Oxygen XML Editor you can transform your XML documents to the following formats without having to exit from the application:

- **PDF** - Adobe Portable Document Format (PDF) is a compact binary file format that can be viewed and printed by anyone, anywhere across a broad range of hardware and software using the free PDF Viewer from [Adobe](#).
- **PS** - PostScript is the leading printing technology from [Adobe](#) for high-quality, best-in-class printing solutions ranging from desktop devices to the most advanced digital presses, platemakers, and large format image setters in the world. PostScript files can be viewed using viewers such as GhostScript, but are more commonly created as a prepress format.
- **TXT** - Text files are Plain ASCII Text and can be opened in any text editor or word processor.
- **XML** - XML stands for eXtensible Markup Language and is a [W3C](#) standard markup language, much like HTML, which was designed to describe data. XML tags are not predefined in XML. You must define your own tags. XML uses a Document Type Definition (DTD), an XML Schema or a Relax NG schema to describe the data. XML with a DTD, XML Schema or Relax NG schema is designed to be self-descriptive. XML is not a replacement for HTML. XML and HTML were designed with different goals:
  - XML was designed to describe data and to focus on what data is.
  - HTML was designed to display data and to focus on how data looks.
  - HTML is about displaying information, XML is about describing information.
- **XHTML** - XHTML stands for eXtensible HyperText Markup Language, a [W3C](#) standard. XHTML is aimed to replace HTML. While almost identical to HTML 4.01, XHTML is a stricter and cleaner version of HTML. XHTML is HTML defined as an XML application.

For transformation to formats that are not listed above simply install the tool chain required to perform the transformation and process the xml files created with Oxygen XML Editor in accordance with the processor instructions.

All formatting during a transformation is provided under the control of an Extensible Stylesheet (XSLT). Specifying the appropriate XSLT enables transformation to the above formats and preparation of output files for specific user agent viewing applications, including:

- **HTML** - HTML stands for Hyper Text Markup Language and is a [W3C Standard](#) for the World Wide Web. HTML is a text file containing small markup tags. The markup tags tell the Web browser how to display the page. An HTML file must have an `htm` or `html` file extension. An HTML file can be created using a simple text editor.
- **HTML Help** - [Microsoft HTML Help](#) is the standard help system for the Windows platform. Authors can use HTML Help to create online help for a software application or to create content for a multimedia title or Web site. Developers can use the HTML Help API to program a host application or hook up context-sensitive help to an application.
- **JavaHelp** - JavaHelp software is a full-featured, platform-independent, extensible help system from [Sun Microsystems/Oracle](#) that enables developers and authors to incorporate online help in applets, components, applications, operating systems, and devices. JavaHelp is a free product and the binaries for JavaHelp can be redistributed.
- **Eclipse Help** - Eclipse Help is the help system incorporated in the [Eclipse platform](#) that enables Eclipse plugin developers to incorporate online help in their plugins.

Many other target formats are possible, these are the most popular. The basic condition for transformation to any format is that your source document is well-formed. Always, make sure that the XSL used for the transformation is the right one according to the desired output format and with the input source definition. For example, if you want to transform to HTML format using a DocBook html stylesheet, your source xml document should respect the DocBook DTD.

An XSL stylesheet specifies the presentation of a class of XML documents by describing how an instance of the class is transformed into an output document by using special formatting vocabulary.

XSL consists of three parts:

- **XSL Transformations (XSLT)** - XSLT is a language for transforming XML documents.
- **XML Path (XPath) Language** - XPath is an expression language used by XSLT to access or refer parts of an XML document. XPath is also used by the XML Linking specification.

- **XSL Formatting Objects (XSL:FO)** - XSL:FO is an XML vocabulary for specifying formatting semantics.

Oxygen XML Editor supports XSLT/XPath version 1.0 using Saxon 6.5.5, Xalan, Xsltproc, MSXML (3.0, 4.0, .NET) and XSLT/XPath 2.0 by using Saxon 9.4.0.4 HE, Saxon 9.4.0.4 PE, and Saxon 9.4.0.4 EE. *The validation* is done also depending on the stylesheet version.

## Transformation Scenario

---

A transformation scenario is a set of complex operations and settings that gives you the possibility to obtain outputs of multiple types (XML, HTML, PDF, EPUB, and others) from the same source of XML files and stylesheets.

Executing a transformation scenario implies multiple actions, such as:

- validating the input file;
- obtaining intermediate output files (for example formatting objects for the XML to PDF transformation);
- using transformation engines to produce the output.

Before transforming an XML document in Oxygen XML Editor, define a transformation scenario to apply to that document. A scenario is a set of values for various parameters defining a transformation. It is not related to any particular document but to a document type:

- **Scenarios that apply to XML files** - Such a scenario contains the location of an XSLT stylesheet that is applied on the edited XML document and other transform parameters.
- **Scenarios that apply to XSLT files** - Such a scenario contains the location of an XML document that the edited XSLT stylesheet is applied on and other transform parameters.
- **Scenarios that apply to XQuery files** - Such a scenario contains the location of an XML source that the edited XQuery file is applied on and other transform parameters. When the XML source is a native XML database the XML source field of the scenario is empty because the XML data is read with XQuery specific functions like `document ( )`. When the XML source is a local XML file, the URL of the file is specified in the XML input field of the scenario.
- **Scenarios that apply to SQL files** - Such a scenario specifies a database connection for the database server that runs the SQL file associated with the scenario. The data processed by the SQL script is located in the database.
- **Scenarios that apply to XProc files** - Such a scenario contains the location of an XProc script and other transform parameters.
- **DITA-OT scenarios** - Such a scenario provides the parameters for an Ant transformation that executes a DITA-OT build script. Oxygen XML Editor comes with a built-in version of Ant and a built-in version of DITA-OT but different versions can be set in the scenario.



### Note:

Status messages generated during the transformation process are displayed in the *Information view*.

## Defining a New Transformation Scenario

Defining a transformation scenario is the first step in the process of transforming a document. The following types of scenarios are available:

- ***XML transformation with XSLT*** - specifies transform parameters and the location of an XSLT stylesheet that Oxygen XML Editor applies to the edited XML document. This scenario is useful when you develop an XML document and the XSLT document is in its final form;
- ***XML transformation with XQuery*** - specifies transform parameters and the location of an XQuery file that Oxygen XML Editor applies to the edited XML document;
- ***DITA-OT transformation*** - specifies the parameters for an Ant transformation that executes a DITA-OT build script. Oxygen XML Editor comes with a built-in version of Ant and a built-in version of DITA-OT but different versions can be set in the scenario;
- ***ANT transformation*** - allows you to configure options and parameters of an ANT script;

- **XSLT transformation** - specifies transform parameters and the location of an XML document to which the edited XSLT stylesheet is applied. This scenario is useful when you develop an XSLT document and the XML document is in its final form;
- **XProc transformation** - contains the location of an XProc script and other transform parameters;
- **XQuery transformation** - specifies transform parameters and the location of an XML source to which the edited XQuery file is applied. When the XML source is a native XML database the XML source field of the scenario is empty because the XML data is read with XQuery specific functions like `document ( )`. When the XML source is a local XML file, the URL of the file is specified in the XML input field of the scenario;
- **SQL transformation** - specifies a database connection for the database server that runs the SQL file associated with the scenario. The data processed by the SQL script is located in the database.

## XML transformation with XSLT

To create an **XML transformation with XSLT** scenario, use one of the following methods:

- Go to **Window > Show View** and select  **Transformation Scenarios** to display this view. Click the **New** button and select **XML transformation with XSLT**;
- Click the  **Configure Transformation Scenario(s)** **CTRL+Shift+C** button on the **Transformation** toolbar, then click the **New** button and select **XML transformation with XSLT**;
- Select **CTRL+Shift+T** on your keyboard or click the  **Apply Transformation Scenario** button on the **Transformation** toolbar to open the **Transform With** dialog. In this dialog click the **New** button and select **XML transformation with XSLT**.
  - 👉 **Note:** In case a scenario is already associated with the edited document, selecting **CTRL+Shift+T** or  **Apply Transformation Scenario** runs the associated scenario automatically. You can check whether transformation scenarios are associated with the edited document by hovering your cursor over the  **Apply Transformation Scenario** button.

All three methods open the **New Scenario** dialog box. This dialog allows you to configure the options that control the transformation.

The upper part of the dialog box contains the **Name** field and the **Storage** options:

- **Global Options** - the scenario is saved in the global options stored in the user home directory;
- **Project Options** - the scenario list is stored in the project file. In case your project is saved on a source versioning/sharing system (CVS, SVN, Source Safe, and so on.), your team can use the scenarios you defined.

The lower part of the dialog box contains the following tabs:

- **XSLT**;
- **Output**;
- **FO Processors**.

### The XSLT Tab

The **XSLT** tab contains the following options:

- **XML URL** - specifies the source XML file. This URL is resolved through the catalog resolver. If the catalog does not have a mapping for the URL, then the file is used directly from its remote location.
  - 👉 **Note:** In case the transformer engine is Saxon 9 and a custom URI resolver is configured in **Preferences** for Saxon 9, the XML input of the transformation is passed to that URI resolver.
  - 👉 **Note:** In case the transformer engine is one of the built-in XSLT 2.0 engines and *the name of an initial template* is specified in the scenario, the **XML URL** field can be empty. The **XML URL** field can also be empty in case of *external XSLT processors*. In all other cases a non-empty XML URL value is mandatory.

- **XSL URL** - specifies the source XSL file that the transformation uses. This URL is resolved through the catalog resolver. If the catalog does not have a mapping for the URL, the file is used directly from its remote location.

You can use the following browsing buttons to enter values in the **XML URL** and **XSL URL** fields:

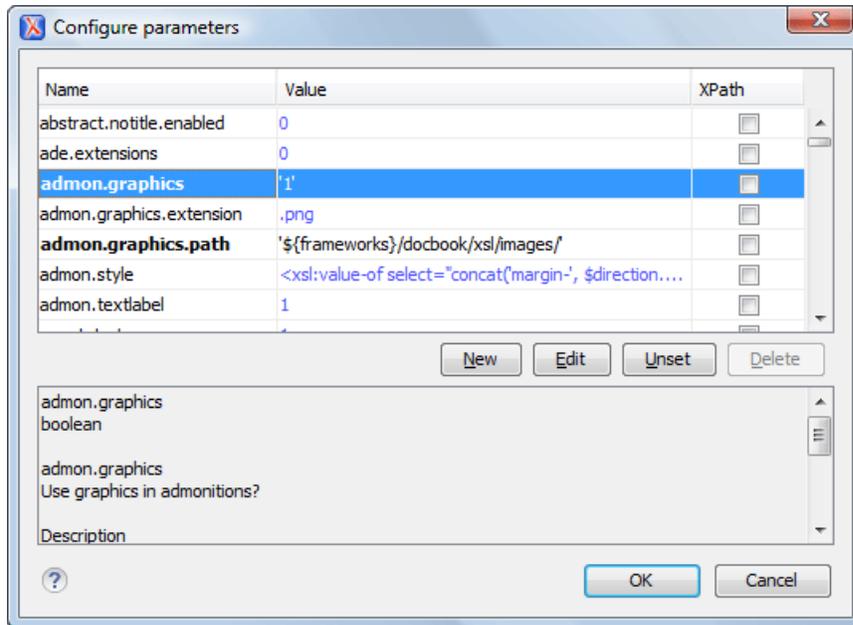
-  **Insert Editor Variables** - opens a pop-up menu allowing to introduce special *Oxygen XML Editor editor variables* or *custom editor variables* in the XML URL field;
-  **Browse for local file** - opens a local file browser dialog box allowing to select a local file;
-  **Browse for remote file** - opens an URL browser dialog box allowing to select a remote file;
-  **Browse for archived file** - opens a zip archive browser dialog box allowing to select a file from a zip archive;
-  **Browse Data Source Explorer** - opens the *Data Source Explorer* window;
-  **Search for file** - allows you to find a file in the current project;
-  **Open in editor** - opens in an editor panel the file with the path specified in the **XML URL** text box.

The rest of the options available in the **XSLT** tab allow you to further customize the transformation scenario:

- **Use "xml-stylesheet" declaration** - use the stylesheet declared with an `xml-stylesheet` declaration instead of the stylesheet specified in the **XSL URL** field. By default this checkbox is not selected and the transformation applies the XSLT stylesheet specified in the **XSL URL** field. If it is checked, the scenario applies the stylesheet specified explicitly in the XML document with the `xml-stylesheet` processing instruction;
- **Transformer** - this combo box presents all the transformation engines available to Oxygen XML Editor for performing a transformation. These are the built-in engines and *the external engines defined in the Custom Engines preferences page*. The engine you choose in this dialog is used as the default transformation engine. In case no validation scenario is associated with an XSLT or XQuery document, the transformation engine is used in the validation process, if it provides validation support;
  -  **Advanced options** - allows you to configure advanced options of the Saxon HE / PE / EE engine for the current transformation scenario. To configure the same options globally, go to the *Saxon-HE/PE/EE preferences page*. For the current transformation scenario, these **advanced options** overwrite the options configured in the *Saxon-HE/PE/EE preferences page*. The **Initial mode and template** option is available only in the **advanced options**. It is a Saxon-specific option that sets the name of the first XSLT template which starts the XSLT transformation or the initial mode of transformation.
- **Parameters** - opens *the Configure parameters dialog*, allowing you to configure the XSLT parameters used in the current transformation. In this dialog you can also configure the parameters of additional stylesheets, set with the **Additional XSLT stylesheets** button. If the XSLT transformation engine is custom-defined you can not use this dialog to configure the parameters sent to the custom engine. In this case, you can copy all parameters from the dialog using the contextual menu actions and edit the custom XSLT engine to include the necessary parameters in the command line ;
- **Extensions** - opens *the dialog for configuring the XSLT/XQuery extension jars or classes* which define extension Java functions or extension XSLT elements used in the transformation;
- **Additional XSLT stylesheets** - opens *the dialog for adding XSLT stylesheets* which are applied on the result of the main stylesheet specified in the **XSL URL** field. This is useful when a chain of XSLT stylesheets must be applied to the input XML document;
- **Append header and footer** - opens a dialog for specifying an URL for a header HTML file added at the beginning of the result of an HTML transformation and a URL for a footer HTML file added at the end of the HTML result of the transformation.

### *XSLT Transformation Parameters*

The parameters of the XSLT stylesheet used in the current transformation scenario.



**Figure 241: Configure parameters dialog**

The table presents all the parameters of the XSLT stylesheet, all imported and included stylesheets and all *additional stylesheets* with their current values. The following font type and color conventions are used:

- blue font values are the defaults collected from the stylesheet;
- black font values and bold font names indicate edited parameters.

If a parameter value was not edited, then the table presents its default value. The bottom panel presents:

- the default value of the parameter selected in the table;
- a description of the parameter, if available;
- the system ID of the stylesheet that declares it.

For example setting the value of a parameter having a declared namespace like:

```
<xsl:param name="p:param" xmlns:p="namespace">default</xsl:param>
```

use the following expression in the **Name** column of the **Parameters** dialog:

```
{namespace}param
```

If the **XPath** column is checked, the parameter value is evaluated as an XPath expression before starting the XSLT transformation.

For example, you can use expressions like:

```
doc('test.xml')//entry  
//person[@atr='val']
```



**Note:**

1. The **doc** function solves the argument relative to the XSL stylesheet location. You can use full paths or editor variables like **\${cfdu}** (current file directory) to specify other locations: `doc('${cfdu}/test.xml')//*`
2. You cannot use XSLT Functions. Only XPath functions are allowed.

The following actions are available for managing parameters:

- **New** - Adds a new parameter to the list.
- **Edit** - Edits the value of the selected parameter.
- **Unset** - Resets the selected parameter to its default value. Available only for parameters with set values.
- **Delete** - Removes the selected parameter from the list. It is enabled only for parameters added to the list with the **New** button.

The *editor variables* displayed at the bottom of the dialog can be used in the values of the parameters to make them independent of the location of the XSLT stylesheet or the XML document.

## The Output Tab

The **Output** tab contains the following options:

- **Prompt for file** - At the end of the transformation a file browser dialog is displayed for specifying the path and name of the file which stores the transformation result.
- **Save As** - The path of the file where the transformation result are stored. The path can include *special Oxygen XML Editor editor variables* or *custom editor variables*.
- **Open in Browser/System Application** - If enabled, Oxygen XML Editor opens the transformation result automatically, in a system application associated with the type of the result (HTML/XHTML, PDF, text) file.



**Note:** If you already set the **Default Internet browser** option in the **Global** preferences page, it takes precedence over the default system application settings.

- **Saved file** - When **Open in Browser/System Application** is selected this button can be used to specify that Oxygen XML Editor should open automatically at the end of the transformation the file specified in the **Save As** text field.
- **Other location** - When **Open in System Application** is selected, this button can be used to specify that Oxygen XML Editor should not open the file specified in the **Save As** text field, it should open the file specified in the text field of the **Other location** radio button. The file path can include *special Oxygen XML Editor editor variables* or *custom editor variable*.
- **Open in editor** - When this is enabled, the transformation result set in the **Save As** field is opened in a new editor panel with the appropriate built-in editor type: if the result is an XML file it is opened with the built-in XML editor, if it is an XSL-FO file it is opened with the built-in FO editor, and so on.
- **Show As XHTML** - It is enabled only when **Open in browser** is disabled. If this is checked, Oxygen XML Editor displays the transformation result in a built-in XHTML browser panel at the bottom of the application window.



**Important:** When transforming very large documents, you should be aware that enabling this feature results in a very long time necessary for rendering the transformation result in the XHTML result viewer panel. This drawback appears due to the built-in Java XHTML browser implementation. In these cases, if you wish to see the XHTML result of the transformation, you should use an external browser by checking the **Open in browser** option.

- **Show As XML** - If this is checked Oxygen XML Editor displays the transformation result in an XML viewer panel at the bottom of the application window with *syntax highlight* specific for XML documents.
- **Show As SVG** - If this is checked Oxygen XML Editor displays the transformation result in an SVG viewer panel at the bottom of the application window by rendering the result as an SVG image.
- **Image URLs are relative to** - If **Show As XHTML** is checked this text field specifies the path used to resolve image paths contained in the transformation result.

## The FO Processor Tab

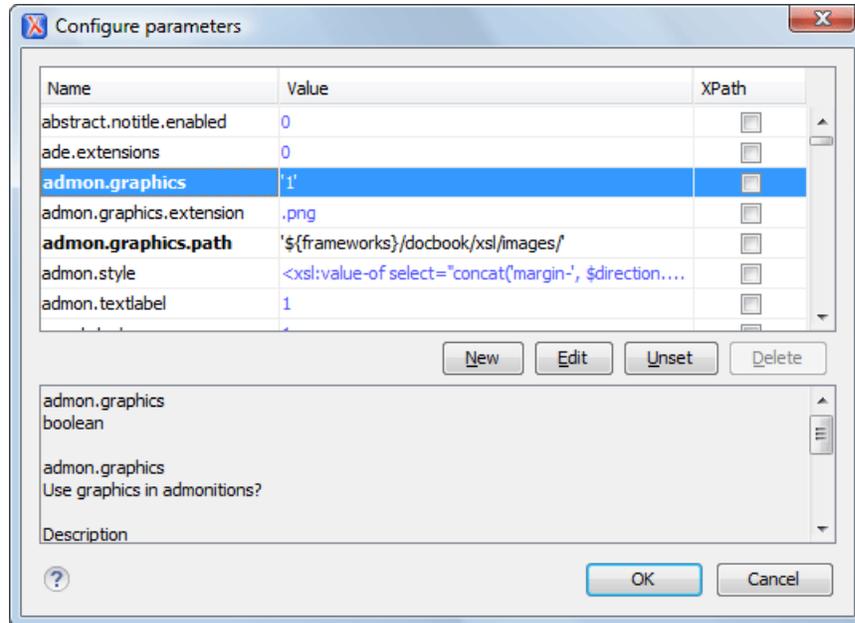
The **FO Processor** tab contains the following options:

- **Perform FO Processing** - specifies whether an FO processor is applied (either the built-in Apache FOP engine or an external engine defined in **Preferences**) during the transformation;
- **XSLT result as input** - the FO processor is applied to the result of the XSLT transformation defined in the **XSLT** tab;
- **XML URL as input** - the FO processor is applied to the input XML file;

- **Method** - the output format of the FO processing. Available options depend on the selected processor type;
- **Processor** - specifies the FO processor. It can be the built-in Apache FOP processor or an *external processor*.

### XSLT Stylesheet Parameters

The global parameters of the XSLT stylesheet used in the transformation scenario are configured from the dialog available from the **Parameters** button of the **Configure Transformation** dialog:



**Figure 242: Configure parameters dialog**

The table presents all the parameters of the XSLT stylesheet, all imported and included stylesheets and all *additional stylesheets* with their current values. The following font type and color conventions are used:

- blue font values are the defaults collected from the stylesheet;
- black font values and bold font names indicate edited parameters.

If a parameter value was not edited, then the table presents its default value. The bottom panel presents:

- the default value of the parameter selected in the table
- a description of the parameter, if available
- the system ID of the stylesheet that declares it

For example setting the value of a parameter having a declared namespace like:

```
<xsl:param name="p:param" xmlns:p="namespace">default</xsl:param>
```

use the following expression in the **Name** column of the **Parameters** dialog:

```
{namespace}param
```

If the **XPath** column is checked, the parameter value is evaluated as an XPath expression before starting the XSLT transformation.

For example, you can use expressions like:

```
doc('test.xml')//entry
//person[@atr='val']
```

**Note:**

1. The **doc** function solves the argument relative to the XSL stylesheet location. You can use full paths or editor variables like `#{cfdu}` (current file directory) to specify other locations: `doc(' #{cfdu}/test.xml ' ) // *`
2. You cannot use XSLT Functions. Only XPath functions are allowed.

The following actions are available for managing parameters:

- **New** - Adds a new parameter to the list.
- **Edit** - Edits the value of the selected parameter.
- **Unset** - Resets the selected parameter to its default value. Available only for parameters with set values.
- **Delete** - Removes the selected parameter from the list. It is enabled only for parameters added to the list with the **New** button.

The *editor variables* displayed at the bottom of the dialog can be used in the values of the parameters to make them independent of the location of the XSLT stylesheet or the XML document.

**Additional XSLT Stylesheets**

The list of additional XSLT stylesheets can be edited in the dialog opened by the button **Additional XSLT Stylesheets** from the **Configure Transformation** dialog.

- **Add** - Adds a stylesheet in the **Additional XSLT stylesheets** list using a file browser dialog. You can type an editor variable in the file name field of the browser dialog. The name of the stylesheet will be added in the list after the current selection.
- **Remove** - Deletes the selected stylesheet from the **Additional XSLT stylesheets** list.
- **Open** - Opens the selected stylesheet in a separate view.
- **Up** - Moves the selected stylesheet up in the list.
- **Down** - Moves the selected stylesheet down in the list.

This dialog allows the user to add additional XSLT stylesheets to the transformation.

The path specified in the URL text field can include *special Oxygen XML Editor editor variables*.

**XML Transformation with XQuery**

To create an **XML transformation with XQuery** scenario, use one of the following methods:

- Go to **Window > Show View** and select **Transformation Scenarios** to display this view. Click the **New** button and select **XML transformation with XQuery**;
- Click the **Configure Transformation Scenario(s) CTRL+Shift+C** button on the **Transformation** toolbar, then click the **New** button and select **XML transformation with XQuery**;
- Select **CTRL+Shift+T** on your keyboard or click the **Apply Transformation Scenario** button on the **Transformation** toolbar to open the **Transform With** dialog. In this dialog click the **New** button and select **XML transformation with XQuery**.



**Note:** In case a scenario is already associated with the edited document, selecting **CTRL+Shift+T** or **Apply Transformation Scenario** runs the associated scenario automatically. You can check whether transformation scenarios are associated with the edited document by hovering your cursor over the **Apply Transformation Scenario** button.

All three methods open the **New Scenario** dialog box. This dialog allows you to configure the options that control the transformation.

The upper part of the dialog box contains the **Name** field and the **Storage** options:

- **Global Options** - the scenario is saved in the global options stored in the user home directory;
- **Project Options** - the scenario list is stored in the project file. In case your project is saved on a source versioning/sharing system (CVS, SVN, Source Safe, and so on.), your team can use the scenarios you defined.

The lower part of the dialog box contains the following tabs:

- *The XQuery tab;*
- *The FO Processor tab;*
- *The Output tab.*

### The XQuery Tab

The XQuery tab contains the following options:

- **XML URL** - specifies the source XML file. This URL is resolved through the catalog resolver. If the catalog does not have a mapping for the URL, then the file is used directly from its remote location.
  - 👉 **Note:** In case the transformer engine is Saxon 9 and a custom URI resolver is configured in **Preferences** for Saxon 9, the XML input of the transformation is passed to that URI resolver.
- **XQuery URL** - specifies the source XQuery file that the transformation uses. This URL is resolved through the catalog resolver. If the catalog does not have a mapping for the URL, the file is used directly from its remote location.

You can use the following browsing buttons to enter values in the **XML URL** and **XQuery URL** fields:

- 🌱 **Insert Editor Variables** - opens a pop-up menu allowing to introduce special *Oxygen XML Editor editor variables* or *custom editor variables* in the XML URL field;
- 📁 **Browse for local file** - opens a local file browser dialog box allowing to select a local file;
- 🌐 **Browse for remote file** - opens an URL browser dialog box allowing to select a remote file;
- 📦 **Browse for archived file** - opens a zip archive browser dialog box allowing to select a file from a zip archive;
- 📊 **Browse Data Source Explorer** - opens the *Data Source Explorer* window;
- 🔍 **Search for file** - allows you to find a file in the current project;
- 📄 **Open in editor** - opens in an editor panel the file with the path specified in the **XML URL** text box.

The rest of the options available in the **XQuery** tab allow you to further customize the transformation scenario:

- **Transformer** - this combo box presents all the transformation engines available to Oxygen XML Editor for performing a transformation. These are the built-in engines and *the external engines defined in the Custom Engines preferences page*. The engine you choose in this dialog is used as the default transformation engine. In case no validation scenario is associated with an XSLT or XQuery document, the transformation engine is used in the validation process, if it provides validation support;
  - ⚙️ **Advanced options** - *configure advanced options specific for the Saxon HE / PE / EE engine*.
- **Parameters** - opens the **Configure parameters** dialog for configuring the XQuery parameters. If the XQuery/XSLT transformation engine is custom-defined you can not use this dialog to set parameters. Instead, copy all parameters from the dialog using the contextual menu actions and edit the custom XSLT/XQuery engine to include the necessary parameters in the command line which starts the transformation process;
- **Extensions** - opens *the dialog for configuring the XSLT/XQuery extension jars or classes* which define extension Java functions or extension XQuery elements used in the transformation;
- **Append header and footer** - opens a dialog for specifying an URL for a header HTML file added at the beginning of the result of an HTML transformation and a URL for a footer HTML file added at the end of the HTML result of the transformation.

### The FO Processor Tab

The FO Processor tab contains the following options:

- **Perform FO Processing** - specifies whether an FO processor is applied (either the built-in Apache FOP engine or an external engine defined in **Preferences**) during the transformation;
- **XQuery result as input** - the FO processor is applied to the result of the XQuery transformation defined in the **XQuery** tab;
- **XML URL as input** - the FO processor is applied to the input XML file;

- **Method** - the output format of the FO processing. Available options depend on the selected processor type;
- **Processor** - specifies the FO processor. It can be the built-in Apache FOP processor or an *external processor*.

## The Output Tab

The **Output** tab contains the following options:

- **Present as a sequence** - enable this option to avoid the long time necessary for fetching the full result. This option fetches only the first chunk of the result;
- **Prompt for file** - At the end of the transformation a file browser dialog is displayed for specifying the path and name of the file which stores the transformation result;
- **Save As** - The path of the file where the transformation result are stored. The path can include *special Oxygen XML Editor editor variables* or *custom editor variables*;
- **Open in Browser/System Application** - If enabled, Oxygen XML Editor opens the transformation result automatically, in a system application associated with the type of the result (HTML/XHTML, PDF, text) file.



**Note:** If you already set the **Default Internet browser** option in the **Global** preferences page, it takes precedence over the default system application settings.

- **Saved file** - When **Open in Browser/System Application** is selected this button can be used to specify that Oxygen XML Editor should open automatically at the end of the transformation the file specified in the **Save As** text field;
- **Other location** - When **Open in System Application** is selected, this button can be used to specify that Oxygen XML Editor should not open the file specified in the **Save As** text field, it should open the file specified in the text field of the **Other location** radio button. The file path can include *special Oxygen XML Editor editor variables* or *custom editor variable*
- **Open in editor** - When this is enabled, the transformation result set in the **Save As** field is opened in a new editor panel with the appropriate built-in editor type: if the result is an XML file it is opened with the built-in XML editor, if it is an XSL-FO file it is opened with the built-in FO editor, and so on;
- **Show As XHTML** - It is enabled only when **Open in browser** is disabled. If this is checked, Oxygen XML Editor displays the transformation result in a built-in XHTML browser panel at the bottom of the application window.



**Important:** When transforming very large documents, you should be aware that enabling this feature results in a very long time necessary for rendering the transformation result in the XHTML result viewer panel. This drawback appears due to the built-in Java XHTML browser implementation. In these cases, if you wish to see the XHTML result of the transformation, you should use an external browser by checking the **Open in browser** option.

- **Show As XML** - If this is checked Oxygen XML Editor displays the transformation result in an XML viewer panel at the bottom of the application window with *syntax highlight* specific for XML documents
- **Show As SVG** - If this is checked Oxygen XML Editor displays the transformation result in an SVG viewer panel at the bottom of the application window by rendering the result as an SVG image;
- **Image URLs are relative to** - If **Show As XHTML** is checked this text field specifies the path used to resolve image paths contained in the transformation result.

## DITA OT Transformation

To create a **DITA OT Transformation** scenario, use one of the following methods:

- Go to **Window > Show View** and select **Transformation Scenarios** to display this view. Click the **New** button and select **DITA OT Transformation**;
- Click the **Configure Transformation Scenario(s) CTRL+Shift+C** button on the **Transformation** toolbar, then click the **New** button and select **DITA OT Transformation**;
- Select **CTRL+Shift+T** on your keyboard or click the **Apply Transformation Scenario** button on the **Transformation** toolbar to open the **Transform With** dialog. In this dialog click the **New** button and select **DITA OT Transformation**.

-  **Note:** In case a scenario is already associated with the edited document, selecting **CTRL+Shift+T** or  **Apply Transformation Scenario** runs the associated scenario automatically. You can check whether transformation scenarios are associated with the edited document by hovering your cursor over the  **Apply Transformation Scenario** button.

All three methods open the **DITA transformation type** dialog box. This dialog presents the list of possible outputs that the **DITA OT Transformation** is able to produce. Select the transformation type, click **OK** and move on to configuring the options in the **New Scenario** dialog. This dialog allows you to configure the options that control the transformation.

The upper part of the dialog box contains the **Name** field and the **Storage** options:

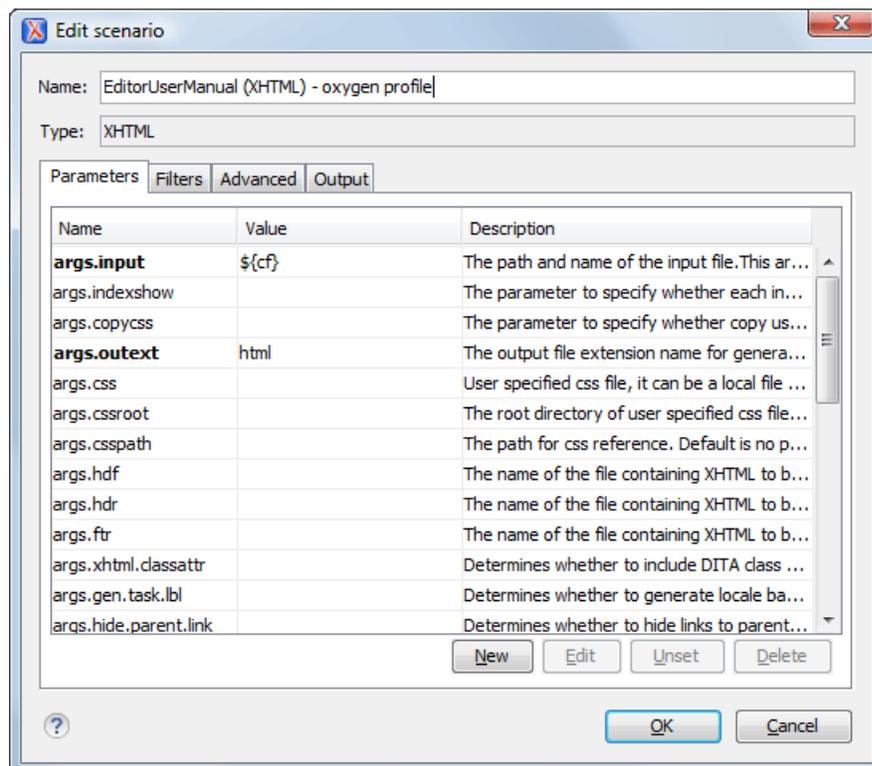
- **Global Options** - the scenario is saved in the global options stored in the user home directory;
- **Project Options** - the scenario list is stored in the project file. In case your project is saved on a source versioning/sharing system (CVS, SVN, Source Safe, and so on.), your team can use the scenarios you defined.

The lower part of the dialog box contains the following tabs:

- *Parameters*;
- *Filters*;
- *Advanced*;
- *Output*;
- *FO Processor*.

### The Parameters Tab

In this dialog you can configure the parameters sent to the DITA-OT build file.



**Figure 243: Edit DITA Ant transformation parameters**

All the parameters that the DITA-OT documentation specifies as available for each chosen type of transformation (eg: XHTML) are listed along with their description. The values for some important parameters are already filled in. You can find more information about each parameter in the [DITA OT Documentation](#). You can also add additional parameters to the list.

Using the toolbar buttons you can add, edit or remove a parameter.

Depending on the parameter type the parameter value will be:

- a simple text field for simple parameter values
- a combo box with some predefined values
- a file chooser and an editor variables selector to simplify setting a file path as value to a parameter

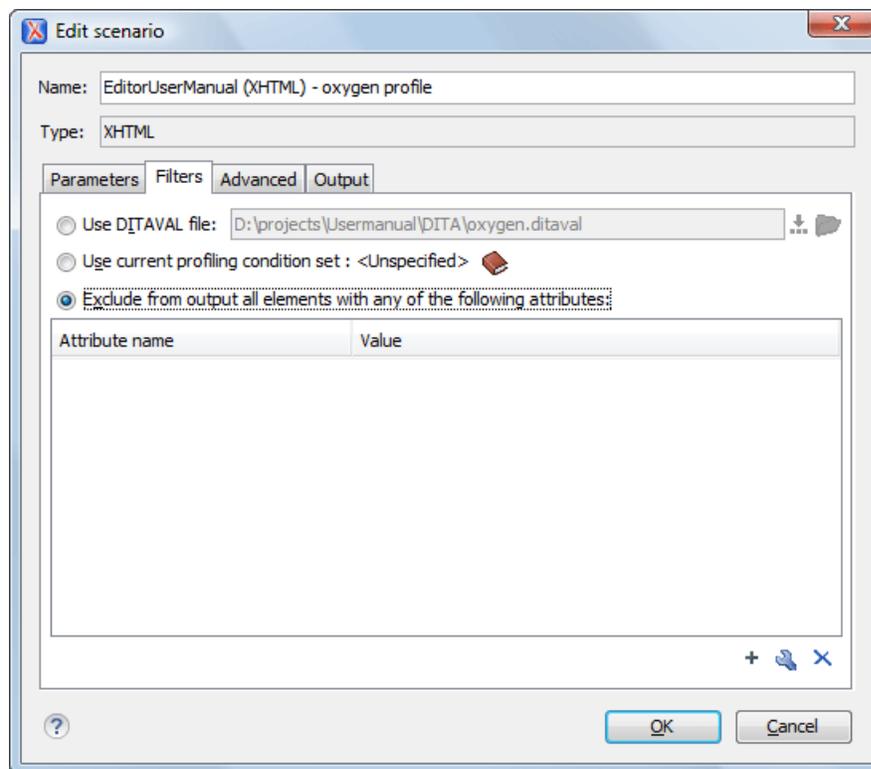
The value of a parameter can be entered at runtime if a value `ask('user-message', param-type, 'default-value' ?)` is used as value of parameter in the Configure parameters dialog.

### Examples:

- `${ask('message')}` - Only the message displayed for the user is specified.
- `${ask('message', generic, 'default')}` - 'message' is displayed, the type is not specified (the default is string), the default value is 'default'.
- `${ask('message', password)}` - 'message' is displayed, the characters typed are masked with a circle symbol.
- `${ask('message', password, 'default')}` - same as before, the default value is 'default'.
- `${ask('message', url)}` - 'message' is displayed, the parameter type is URL.
- `${ask('message', url, 'default')}` - same as before, the default value is 'default'.

### The Filters Tab

In the scenario **Filters** tab you can add filters to remove certain content elements from the generated output.



**Figure 244: Edit Filters tab**

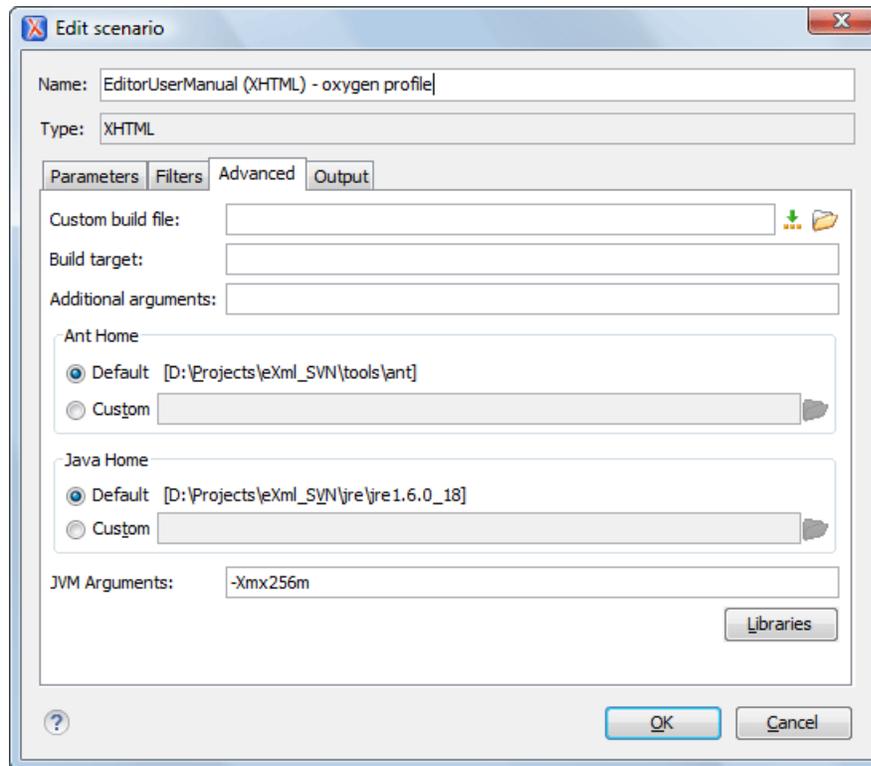
There are three ways to define filters:

- **Use DITAVAL file** - If you already have a DITAVAL file associated with the transformed map you can specify the path to it and it will be used when filtering content. You can find out more about constructing a DITAVAL file in the [DITA OT Documentation](#) topic.
- **Use current profiling condition set** - Allows you to use the currently active [profiling condition set](#).

- **Exclude from output all elements with any of the following attributes** - You can configure a simple list of attribute (name, value) pairs which when present on an element in the input will remove it from output.

### The **Advanced** Tab

In the **Advanced** tab, you can specify advanced options for the transformation.



**Figure 245: Advanced settings tab**

You have several parameters that you can specify here:

- **Custom build file** - If you use a custom DITA-OT build file you can specify the path to the customized build file. If empty, the `build.xml` file from the `dita.dir` directory configured in the **Parameters** tab is used.
- **Build target** - You can specify a build target to the build file. By default no target is necessary and the default `init` target is used.
- **Additional arguments** - You can specify additional command-line arguments to be passed to the ANT transformation like `-verbose`.
- **Ant Home** - You can specify a custom ANT installation to run the DITA Map transformation. By default it is the ANT installation bundled with Oxygen XML Editor.
- **Java Home** - You can specify a custom Java Virtual Machine to run the ANT transformation. By default it is the Java Virtual Machine used by Oxygen XML Editor.
- **JVM Arguments** - This parameter allows you to set specific parameters to the Java Virtual Machine used by ANT. By default it is set to `-Xmx256m` which means the transformation process is allowed to use 256 megabytes of memory. Sometimes, when performing a large DITA map transformation you may want to increase the memory allocated to the Java Virtual Machine from the default value (256 MB) to a higher value, like 512 MB. In this way, you can avoid the Out of Memory error messages (**OutOfMemoryError**) received from the ANT process.

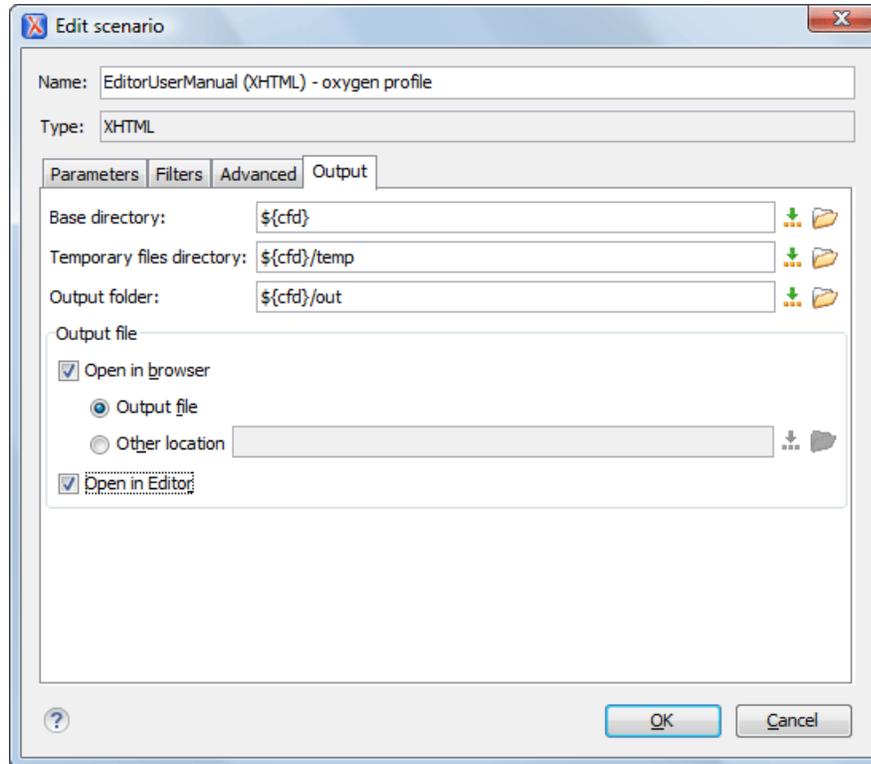


**Note:** If you are publishing DITA to PDF and still experience problems, you should also increase the amount of memory allocated to the FO transformer. To do this, open the [Parameters tab](#) and increase the value of `maxJavaMemory` parameter (default value is 500).

- **Libraries** - Oxygen XML Editor adds by default as high priority libraries which are not transformation-dependent and also patches for certain DITA Open Toolkit bugs. You can specify all the additional libraries (jar files or additional class paths) which are used by the ANT transformer. You can also decide to control all libraries added to the classpath.

### The **Output** Tab

In the **Output** tab, you can configure options related to the place where the output is generated.



**Figure 246: Output settings tab**

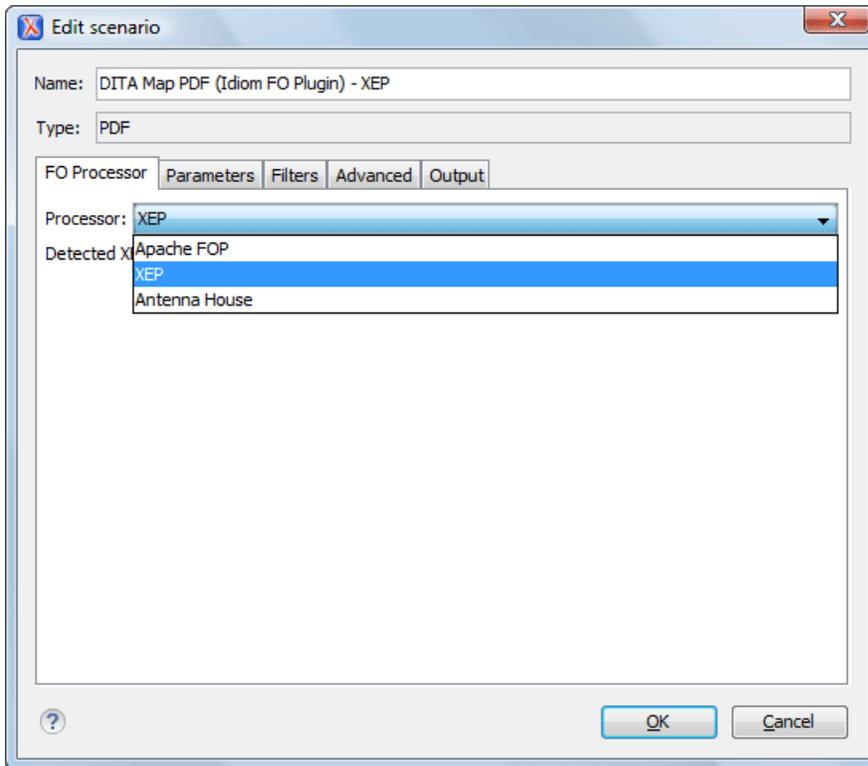
You have several parameters that you can specify here:

- **Base directory** - All the relative paths which appear as values in parameters are considered relative to the base directory. The default value is the directory where the transformed map is located.
- **Temporary files directory** - This directory is used to store pre-processed temporary files until the final output is obtained.
- **Output folder** - The folder where the final output content is copied.
- **Output file options** - The transformation output can then be opened in a browser or even in the editor, if specified.

 **Note:** If the DITA Map or topic is opened from a remote location or from a ZIP file, the scenario must specify absolute output, temporary and base file paths.

### The **FO Processor** Tab

This tab allows you to set an FO Processor, when you choose to generate PDF output.



**Figure 247: FO Processor configuration tab**

You can choose between:

- **Apache FOP** - Default setting. This processor comes bundled with .
- **XEP** - The *RenderX* XEP processor.

If you select **XEP** in the combo and XEP was already installed in you can see the detected installation path appear under the combo box.

XEP is considered as installed if it was detected in one of the following sources:

- XEP was configured as an external FO Processor in the [FO Processors option page](#);
- The system property `com.oxygenxml.xep.location` was set to point to the XEP executable file for the platform (eg: `xep.bat` on Windows);
- XEP was installed in the `frameworks/dita/DITA-OT/plugins/org.dita.pdf2/lib` directory of the installation directory.
- **Antenna House** - The *Antenna House* AH (v5) or XSL (v4) Formatter processor.

If Antenna House was already installed on your computer and you select **Antenna House** in the combo box, in you can see the detected installation path appear under the combo.

Antenna House is considered as installed if it was detected in one of the following sources:

- Environment variable set by Antenna House installation (the newest installation version will be used, v5 being preferred over v4).
- Antenna House was added as an external FO Processor in the preferences pages.

## ANT Transformation

An **Ant** scenario is usually associated with an Ant build script. Oxygen XML Editor runs an Ant scenario as an external process that executes the Ant build script with the built-in Ant distribution (Apache Ant version 1.8.2) that comes with the application or optionally with a custom Ant distribution configured in the scenario.

To create an **ANT** scenario, use one of the following methods:

- Go to **Window > Show View** and select  **Transformation Scenarios** to display this view. Click the **New** button and select **ANT**;
  - Click the  **Configure Transformation Scenario(s)** **CTRL+Shift+C** button on the **Transformation** toolbar, then click the **New** button and select **ANT**;
  - Select **CTRL+Shift+T** on your keyboard or click the  **Apply Transformation Scenario** button on the **Transformation** toolbar to open the **Transform With** dialog. In this dialog click the **New** button and select **ANT**.
-  **Note:** In case a scenario is already associated with the edited document, selecting **CTRL+Shift+T** or  **Apply Transformation Scenario** runs the associated scenario automatically. You can check whether transformation scenarios are associated with the edited document by hovering your cursor over the  **Apply Transformation Scenario** button.

All three methods open the **New Scenario** dialog box. This dialog allows you to configure the options that control the transformation.

The upper part of the dialog box contains the **Name** field and the **Storage** options:

- **Global Options** - the scenario is saved in the global options stored in the user home directory;
- **Project Options** - the scenario list is stored in the project file. In case your project is saved on a source versioning/sharing system (CVS, SVN, Source Safe, and so on.), your team can use the scenarios you defined.

The lower part of the dialog box contains the following tabs:

- *the Options tab;*
- *the Parameters tab;*
- *the Output tab.*

### The Options Tab

The **Options** tab contains the following options:

- **Working directory** - path of the current directory of the Ant external process. An *editor variable* can be inserted in this text box using the small green arrow button ();
- **Build file** - ant script file that is the input of the Ant external process. An *editor variable* can be inserted in this text box using the small green arrow button ();
- **Build target** - optionally a build target from the Ant script file can be specified. If no target is specified, the Ant target that is specified as default in the Ant script file is executed;
- **Additional arguments** - additional command-line arguments to be passed to the Ant transformation (for example -verbose);
- **Ant Home** - path to the Ant installation to run the transformation. By default it is the Ant installation version 1.8.2 that is bundled with Oxygen XML Editor. A custom Ant installation can also be set;
- **Java Home** - the path to the Java Virtual Machine that runs the Ant transformation. By default it is the Java Virtual Machine that is bundled with Oxygen XML Editor. A custom Java virtual machine can also be set;
- **JVM Arguments** - this parameter allows you to set specific parameters to the Java Virtual Machine used by Ant. By default it is set to -Xmx256m which means the transformation process is allowed to use 256 megabytes of memory. Sometimes, when performing a large DITA map transformation you may want to increase the memory allocated to the Java Virtual Machine from the default value (256 MB) to a higher value, like 512 MB. In this way, you can avoid running out of memory (**OutOfMemoryError**) when running an Ant process;
- **Libraries** - this button allows adding to the classpath of the Ant process any external libraries that are not bundled with Ant (that is they are not built-in Ant libraries).

### The Parameters Tab

On the **Parameters** tab you can use the **New**, **Edit**, and **Delete** buttons to set the parameters accessible as Ant properties in the Ant build script.

## The Output Tab

The following details can be configured in the **Output** tab:

- the file to open automatically when the transformation is finished in the **Open** text box, usually the output file of the Ant process; an *editor variable* can be inserted in this text box using the small green arrow button ();
- if the file specified in the **Open** text box is opened in the system application that is set in the operating system as the default application for that type of files (for example the *Acrobat Reader* application for .pdf files.);
- if the file specified in the **Open** text box is opened in Oxygen XML Editor; for example if it is an .xml file it is opened automatically in *the XML editor panel*, if it is a .zip file or an .epub file it is opened in *the Archive Browser view*, etc.;

## XSLT Transformation

To create an **XSLT transformation** scenario, use one of the following methods:

- Go to **Window > Show View** and select  **Transformation Scenarios** to display this view. Click the **New** button and select **XSLT transformation**;
- Click the  **Configure Transformation Scenario(s) CTRL+Shift+C** button on the **Transformation** toolbar, then click the **New** button and select **XSLT transformation**;
- Select **CTRL+Shift+T** on your keyboard or click the  **Apply Transformation Scenario** button on the **Transformation** toolbar to open the **Transform With** dialog. In this dialog click the **New** button and select **XSLT transformation**.

 **Note:** In case a scenario is already associated with the edited document, selecting **CTRL+Shift+T** or  **Apply Transformation Scenario** runs the associated scenario automatically. You can check whether transformation scenarios are associated with the edited document by hovering your cursor over the  **Apply Transformation Scenario** button.

All three methods open the **New Scenario** dialog box. This dialog allows you to configure the options that control the transformation.

The upper part of the dialog box contains the **Name** field and the **Storage** options:

- **Global Options** - the scenario is saved in the global options stored in the user home directory;
- **Project Options** - the scenario list is stored in the project file. In case your project is saved on a source versioning/sharing system (CVS, SVN, Source Safe, and so on.), your team can use the scenarios you defined.

The lower part of the dialog box contains the following tabs:

- *XSLT*;
- *FO Processor*;
- *Output*;

## The XSLT Tab

The **XSLT** tab contains the following options:

- **XML URL** - specifies the source XML file that the transformation uses. This URL is resolved through the catalog resolver. If the catalog does not have a mapping for the URL, then the file is used directly from its remote location.

 **Note:** In case the transformer engine is Saxon 9 and a custom URI resolver is configured in **Preferences** for Saxon 9, the XML input of the transformation is passed to that URI resolver.

 **Note:** In case the transformer engine is one of the built-in XSLT 2.0 engines and *the name of an initial template* is specified in the scenario, the **XML URL** field can be empty. The **XML URL** field can also be empty in case of *external XSLT processors*. In all other cases a non-empty XML URL value is mandatory.

- **XSL URL** - specifies the source XSL. This URL is resolved through the catalog resolver. If the catalog does not have a mapping for the URL, the file is used directly from its remote location.

You can use the following browsing buttons to enter values in the **XML URL** and **XSL URL** fields:

-  **Insert Editor Variables** - opens a pop-up menu allowing to introduce special *Oxygen XML Editor editor variables* or *custom editor variables* in the XML URL field;
-  **Browse for local file** - opens a local file browser dialog box allowing to select a local file;
-  **Browse for remote file** - opens an URL browser dialog box allowing to select a remote file;
-  **Browse for archived file** - opens a zip archive browser dialog box allowing to select a file from a zip archive;
-  **Browse Data Source Explorer** - opens the *Data Source Explorer* window;
-  **Search for file** - allows you to find a file in the current project;
-  **Open in editor** - opens in an editor panel the file with the path specified in the **XML URL** text box.

The rest of the options available in the **XSLT** tab allow you to further customize the transformation scenario:

- **Use "xml-stylesheet" declaration** - use the stylesheet declared with an `xml-stylesheet` declaration instead of the stylesheet specified in the **XSL URL** field. By default this checkbox is not selected and the transformation uses the XSLT stylesheet specified in the **XSL URL** field. If it is checked, the scenario is applied to the stylesheet specified explicitly in the XML document with the `xml-stylesheet` processing instruction;
- **Transformer** - this combo box presents all the transformation engines available to Oxygen XML Editor for performing a transformation. These are the built-in engines and *the external engines defined in the Custom Engines preferences page*. The engine you choose in this dialog is used as the default transformation engine. In case no validation scenario is associated with an XSLT or XQuery document, the transformation engine is used in the validation process, if it provides validation support;
-  **Advanced options** - allows you to configure advanced options of the Saxon HE / PE / EE engine for the current transformation scenario. To configure the same options globally, go to the *Saxon-HE/PE/EE preferences page*. For the current transformation scenario, these **advanced options** overwrite the options configured in the *Saxon-HE/PE/EE preferences page*. The **Initial mode and template** option is available only in the **advanced options**. It is a Saxon-specific option that sets the name of the first XSLT template which starts the XSLT transformation or the initial mode of transformation;
- **Parameters** - opens *the Configure parameters dialog*, allowing you to configure the XSLT parameters used in the current transformation. In this dialog you can also configure the parameters of additional stylesheets, set with the **Additional XSLT stylesheets** button. If the XSLT transformation engine is custom-defined you can not use this dialog to configure the parameters sent to the custom engine. In this case, you can copy all parameters from the dialog using the contextual menu actions and edit the custom XSLT engine to include the necessary parameters in the command line ;
- **Extensions** - opens *the dialog for configuring the XSLT/XQuery extension jars or classes* which define extension Java functions or extension XSLT elements used in the transformation;
- **Additional XSLT stylesheets** - opens *the dialog for adding XSLT stylesheets* which are applied on the result of the main stylesheet specified in the **XSL URL** field. This is useful when a chain of XSLT stylesheets must be applied to the input XML document;
- **Append header and footer** - opens a dialog for specifying an URL for a header HTML file added at the beginning of the result of an HTML transformation and a URL for a footer HTML file added at the end of the HTML result of the transformation.

## The FO Processor Tab

The **FO Processor** tab contains the following options:

- **Perform FO Processing** - specifies whether an FO processor is applied (either the built-in Apache FOP engine or an external engine defined in **Preferences**) during the transformation;
- **XSLT result as input** - the FO processor is applied to the result of the XSLT transformation defined in the **XSLT** tab;
- **XML URL as input** - the FO processor is applied to the input XML file;
- **Method** - the output format of the FO processing. Available options depend on the selected processor type;

- **Processor** - specifies the FO processor. It can be the built-in Apache FOP processor or an *external processor*.

## The Output Tab

The **Output** tab contains the following options:

- **Prompt for file** - At the end of the transformation a file browser dialog is displayed for specifying the path and name of the file which stores the transformation result;
- **Save As** - The path of the file where the transformation result are stored. The path can include *special Oxygen XML Editor editor variables* or *custom editor variables*;
- **Saved file** - When **Open in Browser/System Application** is selected this button can be used to specify that Oxygen XML Editor should open automatically at the end of the transformation the file specified in the **Save As** text field;
- **Other location** - When **Open in System Application** is selected, this button can be used to specify that Oxygen XML Editor should not open the file specified in the **Save As** text field, it should open the file specified in the text field of the **Other location** radio button. The file path can include *special Oxygen XML Editor editor variables* or *custom editor variable*;
- **Open in editor** - When this is enabled, the transformation result set in the **Save As** field is opened in a new editor panel with the appropriate built-in editor type: if the result is an XML file it is opened with the built-in XML editor, if it is an XSL-FO file it is opened with the built-in FO editor, and so on;
- **Show As XHTML** - It is enabled only when **Open in browser** is disabled. If this is checked, Oxygen XML Editor displays the transformation result in a built-in XHTML browser panel at the bottom of the application window;



**Important:** When transforming very large documents, you should be aware that enabling this feature results in a very long time necessary for rendering the transformation result in the XHTML result viewer panel. This drawback appears due to the built-in Java XHTML browser implementation. In these cases, if you wish to see the XHTML result of the transformation, you should use an external browser by checking the **Open in browser** option.

- **Show As XML** - If this is checked Oxygen XML Editor displays the transformation result in an XML viewer panel at the bottom of the application window with *syntax highlight* specific for XML documents;
- **Show As SVG** - If this is checked Oxygen XML Editor displays the transformation result in an SVG viewer panel at the bottom of the application window by rendering the result as an SVG image;
- **Image URLs are relative to** - If **Show As XHTML** is checked this text field specifies the path used to resolve image paths contained in the transformation result.

## XProc Transformation

A sequence of transformations described by an XProc script can be executed with an XProc transformation scenario. To create an **XProc transformation** scenario, use one of the following methods:

- Go to **Window > Show View** and select **Transformation Scenarios** to display this view. Click the **New** button and select **XProc transformation**;
- Click the **Configure Transformation Scenario(s)CTRL+Shift+C** button on the **Transformation** toolbar, then click the **New** button and select **XProc transformation**;
- Select **CTRL+Shift+T** on your keyboard or click the **Apply Transformation Scenario** button on the **Transformation** toolbar to open the **Transform With** dialog. In this dialog click the **New** button and select **XProc transformation**.



**Note:** In case a scenario is already associated with the edited document, selecting **CTRL+Shift+T** or **Apply Transformation Scenario** runs the associated scenario automatically. You can check whether transformation scenarios are associated with the edited document by hovering your cursor over the **Apply Transformation Scenario** button.

All three methods open the **New Scenario** dialog box. This dialog allows you to configure the options that control the transformation.

The upper part of the dialog box contains the **Name** field and the **Storage** options:

- **Global Options** - the scenario is saved in the global options stored in the user home directory;
- **Project Options** - the scenario list is stored in the project file. In case your project is saved on a source versioning/sharing system (CVS, SVN, Source Safe, and so on.), your team can use the scenarios you defined.

The lower part of the dialog box contains the following tabs:

- *the XProc tab;*
- *the Inputs tab;*
- *the Parameters tab;*
- *the Outputs tab;*
- *the Options tab.*

### The XProc Tab

The **XProc** tab contains the following options:

- **XProc URL** - specifies the URL of the XProc script;
- **Processor** - specifies the XProc engine. You can select the built-in *Calabash* engine or a custom engine *configured in the Preferences dialog*.

### The Inputs Tab

The **Inputs** tab contains a list with the ports that the XProc script uses to read input data. To add, modify, and delete ports from this list, use the **New**, **Edit**, and **Delete** buttons. Each input port has an assigned name in the XProc script. The XProc engine reads data from the URLs specified in the **URLs** list. The *built-in editor variables* and the *custom editor variables* can be used to specify these URLs.

### The Parameters Tab

The **Parameters** tab presents a list with the parameters collected from the XProc script. To add new parameters click the **New** button.

Each port where the output of the XProc transformation is sent is associated with an URL on the **Outputs** tab of the dialog. The *built-in editor variables* and the *custom editor variables* can be used for specifying this URL.

### The Outputs Tab

The **Outputs** tab displays a list of output ports collected from the XProc script. To define additional output ports click the **New** button .

The result of the XProc transformation can be displayed as a sequence in an output view with two sections:

- a list with the output ports on the left side;
- the content of the document(s) that correspond to the selected output port on the right side.

If the **Open results in editor** option is selected, the XProc transformation result is opened automatically in an editor panel. By selecting the **Open in System Application** option, you can specify a file that is opened at the end of the XProc transformation in the system application associated with that file type.

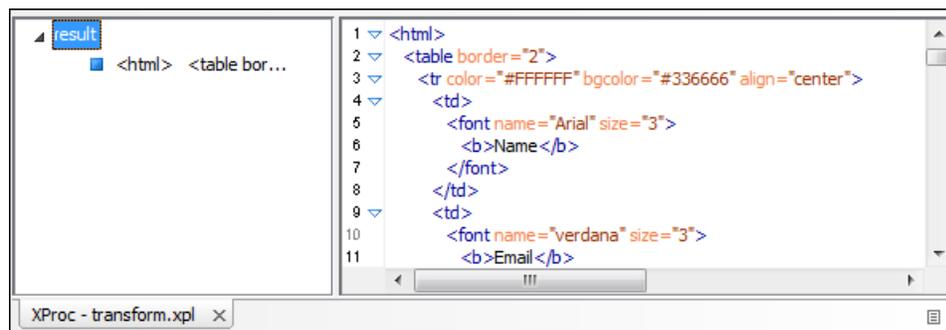


Figure 248: XProc Transformation results view

## The Options Tab

The **Options** displays a list with the options collected from the XProc script. To define new options click the **New** button.

The options collected from the script are rendered plain. Edited options as well as new ones are rendered bold.

## Configuring Calabash with XEP

To generate PDF output from your XProc pipeline (when using the Calabash XProc processor), follow these steps:

1. Open the `[Oxygen-install-folder]/lib/xproc/calabash/engine.xml` file.
2. Uncomment the `<system-property name="com.xmlcalabash.fo-processor" value="com.xmlcalabash.util.FoXEP"/>` system property.
3. Uncomment the `<system-property name="com.renderx.xep.CONFIG" file="../../tools/xep/xep.xml"/>` system property. Edit the `file` attribute to point to the configuration file that is usually located in the XEP installation folder.
4. Uncomment the references to the XEP libraries. Edit them to point to the matching library names from the XEP installation directory.
5. Restart Oxygen XML Editor.

## Integration of an External XProc Engine

The Javadoc documentation of the XProc API is available for download from the application website as a zip file: [xprocAPI.zip](#). In order to create an XProc integration project follow the next steps:

1. Take the `oxygen.jar` from `[Oxygen-install-folder]/lib` and put it in the `lib` folder of your project.
2. Implement the `ro.sync.xml.transformer.xproc.api.XProcTransformerInterface` interface.
3. Create a Java archive (jar) from the classes you created.
4. Create a `engine.xml` file according with the `engine.dtd` file. The attributes of the `engine` element have the following meanings:
  1. `name` - The name of the XProc engine.
  2. `description` - A short description of the XProc engine.
  3. `class` - The complete name of the class that implements `ro.sync.xml.transformer.xproc.api.XProcTransformerInterface`.
  4. `version` - The version of this integration.
  5. `engineVersion` - The version of the integrated engine.
  6. `vendor` - The name of the vendor / implementor.
  7. `supportsValidation` - `true` if the engine supports validation, `false` otherwise.

The `engine` element has only one child, `runtime`. The `runtime` element contains several `library` elements with the `name` attribute containing the relative or absolute location of the libraries necessary to run this integration.

5. Create a folder with the name of the integration in the `[Oxygen-install-folder]/lib/xproc`.
6. Put there the `engine.xml`, and all the libraries necessary to run the new integration.

## XQuery Transformation

To create an **XQuery transformation** scenario, use one of the following methods:

- Go to **Window > Show View** and select  **Transformation Scenarios** to display this view. Click the **New** button and select **XQuery transformation**;
- Click the  **Configure Transformation Scenario(s)** **CTRL+Shift+C** button on the **Transformation** toolbar, then click the **New** button and select **XQuery transformation**;
- Select **CTRL+Shift+T** on your keyboard or click the  **Apply Transformation Scenario** button on the **Transformation** toolbar to open the **Transform With** dialog. In this dialog click the **New** button and select **XQuery transformation**.

-  **Note:** In case a scenario is already associated with the edited document, selecting **CTRL+Shift+T** or  **Apply Transformation Scenario** runs the associated scenario automatically. You can check whether transformation scenarios are associated with the edited document by hovering your cursor over the  **Apply Transformation Scenario** button.

All three methods open the **New Scenario** dialog box. This dialog allows you to configure the options that control the transformation.

The upper part of the dialog box contains the **Name** field and the **Storage** options:

- **Global Options** - the scenario is saved in the global options stored in the user home directory;
- **Project Options** - the scenario list is stored in the project file. In case your project is saved on a source versioning/sharing system (CVS, SVN, Source Safe, and so on.), your team can use the scenarios you defined.

The lower part of the dialog box contains the following tabs:

- *the XQuery tab;*
- *the FO Processor tab;*
- *the Output tab.*

### The XQuery Tab

The **XQuery** tab contains the following options:

- **XML URL** - specifies the source XML file that the transformation uses. This URL is resolved through the catalog resolver. If the catalog does not have a mapping for the URL, then the file is used directly from its remote location;

-  **Note:** In case the transformer engine is Saxon 9 and a custom URI resolver is configured in **Preferences** for Saxon 9, the XML input of the transformation is passed to that URI resolver.

- **XQuery URL** - specifies the source XQuery file. This URL is resolved through the catalog resolver. If the catalog does not have a mapping for the URL, the file is used directly from its remote location.

You can use the following browsing buttons to enter values in the **XML URL** and **XQuery URL** fields:

-  **Insert Editor Variables** - opens a pop-up menu allowing to introduce special *Oxygen XML Editor editor variables* or *custom editor variables* in the XML URL field;
-  **Browse for local file** - opens a local file browser dialog box allowing to select a local file;
-  **Browse for remote file** - opens an URL browser dialog box allowing to select a remote file;
-  **Browse for archived file** - opens a zip archive browser dialog box allowing to select a file from a zip archive;
-  **Browse Data Source Explorer** - opens the *Data Source Explorer* window;
-  **Search for file** - allows you to find a file in the current project;
-  **Open in editor** - opens in an editor panel the file with the path specified in the **XML URL** text box.

The rest of the options available in the **XQuery** tab allow you to further customize the transformation scenario:

- **Transformer** - this combo box presents all the transformation engines available to Oxygen XML Editor for performing a transformation. These are the built-in engines and *the external engines defined in the Custom Engines preferences page*. The engine you choose in this dialog is used as the default transformation engine. In case no validation scenario is associated with an XSLT or XQuery document, the transformation engine is used in the validation process, if it provides validation support;
  -  **Advanced options** - *configure advanced options specific for the Saxon HE / PE / EE engine*
- **Parameters** - opens the **Configure parameters** dialog for configuring the XQuery parameters. If the XQuery/XSLT transformation engine is custom-defined you can not use this dialog to set parameters. Instead, copy all parameters from the dialog using the contextual menu actions and edit the custom XSLT/XQuery engine to include the necessary parameters in the command line which starts the transformation process

- **Extensions** - opens *the dialog for configuring the XSLT/XQuery extension jars or classes* which define extension Java functions or extension XQuery elements used in the transformation
- **Append header and footer** - opens a dialog for specifying an URL for a header HTML file added at the beginning of the result of an HTML transformation and a URL for a footer HTML file added at the end of the HTML result of the transformation

### The FO Processor Tab

The **FO Processor** tab contains the following options:

- **Perform FO Processing** - specifies whether an FO processor is applied (either the built-in Apache FOP engine or an external engine defined in **Preferences**) during the transformation;
- **XQuery result as input** - the FO processor is applied to the result of the XQuery transformation defined in the **XQuery** tab;
- **XML URL as input** - the FO processor is applied to the input XML file;
- **Method** - the output format of the FO processing. Available options depend on the selected processor type;
- **Processor** - specifies the FO processor. It can be the built-in Apache FOP processor or an *external processor*.

### The Output Tab

The **Output** tab contains the following tab:

- **Prompt for file** - At the end of the transformation a file browser dialog is displayed for specifying the path and name of the file which stores the transformation result.
- **Save As** - The path of the file where the transformation result are stored. The path can include *special Oxygen XML Editor editor variables* or *custom editor variables*.
- **Open in Browser/System Application** - If enabled, Oxygen XML Editor opens the transformation result automatically, in a system application associated with the type of the result (HTML/XHTML, PDF, text) file.



**Note:** If you already set the **Default Internet browser** option in the **Global** preferences page, it takes precedence over the default system application settings.

- **Saved file** - When **Open in Browser/System Application** is selected this button can be used to specify that Oxygen XML Editor should open automatically at the end of the transformation the file specified in the **Save As** text field.
- **Other location** - When **Open in System Application** is selected, this button can be used to specify that Oxygen XML Editor should not open the file specified in the **Save As** text field, it should open the file specified in the text field of the **Other location** radio button. The file path can include *special Oxygen XML Editor editor variables* or *custom editor variable*.
- **Open in editor** - When this is enabled, the transformation result set in the **Save As** field is opened in a new editor panel with the appropriate built-in editor type: if the result is an XML file it is opened with the built-in XML editor, if it is an XSL-FO file it is opened with the built-in FO editor, and so on.
- **Show As XHTML** - It is enabled only when **Open in browser** is disabled. If this is checked, Oxygen XML Editor displays the transformation result in a built-in XHTML browser panel at the bottom of the application window.



**Important:** When transforming very large documents, you should be aware that enabling this feature results in a very long time necessary for rendering the transformation result in the XHTML result viewer panel. This drawback appears due to the built-in Java XHTML browser implementation. In these cases, if you wish to see the XHTML result of the transformation, you should use an external browser by checking the **Open in browser** option.

- **Show As XML** - If this is checked Oxygen XML Editor displays the transformation result in an XML viewer panel at the bottom of the application window with *syntax highlight* specific for XML documents.
- **Show As SVG** - If this is checked Oxygen XML Editor displays the transformation result in an SVG viewer panel at the bottom of the application window by rendering the result as an SVG image.
- **Image URLs are relative to** - If **Show As XHTML** is checked this text field specifies the path used to resolve image paths contained in the transformation result.

## SQL Transformation

To create an **SQL transformation** scenario, use one of the following methods:

- Go to **Window > Show View** and select  **Transformation Scenarios** to display this view. Click the **New** button and select **SQL transformation**;
- Click the  **Configure Transformation Scenario(s)** **CTRL+Shift+C** button on the **Transformation** toolbar, then click the **New** button and select **SQL transformation**;
- Select **CTRL+Shift+T** on your keyboard or click the  **Apply Transformation Scenario** button on the **Transformation** toolbar to open the **Transform With** dialog. In this dialog click the **New** button and select **SQL transformation**.

 **Note:** In case a scenario is already associated with the edited document, selecting **CTRL+Shift+T** or  **Apply Transformation Scenario** runs the associated scenario automatically. You can check whether transformation scenarios are associated with the edited document by hovering your cursor over the  **Apply Transformation Scenario** button.

All three methods open the **New Scenario** dialog box. This dialog allows you to configure the following options that control the transformation:

- **Name** - the unique name of the transformation scenario;
- **Global Options** - the scenario is saved in the global options stored in the user home directory;
- **Project Options** - the scenario list is stored in the project file. In case your project is saved on a source versioning/sharing system (CVS, SVN, Source Safe, and so on.), your team can use the scenarios you defined;
- **SQL URL** - specifies the URL of the SQL script. This field also accepts *editor variables*.
- **Connection** - opens the [data source preferences page](#);
- **Parameters** - allows you to configure the parameters of the transformation.

## XSLT/XQuery Extensions

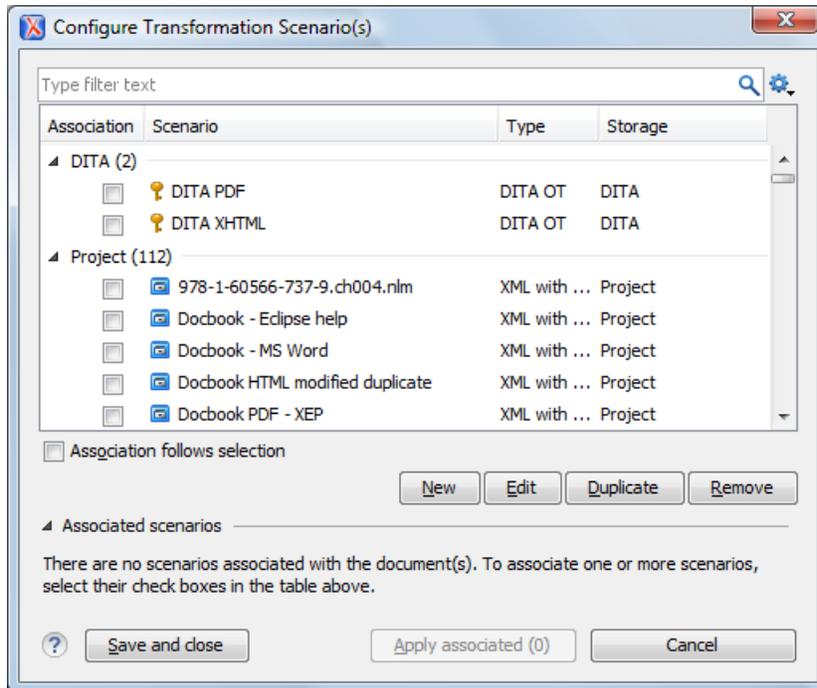
The **Libraries** dialog is used to specify the jars and classes containing extension functions called from the XSLT/XQuery file of the current transformation scenario.

An extension function called from the XSLT or XQuery file of the current transformation scenario will be searched in the specified extensions in the order of the list displayed in the dialog. For changing the order of the items the user must select the item that must be moved to other position in the list and press the  up and  down buttons.

## The Configure Transformation Scenario(s) Dialog

You can use this dialog to manage both the *built-in transformation scenarios* and the ones you create.

To open it, either click the  **Configure Transformation Scenario(s)** button on the application toolbar, or go to **Document > Transformation > Configure transformation scenario. (Ctrl+Shift+C)** .



**Figure 249: Configure Transformation Scenario(s) Dialog**

The top section of the dialog contains a filter that allows you to search through the scenarios list. Using the **Settings** button you can configure the following options:

- **Show all scenarios** - select this option to display all the available scenarios, regardless of the document they are associated with;
- **Show only the scenarios available for the editor** - select this option to display in the **Transformation scenarios** view only the scenarios which Oxygen XML Editor can execute for the current document type;
- **Show associated scenarios** - select this option to display only the scenarios associated with the document you are editing;
-  **Import scenarios** - use this option to open the **Import scenarios** dialog. The **Import scenarios** dialog allows you to select which scenario of the `scenarios` files you want to import. In case one of the scenarios you import is identical with an existing scenario, Oxygen XML Editor ignores the scenario you are importing. In case a conflict appears (an imported scenario has the same name with an existing one), you can choose between two options:
  - keep or replace the existing scenario;
  - keep both scenarios.

 **Note:** When you keep both scenarios, Oxygen XML Editor adds `imported` to the name of the imported scenario.

-  **Export selected scenarios** - use this option to export transformation and validation scenarios individually. Oxygen XML Editor creates a `scenarios` file which contains the scenarios you export.

The middle section of the dialog presents the scenarios that you can apply to the document you are editing. You can view both the scenarios associated with the current document type and the scenarios defined at project level. The following columns are used to display the transformation scenarios:

- **Association** - the check-boxes in this column mark whether a transformation scenario is associated with the document you are editing;
- **Scenario** - this column presents the names of the transformation scenarios;
- **Type** - specifies the type of the transformation scenario. For further details about the different types of transformation scenarios available in Oxygen XML Editor go to [Defining a New Transformation Scenario](#);

- **Storage** - specifies whether a transformation scenario is defined at project level.

Left click the header of each column to sort its items. The contextual menu of each header allows you to show or hide the **Type** and **Storage** columns, group the columns by **Association**, **Type**, and **Storage**, ungroup all of them, or reset the layout.

The bottom section of the dialog contains the following actions:

- **Association follows selection** - enable this check-box to associate selected transformation scenarios automatically with the document you are editing. This option also works for multiple selection;

 **Note:** When this option is enabled, the **Association** column is no longer presented.

- **New** - this button allows you to create a new transformation scenario *depending on its type*;
- **Edit** - this button opens the **Edit scenario** dialog which allows you to configure the options of the transformations scenario you are editing;

 **Note:** In case you try to edit a transformation scenario associated with a document type, Oxygen XML Editor displays a warning message to inform you that this is not possible. You have the option to create a *duplicated transformation scenario* and edit this one instead.

- **Duplicate** - use this button to create a *duplicated transformation scenario*;
- **Remove** - use this button to remove transformation scenarios.

 **Note:** Removing scenarios associated with a document type is not permitted.

The **Edit**, **Duplicate**, and **Remove** actions are also available in the contextual menu of the transformation scenarios listed in the middle section of the **Configure Transformation Scenario(s)**. This contextual menu also contains the  *Import scenarios* and  *Export selected scenarios* actions and allows you to change the storage of a transformation scenario.

## Duplicating a Transformation Scenario

Use the following procedure to duplicate a transformation scenario.

1. Go to menu **Document > Transformation > Configure Transformation Scenario (Ctrl+Shift+C)** to open the **Configure Transformation** dialog.
2. Click the **Duplicate Scenario** button of the dialog to create a copy of the current scenario.
3. Click the **Name** field and type a new name.
  - a) You can choose to save the scenarios at project level by setting the **Project Scenarios** setting.
4. Click **OK** or **Transform Now** to save the scenario.

## Editing a Transformation Scenario

Editing a transformation scenario is useful in case you run an existing one and you need to configure some of its parameters.

Oxygen XML Editor allows you to configure existing transformation scenarios either from the **Transformation Scenarios** view, or from the  **Configure Transformation Scenario(s)**, and **Transform with** dialog boxes.

Use one of the following methods to configure a transformation scenario:

- go to the **Transformation Scenarios** view, select a transformation scenario and click the  **Edit** button on the toolbar of the view;
- click the  **Configure Transformation Scenario(s)** button on the **Transformation** toolbar, select a transformation scenario from the **Configure Transformation Scenario(s)** dialog box and click the **Edit** button;
- click the  **Apply Transformation Scenario** button on the **Transformation** toolbar, select a transformation scenario from the **Transform With** dialog box and click the **Edit** button.

-  **Note:** In case a transformation scenario is associated with the document you are editing, selecting the  **Apply Transformation Scenario** button starts the transformation process automatically.
-  **Note:** You can edit transformation scenarios that are defined at project level only. To edit a transformation scenario that is associated with a document type, duplicate it and edit the duplicated scenario.

## Batch Transformation

A transform action can be applied on a batch of files *from the Project view's contextual menu* without having to open the files involved in the transformation:

-  **Apply Transformation Scenario(s)** - applies the transformation scenario associated to each of the selected files. If the currently processed file does not have an associated transformation scenario then a warning is displayed in the **Warnings** view;
-  **Configure Transformation Scenario(s)...** - opens a dialog box that allows you to create, manage and set default transformation scenarios;
-  **Transform with...** - Allows you to select one transformation scenario to be applied to each one of the currently selected files.

*xsl:message* output information is collected and displayed in the *Results View*. All entries in the Results View point to the location of the code that triggered them.

-  **Note:** When you trigger a batch transformation, the output messages from the previous one are deleted.

## Built-in Transformation Scenarios

Oxygen XML Editor comes with preconfigured built-in transformation scenarios used for usual transformations. To obtain the output simply one of the built-in scenarios with the currently edited document and click the  **Apply Transformation Scenario(s)** button.

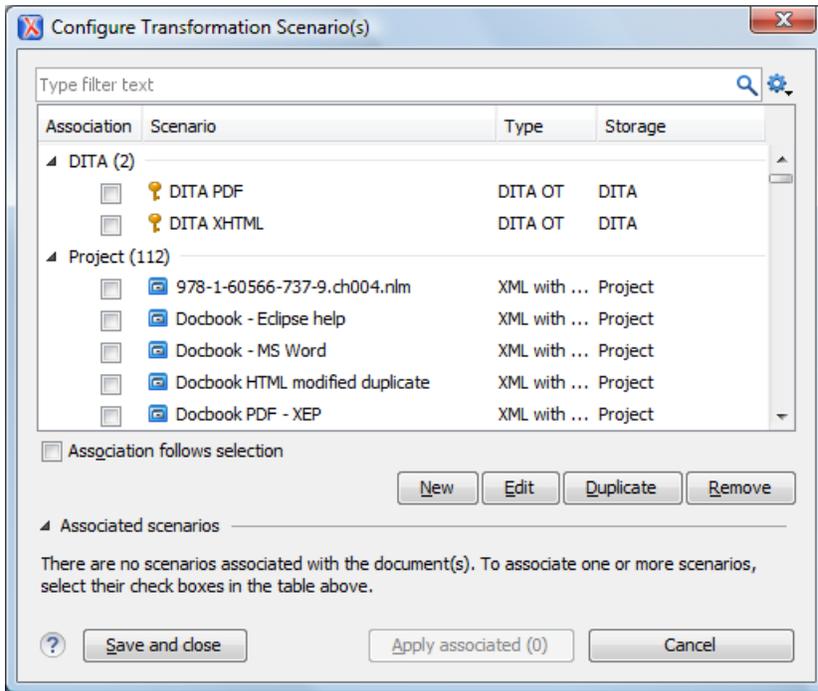
You can use the  **Apply Transformation Scenario(s)** button even if the document you are editing is not associated with a transformation scenario.

In case the document contains an `xml-stylesheet` processing instruction referring to an XSLT stylesheet (commonly used to display the document in web browsers), Oxygen XML Editor prompts you to associate the document with a built-in transformation scenario.

The default transformation scenario is suggested based on the processing instruction from the edited document. The **XSL URL** field of the default transformation scenario contains the URL from the `href` attribute of the processing instruction. The **Use xml-stylesheet declaration** check-box of the scenario is selected by default. Saxon is used as transformation engine and no FO processing is performed. The result of the transformation is store in a file with the same URL as the edited document, but the extension is changed to `html`. The name and path are preserved because the output file name is specified with the help of two *editor variables*: `${cfd}` and `${cfn}`.

## Sharing the Transformation Scenarios

The transformation scenarios can be shared with other users by saving them at project level. In the lower part of the dialog showing the list of scenarios you will find two radio buttons controlling where the scenarios are stored: **Global Scenarios** and **Project Scenarios**.



**Figure 250: Transformation Scenario List Dialog**

Selecting **Global Scenarios** ensures that the scenarios are saved in the global options stored in the user home directory.

After changing the selection to **Project Scenarios**, the scenario list will be stored in the project file. If your project is saved on a source versioning/sharing system (CVS, SVN, Source Safe, etc..) then your team can use the scenarios you defined.

Predefined scenarios are presented according to the current document's detected type. The screenshot above shows all default scenarios for a *DITA* document and several custom transformation scenarios. The key symbol before the scenario name indicates that the scenario can only be modified from the *Document Type Association* options page.

Other preferences can also be stored at the project level. For more information, see the *Preference Sharing* section.

## Transformation Scenarios View

You are able to manage the transformation scenarios easily, using the **Transformation Scenarios** view. To open this view, go to **Window > Show View > Transformation Scenarios**.



Apart from the options available in the contextual menu, the **Transformation Scenarios** view toolbar contains a



**New** drop-down button. The menu of this drop down button contains a list of the scenarios you can create. Oxygen XML Editor analyses which scenario is appropriate and displays it as the first item in the list of scenarios, separated by the rest through a horizontal line.

The  **Settings** drop-down menu of the **Transformation Scenarios** view allows you to configure the following options:

- **Show all scenarios** - select this option to display all the available scenarios, regardless of the document they are associated with;
- **Show only the scenarios available for the editor** - select this option to display in the **Transformation scenarios** view only the scenarios which Oxygen XML Editor can execute for the current document type;
- **Show associated scenarios** - select this option to display only the scenarios associated with the document you are editing;
- **Change storage** - use this option to change the storage location of the selected scenario. You are also able to keep the original storage location and make a copy of the selected scenario in the target storage location;
-  **Import scenarios** - use this option to open the **Import scenarios** dialog. The **Import scenarios** dialog allows you to select which scenario of the `scenarios` file you want to import. In case one of the scenarios you import is identical with an existing scenario, Oxygen XML Editor ignores the scenario you are importing. In case a conflict appears (an imported scenario has the same name with an existing one), you can choose between two options:
  - keep or replace the existing scenario;
  - keep both scenarios.



**Note:** When you keep both scenarios, Oxygen XML Editor adds `imported` to the name of the imported scenario.

-  **Export selected scenarios** - use this option to export transformation and validation scenarios individually. Oxygen XML Editor creates a `scenarios` file which contains the scenarios you export;
- **Show Type** - use this option to display the transformation type of each scenario in the **Transformation Scenarios** view;
- **Show Storage** - use this option to display the storage location of the scenarios in the **Transformation Scenarios** view;
- **Group by Association** - select this option to group the scenarios in the **Transformation Scenarios** view depending on whether they are associated or not with the document you are editing;
- **Group by Type** - select this option to group the scenarios in the **Transformation Scenarios** view by their type;
- **Group by Storage** - select this option to group the scenarios in the **Transformation Scenarios** view by their storage location;
-  **Ungroup all** - select this option to ungroup all the scenarios of the **Transformation Scenarios** view;
- **Reset Layout** - select this option to restore the default settings of the layout of the **Transformation Scenarios** view.

Oxygen XML Editor supports multiple scenarios association. To associate multiple scenarios with a document, enable the check-boxes in front of each scenario. You can also associate multiple scenarios with a document from the **Configure Transformation Scenario(s)** or **Configure Validation Scenario(s)** dialogs.

The **Transformation Scenarios** presents both global scenarios and project scenarios. By default, Oxygen XML Editor presents the items in the **Transformation Scenarios** in the following order: scenarios matching the current framework, scenarios matching the current project, scenarios matching other frameworks. You can group the scenarios depending on the columns in the **Transformation Scenarios** view. Right click the name of a column to choose how to group the scenarios. The following grouping options are available:

- **Group by Association** - select this option to group the scenarios in the **Transformation Scenarios** view depending on whether they are associated or not with the document you are editing;
- **Group by Type** - select this option to group the scenarios in the **Transformation Scenarios** view by their type;
- **Group by Storage** - select this option to group the scenarios in the **Transformation Scenarios** view by their storage location;

## XSLT Processors

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This section explains how to configure an XSLT processor and extensions for such a processor in Oxygen XML Editor.

### Supported XSLT Processors

Oxygen XML Editor comes with the following XSLT processors:

- **Xalan 2.7.1** - *Xalan-Java* is an XSLT processor for transforming XML documents into HTML, text, or other XML document types. It implements XSL Transformations (XSLT) Version 1.0 and XML Path Language (XPath) Version 1.0.
- **Saxon 6.5.5** - *Saxon 6.5.5* is an XSLT processor, which implements the Version 1.0 XSLT and XPath with a number of powerful extensions. This version of Saxon also includes many of the new features that were first defined in the XSLT 1.1 working draft, but for conformance and portability reasons these are not available if the stylesheet header specifies `version="1.0"`.
- **Saxon 9.4.0.4 Home Edition (HE), Professional Edition (PE)** - *Saxon-HE/PE* implements the basic conformance level for XSLT 2.0 and XQuery 1.0. The term *basic XSLT 2.0 processor* is defined in the draft XSLT 2.0 specifications: it is a conformance level that requires support for all features of the language other than those that involve schema processing. The HE product remains open source, but removes some of the more advanced features that were present in Saxon-PE.
- **Saxon 9.4.0.4 Enterprise Edition (EE)** - *Saxon EE* is the schema-aware edition of Saxon and it is one of the built-in processors of Oxygen XML Editor. Saxon EE includes an XML Schema processor, and schema-aware XSLT, XQuery, and XPath processors.

The validation in schema aware transformations is done according to the W3C XML Schema 1.0 or 1.1. This can be [configured in Preferences](#).



**Note:** Oxygen XML Editor implements a Saxon framework that allows you to create Saxon configuration files. Two templates are available: **Saxon collection catalog** and **Saxon configuration**. Both these templates support content completion, element annotation and attribute annotation.

Besides the above list Oxygen XML Editor supports the following processors:

- **Xsltproc (libxslt)** - *Libxslt* is the XSLT C library developed for the Gnome project. `Libxslt` is based on `libxml2` the XML C library developed for the Gnome project. It also implements most of the EXSLT set of processor-portable extensions functions and some of Saxon's evaluate and expressions extensions. The `libxml2` version included in Oxygen XML Editor is 2.7.6 and the `libxslt` version is 1.1.26

Oxygen XML Editor uses `Libxslt` through its command line tool (`Xsltproc`). The XSLT processor is included into the distribution kit of the stand-alone version for Windows and Mac OS X. Because there are differences between different Linux distributions, on Linux you must install `Libxslt` on your machine as a separate application and set the `PATH` variable to contain the `Xsltproc` executable.

The `Xsltproc` processor can be configured from the [XSLTPROC options page](#).



**Caution:** Known problem: file paths containing spaces are not handled correctly in the LIBXML processor. For example the built-in XML catalog files of the predefined document types (DocBook, TEI, DITA, etc) are not handled by LIBXML if Oxygen XML Editor is installed in the default location on Windows (C:\Program Files) because the built-in XML catalog files are stored in the `frameworks` subdirectory of the installation directory which in this case contains at least a space character.

- **MSXML 3.0/4.0** - *MSXML 3.0/4.0* is available only on Windows 2000, Windows NT and Windows XP platforms. It can be used for [transformation](#) and [validation of XSLT stylesheets](#).

Oxygen XML Editor uses the Microsoft XML parser through its command line tool `msxsl.exe`.

Because `msxsl.exe` is only a wrapper, Microsoft Core XML Services (MSXML) must be installed on the computer otherwise you will get a corresponding warning. You can get the latest Microsoft XML parser from [Microsoft web-site](#)

- **MSXML .NET** - *MSXML .NET* is available only on Windows NT4, Windows 2000 and Windows XP platforms. It can be used for *transformation* and *validation of XSLT stylesheets*.

Oxygen XML Editor performs XSLT transformations and validations using .NET Framework's XSLT implementation (`System.Xml.Xsl.XslTransform` class) through the `nxslt` command line utility. The `nxslt` version included in Oxygen XML Editor is 1.6.

You should have the .NET Framework version 1.0 already installed on your system otherwise you will get the following warning: MSXML.NET requires .NET Framework version 1.0 to be installed.  
Exit code: 128

You can get the .NET Framework version 1.0 from the [Microsoft website](#)

- **.NET 1.0** - A transformer based on the `System.Xml 1.0` library available in the .NET 1.0 and .NET 1.1 frameworks from Microsoft (<http://msdn.microsoft.com/xml/>). It is available only on Windows.

You should have the .NET Framework version 1.0 or 1.1 already installed on your system otherwise you will get the following warning: MSXML.NET requires .NET Framework version 1.0 to be installed.  
Exit code: 128

You can get the .NET Framework version 1.0 from the [Microsoft website](#)

- **.NET 2.0** - A transformer based on the `System.Xml 2.0` library available in the .NET 2.0 framework from [Microsoft](#). It is available only on Windows.

You should have the .NET Framework version 2.0 already installed on your system otherwise you will get the following warning: MSXML.NET requires .NET Framework version 2.0 to be installed.  
Exit code: 128

You can get the .NET Framework version 2.0 from the [Microsoft website](#)

The button  **Transformation options** available on the **Transformation** toolbar allows quick access to the *XSLT options* in the Oxygen XML Editor user preferences.

## Configuring Custom XSLT Processors

You can configure and run XSLT and XQuery transformations with processors other than *the ones which come with the Oxygen XML Editor distribution*.

 **Note:** You can not use these custom engines in *the Debugger perspective*.

The output messages of a custom processor are displayed in an output view at the bottom of the application window. If an output message follows *the format of an Oxygen XML Editor linked message*, then a click on the message in the output view highlights the location of the message in an editor panel containing the file referred in the message.

## Configuring the XSLT Processor Extensions Paths

The Xalan and Saxon processors support the use of extension elements and extension functions. Unlike a literal result element, which the stylesheet simply transfers to the result tree, an extension element performs an action. The extension is usually used because the XSLT stylesheet fails in providing adequate functions to the user for accomplishing a more complex task.

The DocBook extensions for Xalan and Saxon are included in the `[Oxygen-install-directory]\frameworks\docbook\xsl\extensions` folder.

Samples on how to use extensions can be found at:

- for Xalan - <http://xml.apache.org/xalan-j/extensions.html>
- for Saxon 6.5.5 - <http://saxon.sourceforge.net/saxon6.5.5/extensions.html>
- for Saxon 9.4.0.4 - <http://www.saxonica.com/documentation/extensibility/intro.xml>

To set an XSLT processor extension (a directory or a jar file), use [the \*Extensions\* button](#) of the scenario edit dialog. The old way of setting an extension (using the parameter `-Dcom.oxygenxml.additional.classpath`) was deprecated and you should use the extension mechanism of the XSLT transformation scenario.

## XSL-FO Processors

This section explains how to apply XSL-FO processors when transforming XML documents to various output formats in Oxygen XML Editor.

### The Built-in XSL-FO Processor

The Oxygen XML Editor installation package is distributed with the *Apache FOP* that is a Formatting Objects processor for rendering your XML documents to PDF. *FOP* is a print and output independent formatter driven by XSL Formatting Objects. *FOP* is implemented as a Java application that reads a formatting object tree and renders the resulting pages to a specified output.

To include PNG images in the final PDF document you need the *JIMI* or *JAI* libraries. For TIFF images you need the *JAI* library. For PDF images you need the *fop-pdf-images* library. These libraries are not bundled with Oxygen XML Editor but using them is very easy. You need to download them and [create an external FO processor](#) based on the built-in FOP libraries and the extension library. The [external FO processor created in Preferences](#) will have a command line like:

```
java -cp "${oxygenInstallDir}/lib/xercesImpl.jar:
${oxygenInstallDir}/lib/fop.jar:${oxygenInstallDir}/lib/
avalon-framework-4.2.0.jar:
${oxygenInstallDir}/lib/batik-all-1.7.jar:${oxygenInstallDir}/lib/
commons-io-1.3.1.jar:
${oxygenInstallDir}/lib/xmlgraphics-commons-1.3.1.jar:
${oxygenInstallDir}/lib/commons-logging-1.0.4.jar:
${oxygenInstallDir}/lib/saxon9ee.jar:${oxygenInstallDir}/lib/
saxon9-dom.jar:
${oxygenInstallDir}/lib/xalan.jar:${oxygenInstallDir}/lib/
serializer.jar:
${oxygenInstallDir}/lib/resolver.jar:${oxygenInstallDir}/lib/
fop-pdf-images-1.3.jar:
${oxygenInstallDir}/lib/PDFBox-0.7.3.jar"
org.apache.fop.cli.Main -fo ${fo} -${method} ${out}
```

You need to add to the classpath `JimiProClasses.zip` for *JIMI* and `jai_core.jar`, `jai_codec.jar` and `mliwrapper_jai.jar` for *JAI*. For the *JAI* package you can include the directory containing the native libraries (`mli_jai.dll` and `mli_jai_mmx.dll` on Windows) in the *PATH* system variable.

The Mac OS X version of the *JAI* library can be downloaded from <http://www.apple.com/downloads/macosx/apple/java3dandjavaadvancedimagingupdate.html>. In order to use it, install the downloaded package.

Other FO processors can be configured in [the Preferences dialog](#).

### Add a Font to the Built-in FOP - The Simple Version

If the font that must be set to Apache FOP is one of the fonts that are installed in the operating system you should follow the next steps for creating and setting a FOP configuration file that looks for the font that it needs in the system fonts. It is a simplified version of [the procedure for setting a custom font in Apache FOP](#).

1. Register the font in FOP configuration. (not necessary in case of DITA PDF transformations, see next step)
  - a) Create a FOP configuration file that specifies that FOP should look for fonts in the installed fonts of the operating system.

```
<fop version="1.0">
  <renderers>
    <renderer mime="application/pdf">
      <fonts>
        <auto-detect/>
      </font>
    </renderer>
  </renderers>
```

```
</renderers>
</fop>
```

b) Set the FOP configuration file in **Preferences**.

Go to menu **Options > Preferences > XML > XSLT/FO/XQuery > FO Processors** and enter the path of the FOP configuration file in the **Configuration file for the built-in FOP** text field.

2. Set the font on the document content.

This is done usually with XSLT stylesheet parameters and depends on the document type processed by the stylesheet.

- For DocBook documents you can start with the predefined scenario called **DocBook PDF**, *edit the XSLT parameters* and set the font name (in our example the font family name is **Arial Unicode MS**) to the parameters `body.font.family` and `title.font.family`.
- For TEI documents you can start with the predefined scenario called **TEI PDF**, *edit the XSLT parameters* and set the font name (in our example **Arial Unicode MS**) to the parameters `bodyFont` and `sansFont`.
- For DITA transformations to PDF using DITA-OT you should modify the following two files:
  - `${frameworks}/dita/DITA-OT/plugins/org.dita.pdf2/cfg/fo/font-mappings.xml` - the `font-face` element included in each element `physical-font` having the attribute `char-set="default"` must contain the name of the font (**Arial Unicode MS** in our example)
  - `${frameworks}/dita/DITA-OT/plugins/org.dita.pdf2/fop/conf/fop.xconf` - an element `auto-detect` must be inserted in the element `fonts` which is inside the element `renderer` having the attribute `mime="application/pdf"`:

```
<renderer mime="application/pdf">
  .
  .
  <fonts>
    <auto-detect/>
  </font>
  .
  .
</renderer>
```

## Add a Font to the Built-in FOP

If an XML document is transformed to PDF using the built-in Apache FOP processor but it contains some Unicode characters that cannot be rendered by the default PDF fonts, then a special font that is capable to render these characters must be configured and embedded in the PDF result.

 **Important:** If this special font is installed in the operating system, there is a simple way of telling FOP to look for it. See *the simplified procedure for adding a font to FOP*.

1. Locate the font.

First, find out the name of a font that has the glyphs for the special characters you used. One font that covers most characters, including Japanese, Cyrillic, and Greek, is Arial Unicode MS.

On Windows the fonts are located into the `C:\Windows\Fonts` directory. On Mac, they are placed in `/Library/Fonts`. To install a new font on your system, is enough to copy it in the `Fonts` directory.

2. Generate a font metrics file from the font file.

- Open a terminal.
- Change the working directory to the Oxygen XML Editor install directory.
- Create the following script file in the Oxygen XML Editor installation directory.

For Mac OS X and Linux create a file `ttfConvert.sh`:

```
#!/bin/sh
export LIB=lib
export CMD=java -cp "$LIB/fop.jar:$LIB/avalon-framework-4.2.0.jar:$LIB/xercesImpl.jar"
export CMD=$CMD org.apache.fo.fop.fonts.apps.TTFReader
export FONT_DIR='/Library/Fonts'
$CMD $FONT_DIR/Arialuni.ttf Arialuni.xml
```

For Windows create a file `ttfConvert.bat`:

```
set LIB=lib
set CMD=java -cp "%LIB%\fop.jar;%LIB%\avalon-framework-4.2.0.jar;%LIB%\xercesImpl.jar"
set CMD=%CMD% org.apache.fop.fonts.apps.TTFReader
set FONT_DIR=C:\Windows\Fonts
%CMD% %FONT_DIR%\Arialuni.ttf Arialuni.xml
```

The paths specified in the file are relative to the Oxygen XML Editor installation directory. If you decide to create it in other directory, change the file paths accordingly.

The `FONT_DIR` can be different on your system. Check that it points to the correct font directory. If the Java executable is not in the `PATH`, specify the full path of the executable.

If the font has bold and italic variants, convert them too by adding two more lines to the script file:

- for Mac OS X and Linux:

```
$CMD $FONT_DIR/Arialuni-Bold.ttf Arialuni-Bold.xml
$CMD $FONT_DIR/Arialuni-Italic.ttf Arialuni-Italic.xml
```

- for Windows:

```
%CMD% %FONT_DIR%\Arialuni-Bold.ttf Arialuni-Bold.xml
%CMD% %FONT_DIR%\Arialuni-Italic.ttf Arialuni-Italic.xml
```

- d) Execute the script.

On Linux and Mac OS X, execute the command `sh ttfConvert.sh` from the command line. On Windows, run the command `ttfConvert.bat` from the command line or double click on the file `ttfConvert.bat`.

### 3. Register the font in FOP configuration. (not necessary in case of DITA PDF transformations, see next step)

- a) Create a FOP configuration file that specifies the font metrics file for your font.

```
<fop version="1.0">
  <base>./</base>
  <font-base>file:/C:/path/to/FOP/font/metrics/files/</font-base>
  <source-resolution>72</source-resolution>
  <target-resolution>72</target-resolution>
  <default-page-settings height="11in" width="8.26in"/>
  <renderers>
    <renderer mime="application/pdf">
      <filterList>
        <value>flate</value>
      </filterList>
      <font>
        <font metrics-url="Arialuni.xml" kerning="yes"
          embed-url="file:/Library/Fonts/Arialuni.ttf">
          <font-triplet name="Arialuni" style="normal"
            weight="normal"/>
        </font>
      </font>
    </renderer>
  </renderers>
</fop>
```

The `embed-url` attribute points to the font file to be embedded. Specify it using the URL convention. The `metrics-url` attribute points to the font metrics file with a path relative to the base element. The triplet refers to the unique combination of name, weight, and style (italic) for each variation of the font. In our case is just one triplet, but if the font had variants, you would have to specify one for each variant. Here is an example for Arial Unicode if it had italic and bold variants:

```
<fop version="1.0">
  ...
  <font>
    <font metrics-url="Arialuni.xml" kerning="yes"
      embed-url="file:/Library/Fonts/Arialuni.ttf">
      <font-triplet name="Arialuni" style="normal"
        weight="normal"/>
    </font>
    <font metrics-url="Arialuni-Bold.xml" kerning="yes"
      embed-url="file:/Library/Fonts/Arialuni-Bold.ttf">
      <font-triplet name="Arialuni" style="normal"
        weight="normal"/>
    </font>
  </font>
</fop>
```

```

        weight="bold"/>
    </font>
    <font metrics-url="Arialuni-Italic.xml" kerning="yes"
        embed-url="file:/Library/Fonts/Arialuni-Italic.ttf">
        <font-triplet name="Arialuni" style="italic"
            weight="normal" />
    </font>
</fonts>
...
</fop>

```

More details about the FOP configuration file are available on <http://xmlgraphics.apache.org/fop/0.93/configuration.html> the FOP website.

b) Set the FOP configuration file in **Preferences**.

Go to menu **Options > Preferences > XML > XSLT/FO/XQuery > FO Processors** and enter the path of the FOP configuration file in the **Configuration file for the built-in FOP** text field.

4. Set the font on the document content.

This is usually done with XSLT stylesheet parameters and depends on the document type processed by the stylesheet.

For DocBook documents, you can start with the predefined scenario called **DocBook PDF**, [edit the XSLT parameters](#), and set the font name (in our example **Arialuni**) to the parameters `body.font.family` and `title.font.family`.

For TEI documents, you can start with the predefined scenario called **TEI PDF**, [edit the XSLT parameters](#), and set the font name (in our example **Arialuni**) to the parameters `bodyFont` and `sansFont`.

For DITA to PDF transformations using DITA-OT modify the following two files:

- `${frameworks}/dita/DITA-OT/plugins/org.dita.pdf2/cfg/fo/font-mappings.xml` - the `font-face` element included in each element `physical-font` having the attribute `char-set="default"` must contain the name of the font (*Arialuni* in our example)
- `${frameworks}/dita/DITA-OT/plugins/org.dita.pdf2/fop/conf/fop.xconf` - an element `font` must be inserted in the element `fonts` which is inside the element `renderer` having the attribute `mime="application/pdf"`:

```

<renderer mime="application/pdf">
    . . .
    <fonts>
        <font metrics-url="Arialuni.xml" kerning="yes"
            embed-url="file:/Library/Fonts/Arialuni.ttf">
            <font-triplet name="Arialuni" style="normal"
                weight="normal" />
        </font>
    </fonts>
    . . .
</renderer>

```

## Adding Libraries to the Built-in FOP

You can extend the functionality of the built-in FO processor by dropping additional libraries in the `[oxygen install folder]/lib/fop` directory.

### Hyphenation

To add support for hyphenation, follow these steps:

1. Download the pre-compiled JAR from [OFFO](#) ;
2. Place the JAR in `[oxygen install folder]/lib/fop`;
3. Restart the application.



---

# Chapter 12

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## Querying Documents

---

**Topics:**

- [Running XPath Expressions](#)
- [Working with XQuery](#)

This chapter shows how to query XML documents in Oxygen XML Editor with XPath expressions and the XQuery language.

## Running XPath Expressions

This section explains possible ways of running an XPath expression on an XML document.

### What is XPath

XPath is a language for addressing specific parts of an XML document. XPath, like the Document Object Model (DOM), models an XML document as a tree of nodes. An XPath expression is a mechanism for navigating through and selecting nodes from the XML document. An XPath expression is in a way analogous to a Structured Query Language (SQL) query used to select records from a database.

There are different types of nodes, including element nodes, attribute nodes and text nodes. XPath defines a way to compute a string-value for each type of node.

XPath defines a library of standard functions for working with strings, numbers and boolean expressions.

Some examples:

- `child::*` - Selects all children of the root node.
- `./name` - Selects all elements having the name "name", descendants of the current node.
- `/catalog/cd[price>10.80]` - Selects all the `cd` elements that have a price element with a value larger than 10.80.

To find out more about XPath, the following URL is recommended: <http://www.w3.org/TR/xpath>.

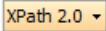
### Oxygen XPath Toolbar

To use XPath expressions effectively, you need a good understanding of *the XPath Core Function Library*. Oxygen XML Editor provides an XPath toolbar that eases the development of XML documents.

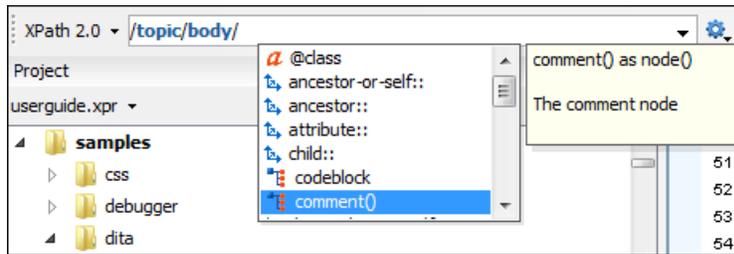
In Oxygen XML Editor you can execute an XPath expression (XPath 1.0, XPath 2.0, XPath 2.0 SA, XPath 3.0, XPath 3.0 SA) ( from the XPath toolbar. To execute an XPath expression . You can use the XPath toolbar to execute both XPath 2.0 basic and XPath 2.0 schema aware expressions. XPath 2.0 schema aware takes into account the Saxon EE *XML Schema version* option.

-  **Note:** The results returned by XPath 2.0 SA and XPath 3.0 SA have a location limited to the line number of the start element (there are no column information and no end specified).
-  **Note:** Oxygen XML Editor uses Saxon to execute XPath 3.0 expressions, but implements a part of the 3.0 functions. When using a function that is not implemented, Oxygen XML Editor can return a compilation error.

Syntax highlight is available in the XPath toolbar and allows you to identify the components of an XPath expression. To customize the colors of the components of an XPath expression, go to **Options > Preferences > Editor > Colors**.

The *content completion assistant* is also available in the XPath toolbar. It offers context-dependent proposals and takes into account the cursor position in the document you are editing. The set of XPath functions proposed by the content completion assistant also depends on the XPath version. Select the XPath version from this drop-down menu  on the XPath toolbar.

In the following figure, the content completion assistant offers element names from the current document and all XPath 2.0 functions:



**Figure 252: Content Completion in the XPath toolbar**

When Oxygen XML Editor evaluates an XPath expression, it uses *XML catalogs* to resolve the location of documents referred in the expression. To configure XML catalogs, go to **Options > Preferences > XML > XML catalog**.

An example is evaluating the `collection(URIofCollection)` function (XPath 2.0). To resolve the references from the files returned by the `collection()` function with an XML catalog, specify the class name of the XML catalog enabled parser for parsing these collection files. The class name is `ro.sync.xml.parser.CatalogEnabledXMLReader`. Specify it as it follows:

```
let $docs := collection(iri-to-uri(
  "file:///D:/temp/test/XQuery-catalog/mydocsdir?recurse=yes;select=*.xml;
  parser=ro.sync.xml.parser.CatalogEnabledXMLReader"))
```

Enable  **XPath update on caret move**, to display the XPath expression at the current cursor position in the XPath toolbar, when you navigate through a document.

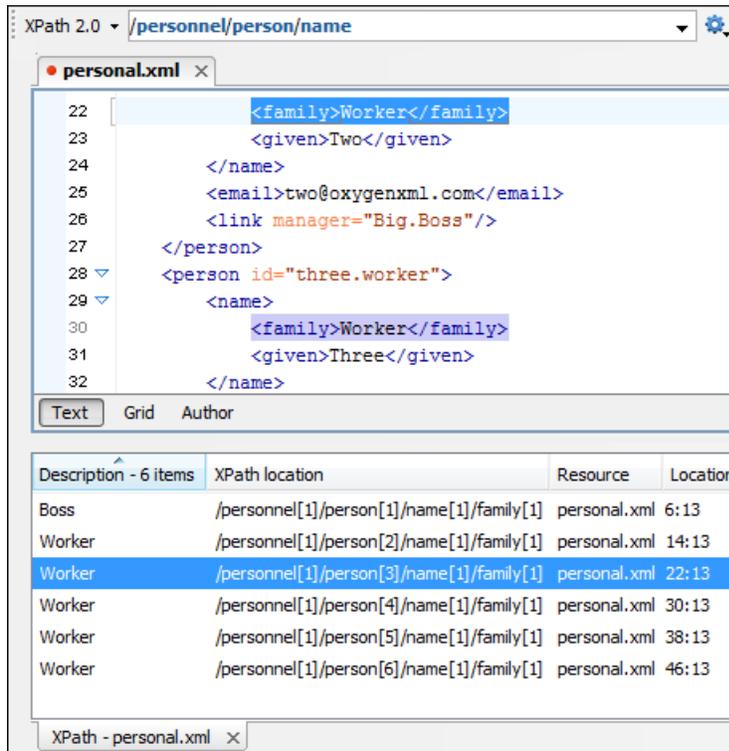
When you run an XPath expression, Oxygen XML Editor displays the results of its execution in the **Results View** *The Results View* on page 50. This view contains five columns:

- Description - holds the result that Oxygen XML Editor displays when you run an XPath expression;
- XPath location - holds the path to the matched node;
- Resource - holds the name of the document on which you run the XPath expression;
- System ID - holds the path to the document itself;
- Location - holds the - holds the location of the result in the document.

To arrange the results depending on a column click on its header. To group the results by their resource, or by their system id, right click the header of any column in the results view and select **Group by "Resource"** or **Group by "System ID"**. If no information regarding location is available, Oxygen XML Editor displays **Not available** in the **Location** column. Oxygen XML Editor displays the results in a valid XPath expression format.

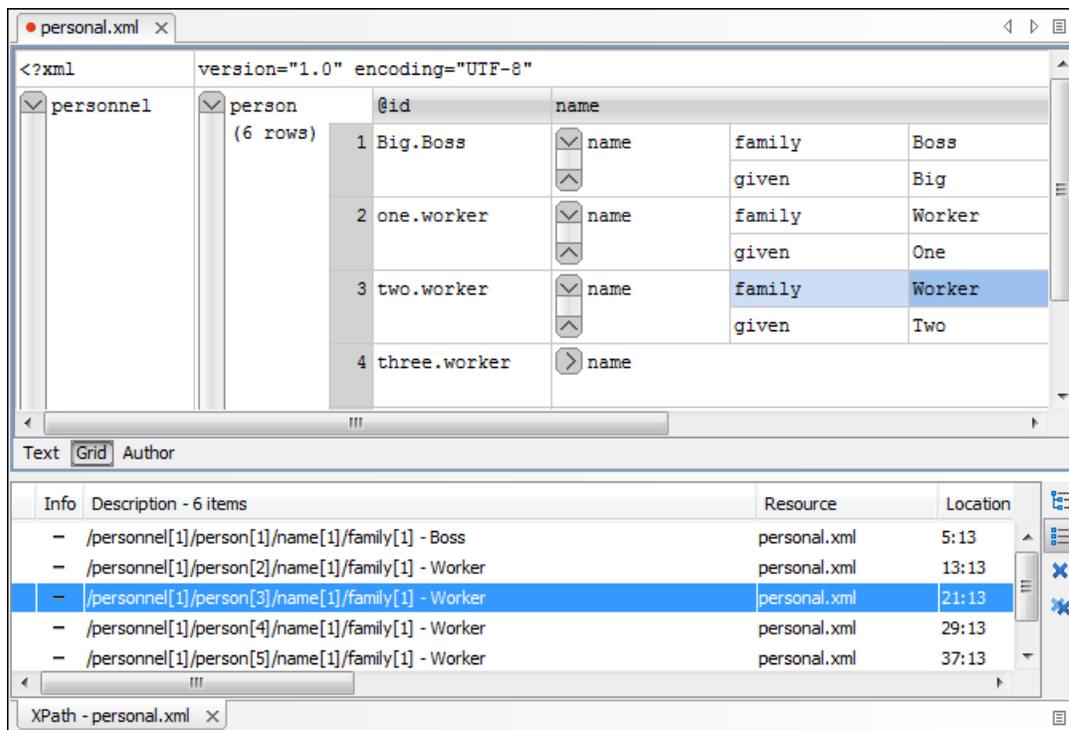
```
- /node[value]/node[value]/node[value] -
```

 **Note:** You can stop the current execution of an XPath expression by using the toolbar or by executing another XPath expression. This is valid when you execute XPath 2.0 and XPath 3.0 expressions.



**Figure 253: XPath results highlighted in editor panel with character precision**

If you use the *grid editor*, when you click a record in the **Results View**, Oxygen XML Editor highlights the entire node.



**Figure 254: XPath results highlighted in the Grid Editor**

When you type expressions longer than 60 characters, a dialog pops up and offers you the possibility to switch to the *XPath builder* view. The XPath builder view is specially designed to assist you with typing and testing complex XPath 1.0 / 2.0 expressions.

### Using XPath with DocBook DTD

The following examples are taken from a DocBook book based on the DocBook XML DTD. The book contains a number of chapters. To return all the chapter nodes of the book, enter `//chapter` in the XPath expression field and press **(Enter)**. This action returns all the `chapter` nodes of the DocBook book in the **Results View**. Click a record in the **Results View** to locate and highlight its corresponding chapter element and all its children nodes in the document you are editing.

To find all `example` nodes contained in the `sect2` nodes of a DocBook XML document, use the following XPath expression: `//chapter/sect1/sect2/example`. Oxygen XML Editor adds a result in the **Results View** for each `example` node found in any `sect2` node.

For example, if the result of the above XPath expression is:

```
- /chapter[1]/sect1[3]/sect2[7]/example[1]
```

it means that in the edited file the `example` node is located in the first chapter, third section level one, seventh section level 2.



**Important:** If you define a default namespace, Oxygen XML Editor binds this namespace to the first free prefix from the list: `default`, `default1`, `default2`, and so on. For example, if you define the default namespace `xmlns="something"` and the prefix `default` is not associated with another namespace, you can match tags without prefix in an XPath expression typed in the XPath toolbar by using the prefix `default`. To find all the `level` elements when you define a default namespace in the root element, execute this expression: `//default:level` in the XPath toolbar.

To define default mappings between prefixes (that you can use in the XPath toolbar) and namespace URIs [go to !\[\]\(044455df3ba2cb4d05a898799dc23740\_img.jpg\) XPath Options preferences panel](#) and enter the mappings in the **Default prefix-namespace mappings** table. The same preferences panel allows you to configure the default namespace used in XPath 2.0 expressions. Different results tabs are created for each executed XPath query.

To apply an XPath expression relative to the element on which the caret is positioned, use the following actions:

- **Document > XML Document > Copy XPath (Ctrl+Alt+.)** (also available on the context menu of the main editor panel) to copy the XPath expression of the current element or attribute to the clipboard;
- **Paste** action in the contextual menu of the XPath toolbar to paste this expression in the toolbar;
- add your relative expression in the toolbar and execute the resulting complete expression.

## The XPath/XQuery Builder View

To open the **XPath/XQuery Builder** view, go to **Window > Show View > XPath/XQuery Builder**.

The XPath/XQuery Builder view allows you to compose complex XPath and XQuery expressions and execute them. The upper part of the view contains the following actions:

- a drop-down list that allows you to select the type of the expression you want to execute. You can choose between:
  - XPath 1.0 (Xerces-driven);
  - XPath 2.0, XPath 2.0SA, Xpath 3.0, Xpath 3.0SA, XQuery 1.0, XQuery 3.0, Saxon-HE XQuery, Saxon-PE XQuery, or Saxon-EE XQuery (all of them are Saxon-driven);
  - a custom connection to XML databases that can execute XQuery expressions.

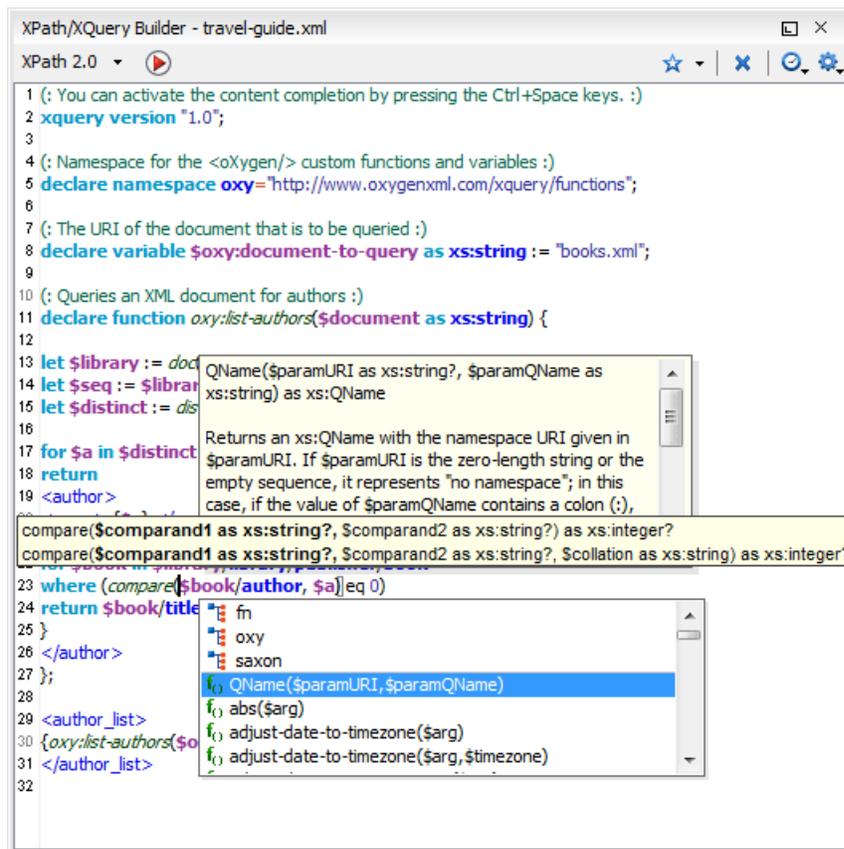


**Note:** The results returned by XPath 2.0 SA and XPath 3.0 SA have a location limited to the line number of the start element (there are no column information and no end specified).



**Note:** Oxygen XML Editor uses Saxon to execute XPath 3.0 expressions. Because Saxon implements a part of the 3.0 functions, when using a function that is not implemented, Oxygen XML Editor returns a compilation error.

- an  **Execute XPath** button. Press this button to start the execution of the XPath or XQuery expression you are editing. The result of the execution is displayed in the *Results view* in a separate tab;
  - a **Favorites** button which allows you to save certain expressions that you can later reuse. To add an expression as favorite, press the star button and enter a name under which the expression is saved. The star turns yellow to confirm that the expression was saved. Expand the drop-down list next to the star button to see all your favorites. Oxygen XML Editor automatically groups favorites in folders named after the method of execution;
  - a  **Clear content** button that you can use to clear the editing area of the view;
  - a  **History** drop-down that keeps a list of the last 15 executed XPath or XQuery expressions;
  - a  **Settings** drop-down menu which contains three options:
    -  **Update on caret move** - select this option to allow the **XPath/XQuery Builder** view to display the XPath expression at the current cursor position when you navigate through the document;
    -  **Evaluate as you type** - select this option to allow the **XPath/XQuery Builder** view to evaluate in real time the expression you are composing;
-  **Note:** The  **Evaluate as you type** option and the automatic validation are disabled when you edit *huge documents*.
-  **Options** - opens the Preferences page of the currently selected method.



**Figure 255: The XPath/XQuery Builder View**

When you hover your cursor over the XPath/XQuery version icon , a tooltip is displayed to let you know what engine Oxygen XML Editor currently uses.

While editing an XPath or XQuery expression, Oxygen XML Editor assists you by providing the following features:

- *content completion assistant*;

- syntax highlight;
- automatic validation of the expression as you type;
-  **Note:** When you type invalid syntax in the XPath/XQuery builder, a red serrated line underlines the invalid fragments.
- method signature balloon, when the cursor is located inside an XQuery function.

The evaluation of the XPath expression tries to resolve the locations of documents referred in the expression through the *XML catalogs*. These catalogs are *configured in the Preferences* pages and *the current XInclude preferences*. For example, these preferences are used when evaluating the XPath 2.0 `collection(URIofCollection)` function.

If you are using the XQuery builder and the current file is an XSLT document, Oxygen XML Editor executes the expressions over the XML source in the associated scenario.

The *usual edit actions* **Cut, Copy, Paste, Select All, Undo, Redo** are available in the pop-up menu of the top editable part of the view.

## Working with XQuery

---

This section explains how to edit and run XQuery queries in Oxygen XML Editor.

### What is XQuery

XQuery is the query language for XML and is officially defined by *a W3C Recommendation document*. The many benefits of XQuery include:

- XQuery allows you to work in one common model no matter what type of data you're working with: relational, XML, or object data.
- XQuery is ideal for queries that must represent results as XML, to query XML stored inside or outside the database, and to span relational and XML sources.
- XQuery allows you to create many different types of XML representations of the same data.
- XQuery allows you to query both relational sources and XML sources, and create one XML result.

### Syntax Highlight and Content Completion

To *create a new XQuery document*, select **File > New (Ctrl+N)** and when the **New** dialog appears select XQuery entry.

Oxygen XML Editor provides syntax highlight for keywords and all known XQuery functions and operators. A content completion assistant is also available and can be activated with the **(Ctrl-Space)** shortcut. The functions and operators are presented together with a description of the parameters and functionality. For some supported database engines like eXist and Berkeley DB, the content completion list offers the specific XQuery functions implemented by that engine. This feature is available when the XQuery file has an associated transformation scenario which uses one of these database engines or the XQuery validation engine is set to one of them via a validation scenario or in the *XQuery Preferences* page.

The extension functions built in the Saxon product are available on content completion if one of the following conditions are true:

- the edited file has a transformation scenario associated that uses as transformation engine Saxon 9.4.0.4 PE or Saxon 9.4.0.4 EE
- the edited file has a validation scenario associated that use as validation engine Saxon 9.4.0.4 PE or Saxon 9.4.0.4 EE
- the validation engine specified in *Preferences* is Saxon 9.4.0.4 PE or Saxon 9.4.0.4 EE.

If the Saxon namespace (<http://saxon.sf.net>) is mapped to a prefix the functions are presented using this prefix, the default prefix for the Saxon namespace (`saxon`) is used otherwise.

If you want to use a function from a namespace mapped to a prefix, just type that prefix and the content completion displays all the XQuery functions from that namespace. When the default namespace is mapped to a prefix the XQuery

functions from this namespace offered by content completion are also prefixed, only the function name being used otherwise.

The content completion popup window presents all the variables and functions from both the edited XQuery file and its imports.

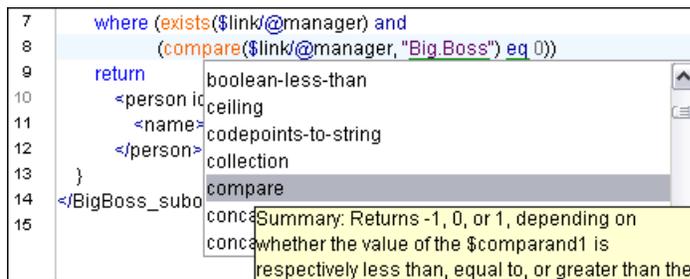


Figure 256: XQuery Content Completion

## XQuery Outline View

The XQuery document structure is presented in the **XQuery Outline** view. The outline tree presents the list of all the components (namespaces, imports, variables, and functions) from both the edited XQuery file and its imports. It allows quick access to a component by knowing its name. It can be opened from the **Window > Show View > Outline** menu action.

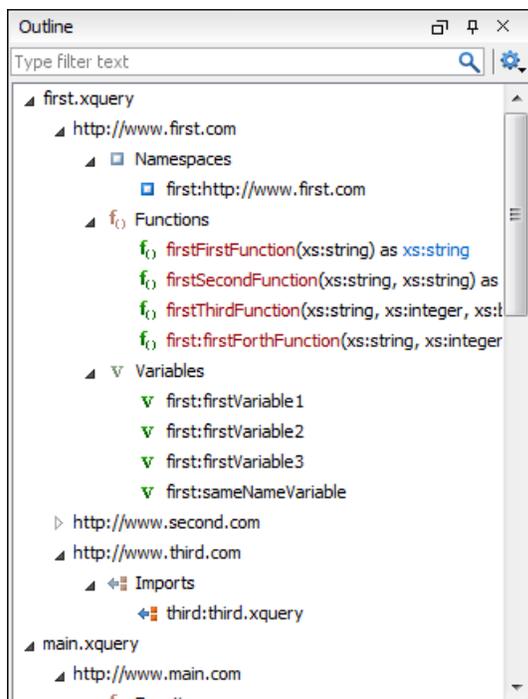


Figure 257: XQuery Outline View

The following actions are available in the **Settings** menu on the Outline view's toolbar:

- **Selection update on caret move** - Controls the synchronization between **Outline** view and source document. The selection in the **Outline** view can be synchronized with the caret moves or the changes performed in the XQuery editor. Selecting one of the components from the **Outline** view also selects the corresponding item in the source document.
- **Sort** - Allows you to alphabetically sort the XQuery components.
- **Show all components** - Displays all collected components starting from the current file. This option is set by default.
- **Show local components** - Displays components defined in the current file only.

- **Group by location/namespace/type** - Allows you to group the components by location, namespace, and type. When grouping by namespace, the main XQuery module namespace is presented first in the **Outline** view.

If you know the component name, you can search it in the **Outline** view by typing its name in the filter text field from the top of the view or directly on the tree structure. When you type the component name in the filter text field you can switch to the tree structure using the arrow keys of the keyboard, **(Enter)**, **(Tab)**, **(Shift-Tab)**. To switch from tree structure to the filter text field, you can use **(Tab)**, **(Shift-Tab)**.

 **Tip:** The search filter is case insensitive. The following wildcards are accepted:

- \* - any string
- ? - any character
- , - patterns separator

If no wildcards are specified, the string to search is used as a partial match (like \*textToFind\*).

The upper part of the view contains a filter box which allows you to focus on the relevant components. Type a text fragment in the filter box and only the components that match it are presented. For advanced usage you can use wildcard characters (\*, ?) and separate multiple patterns with commas.

## The XQuery Input View

A node can be dragged and dropped in the editor area for quickly inserting XQuery expressions.

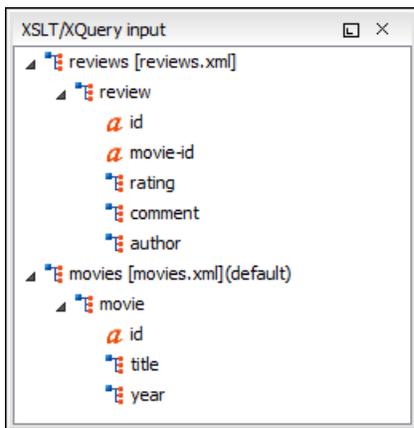


Figure 258: XQuery Input view

### Create FLWOR by drag and drop

For the following XML documents:

```
<movies>
<movie id="1">
<title>The Green Mile</title>
<year>1999</year>
</movie>
<movie id="2">
<title>Taxi Driver</title>
<year>1976</year>
</movie>
</movies>
```

and

```
<reviews>
<review id="100" movie-id="1">
<rating>5</rating>
<comment>It is made after a great Stephen King book.
</comment>
```

```

<author>Paul</author>
</review>
<review id="101" movie-id="1">
<rating>3</rating>
<comment>Tom Hanks does a really nice acting.</comment>
<author>Beatrice</author>
</review>
<review id="104" movie-id="2">
<rating>4</rating>
<comment>Robert De Niro is my favorite actor.</comment>
<author>Maria</author>
</review>
</reviews>

```

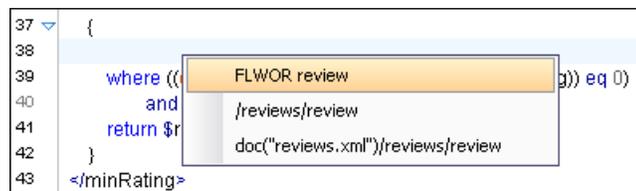
and the following XQuery:

```

let $review := doc("reviews.xml")
for $movie in doc("movies.xml")/movies/movie
let $movie-id := $movie/@id
return
<movie id="{ $movie/@id }">
{ $movie/title }
{ $movie/year }
<maxRating>
{
}
}
</maxRating>
</movie>

```

if you drag the **review** element and drop it between the braces a popup menu will be displayed.



**Figure 259: XQuery Input drag and drop popup menu**

Select **FLWOR rating** and the result document will be:

```

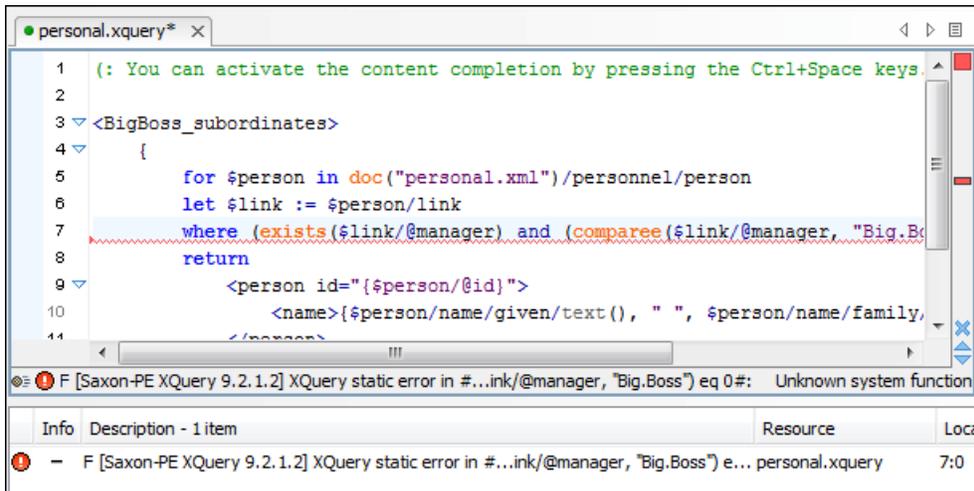
37 {
38   for $review in doc("reviews.xml")/reviews/review
39   return
40   where ((compare($rew/rating/text(), string($minRating)) eq 0)
41     and ($rew/@movie-id = $movie/@id))
42   return $rew/author
43 }
44 </minRating>

```

**Figure 260: XQuery Input drag and drop result**

## XQuery Validation

With Oxygen XML Editor, you can validate your documents before using them in your transformation scenarios. The validation uses the Saxon 9.4.0.4 PE processor or the 9.4.0.4 EE, IBM DB2, eXist, Berkeley DB XML, Documentum xDb (X-Hive/DB) 10, or MarkLogic (version 5 or newer) if you installed them. Any other XQuery processor that offers an *XQJ API implementation* can also be used. This is in conformance with *the XQuery Working Draft*. The processor is used in two cases: validation of the expression and execution. Although the execution implies a validation, it is faster to check the expression syntactically, without executing it. The errors that occurred in the document are presented in the messages view at the bottom of editor window, with a full description message. As with all error messages, if you click one entry, the line where the error appeared is highlighted.



**Figure 261: XQuery Validation**

 **Note:** In case you choose a processor that does not support XQuery validation, Oxygen XML Editor displays a warning when trying to validate.

The **Validate** toolbar provides the  **Validation options** button for quick access to the *XQuery options* in the Oxygen XML Editor user preferences.

When you open an XQuery document from a connection that supports validation (for example MarkLogic, or eXist), by default Oxygen XML Editor uses this connection for validation. In case you open an XQuery file using a MarkLogic connection, the validation better resolves imports.

## Other XQuery Editing Actions

The XQuery editor offers a reduced version of *the popup menu available in the XML editor type*:

- *the split actions*,
- *the folding actions*
- *the edit actions*
- a part of *the source actions*:
  - **To lower case**
  - **To upper case**
  - **Capitalize lines**
- open actions:
  - **Open file at Caret**
  - **Open file at Caret in System Application**

## Transforming XML Documents Using XQuery

XQueries are similar with the XSL stylesheets, both being capable of transforming an XML input into another format. You specify the input URL when you *define the transformation scenario*. The result can be saved and opened in the associated application. You can even run a *FO processor* on the output of an XQuery. The transformation scenarios may be shared between many XQuery files, are *exported* together with the XSLT scenarios and can be managed in *the Configure Transformation Scenario dialog*, or in *the Scenarios view*. The transformation can be performed on the XML document specified in the **XML URL** field, or, if this field is empty, the documents referred from the query expression. The parameters of XQuery transforms must be set in *the Parameters dialog*. Parameters that are in a namespace must be specified using the qualified name, for example a param parameter in the `http://www.oxygenxml.com/ns` namespace must be set with the name `{http://www.oxygenxml.com/ns}param`.

The transformation uses one of the Saxon 9.4.0.4 HE, Saxon 9.4.0.4 PE, Saxon 9.4.0.4 EE processors, a database connection (details can be found in the [Working with Databases](#) chapter - in the [XQuery transformation](#) section) or any XQuery processor that provides an XQJ API implementation.

The Saxon 9.4.0.4 EE processor supports also XQuery 3.0 transformations.

 **Note:** In case the XQuery 3.0 support is active, the XQuery Update support is no longer available.

## XQJ Transformers

This section describes the necessary procedures before running an XQJ transformation.

### How to Configure an XQJ Data Source

Any transformer that offers an XQJ API implementation can be used when validating XQuery or transforming XML documents. (An example of an XQuery engine that implements the XQJ API is [Zorba](#).)

1. In case your XQJ Implementation is native, make sure the directory containing the native libraries of the engine is added to your system environment variables: to PATH - on Windows, to LD\_LIBRARY\_PATH - on Linux, or to DYLD\_LIBRARY\_PATH - on Mac OS X. Restart Oxygen XML Editor after configuring the environment variables.
2. Go to menu **Preferences > Data Sources**.
3. Click the **New** button in the **Data Sources** panel.
4. Enter a unique name for the data source.
5. Select **XQuery API for Java(XQJ)** in the **Type** combo box.
6. Press the **Add** button to add XQJ API-specific files.  
You can manage the driver files using the **Add**, **Remove**, **Detect**, and **Stop** buttons.  
Oxygen XML Editor detects any implementation of `javax.xml.xquery.XQDataSource` and presents it in **Driver class** field.
7. Select the most suited driver in the **Driver class** combo box.
8. Click the **OK** button to finish the data source configuration.

### How to Configure an XQJ Connection

The steps for configuring an XQJ connection are the following:

1. Go to menu **Preferences > Data Sources**.
2. Click the **New** button in the **Connections** panel.
3. Enter a unique name for this connection.
4. Select one of the previously configured [XQJ data sources](#) in the **Data Source** combo box.
5. Fill-in the connection details.

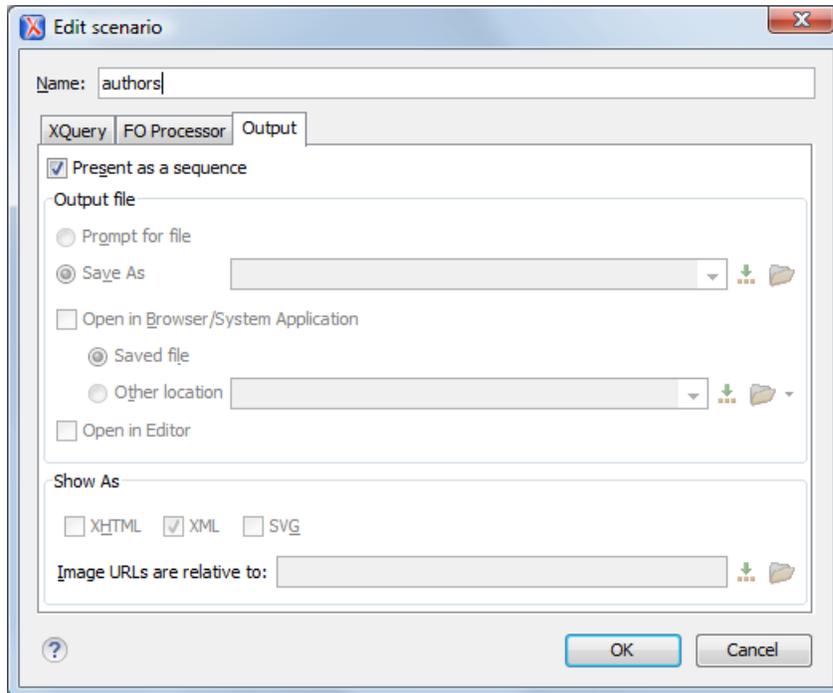
The properties presented in the connection details table are automatically detected depending on the selected data source.

6. Click the **OK** button.

### Display Result in Sequence View

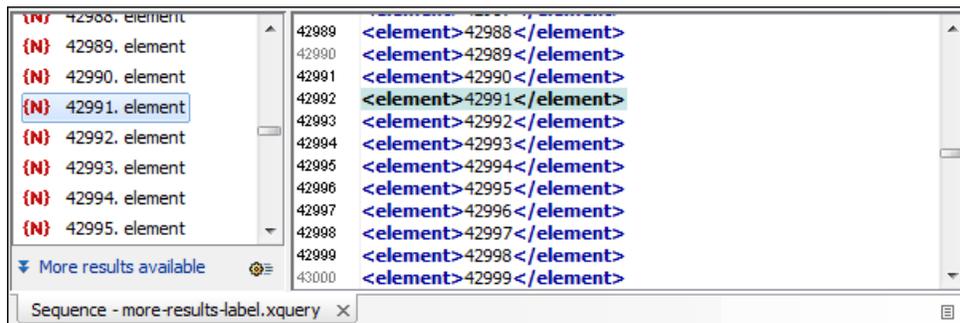
The result of an XQuery executed on a database can be very large and sometimes only a part of the full result is needed. To avoid the long time necessary for fetching the full result, select the **Present as a sequence** option in the **Output** tab of the **Edit scenario** dialog. This option fetches only the first chunk of the result. Clicking the **More results available** label that is displayed at the bottom of the **Sequence** view fetches the next chunk of results.

The size of a chunk can be *set with the option [Size limit of Sequence view](#)*. The  **XQuery options** button from the **More results available** label provides a quick access to this option by opening *the [XQuery panel of the Preferences dialog](#)* where the option can be modified.



**Figure 262: The XQuery transformation result displayed in Sequence view**

A chunk of the XQuery transformation result is displayed in the **Sequence** view.



**Figure 263: The XQuery transformation result displayed in Sequence view**

### Advanced Saxon HE/PE/EE Transform Options

The XQuery transformation scenario allows configuring advanced options specific for the Saxon HE (Home Edition) / PE (Professional Edition) / EE (Enterprise Edition) engine. They are the same options as *the ones set in the user preferences* but they are configured as a specific set of transformation options for each transformation scenario. The default values of the options in the transformation scenario are the values *set in the user preferences*. The advanced options specific for Saxon HE / PE / EE are:

- **Use a configuration file** - If checked, the specified Saxon configuration file are used for determining the Saxon advanced options.
- **Recoverable errors** - Policy for handling recoverable errors in the stylesheet. Allows the user to choose how dynamic errors are handled. Either one of the following options can be selected:
  - recover silently
  - recover with warnings
  - signal the error and do not attempt recovery
- **Strip whitespaces** - Can have one of the following values:

- **All** - Strips all whitespace text nodes from source documents before any further processing, regardless of any `xml:space` attributes in the XML source document.
- **Ignorable** - Strips all ignorable whitespace text nodes from source documents before any further processing, regardless of any `xml:space` attributes in the XML source document. Whitespace text nodes are ignorable if they appear in elements defined in the DTD or schema as having element-only content.
- **None** - Strips no whitespace before further processing.
- **Optimization level** - Allows optimization to be suppressed in cases where reducing compile time is important, or where optimization gets in the way of debugging, or causes extension functions with side-effects to behave unpredictably.
- **Allow calls on extension functions** - If checked, calling external Java functions is allowed.
- **Validation of the source file** - Available only for Saxon EE. It can have three values:
  - **Schema validation** - This mode requires an XML Schema and enables parsing the source documents with schema-validation enabled.
  - **Lax schema validation** - If an XML Schema is provided, this mode enables parsing the source documents with schema-validation enabled.
  - **Disable schema validation** - This mode means parsing the source documents with schema validation disabled.
- **Validation errors in the results tree treated as warnings** - Available only for Saxon EE. If checked, all validation errors are treated as warnings, otherwise they are treated as fatal.
- **Generate bytecode ("--generateByteCode:(on|off)")** - When you enable this option, Saxon-EE attempts to generate Java bytecode for evaluation of parts of a query or stylesheet that are amenable to such treatment. For further details regarding this option, go to [http://www.saxonica.com/documentation/javadoc/net/sf/saxon/lib/FeatureKeys.html#GENERATE\\_BYTE\\_CODE](http://www.saxonica.com/documentation/javadoc/net/sf/saxon/lib/FeatureKeys.html#GENERATE_BYTE_CODE).
- **Enable XQuery 3.0 support ("--qversion:(1.0|3.0)")** - If checked, Saxon EE runs the XQuery transformation with the XQuery 3.0 support.
  - 👉 **Note:** In case the XQuery 3.0 support is active, the XQuery Update support is no longer available.
- **Backup files updated by XQuery ("--backup:(on|off)")** - If checked, backup versions for any XML files updated with XQuery Update are generated.

### Updating XML Documents using XQuery

Using the bundled Saxon 9.4.0.4 EE XQuery processor Oxygen XML Editor offers support for XQuery Update 1.0. The XQuery Update Facility provides expressions that can be used to make persistent changes to instances of the XQuery 1.0 and XPath 2.0 Data Model. Thus, besides querying XML documents, you can modify them using the various insert/delete/modify/create methods available in the *XQuery Update 1.0* standard.

Choose Saxon 9.4.0.4 EE as a transformer in the scenario associated with the XQuery files containing update statements and Oxygen XML Editor will notify you if the update was successful.

#### Using XQuery Update to modify a tag name in an XML file

```
rename node doc("books.xml")//publisher[1]//book[1] as "firstBook"
```

---

# Chapter 13

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## Debugging XSLT Stylesheets and XQuery Documents

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### Topics:

- [Overview](#)
- [Layout](#)
- [Working with the XSLT / XQuery Debugger](#)
- [Debugging Java Extensions](#)
- [Supported Processors for XSLT / XQuery Debugging](#)

This chapter explains the user interface and how to use the debugger with XSLT and XQuery transformations.

## Overview

---

The **XSLT Debugger** and **XQuery Debugger** perspectives enable you to test and debug XSLT 1.0 / 2.0 stylesheets and XQuery 1.0 documents including complex XPath 2.0 expressions. The interface presents simultaneous views of the source XML document, the XSLT/XQuery document and the result document. As you go step by step through the XSLT/XQuery document the corresponding output is generated step by step, and the corresponding position in the XML file is highlighted. At the same time, special views provide various types of debugging information and events useful to understand the transformation process.

The following set of features allow you to test and solve XSLT/XQuery problems:

- support for XSLT 1.0 stylesheets (using Saxon 6.5.5 and Xalan XSLT engines), XSLT 2.0 stylesheets and XPath 2.0 expressions that are included in the stylesheets (using Saxon 9.4.0.4 XSLT engine) and XQuery 1.0 (using Saxon 9.4.0.4 XQuery engine);
- stepping capabilities: step in, step over, step out, run, run to cursor, run to end, pause, stop;
- output to source mapping between every line of output and the instruction element / source context that generated it;
- breakpoints on both source and XSLT/XQuery documents;
- call stack on both source and XSLT/XQuery documents;
- trace history on both source and XSLT/XQuery documents;
- support for XPath expression evaluation during debugging;
- step into imported/included stylesheets as well as included source entities;
- available templates and hits count;
- variables view;
- dynamic output generation.

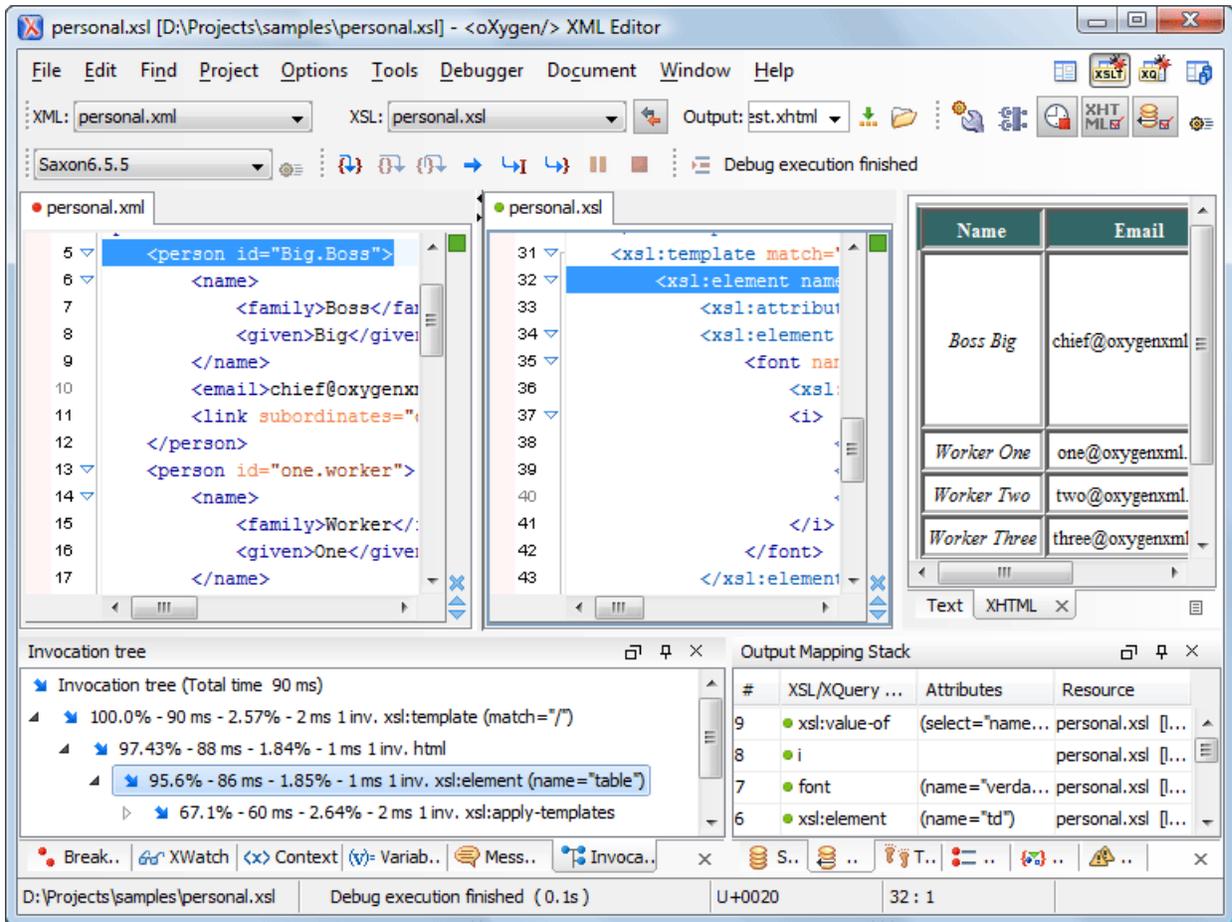
## Layout

---

The XML file and XSL file are displayed in *Text mode*. The other modes (*Author mode*, *Grid mode*) are available only in *the Editor perspective*.

The debugger perspective contains four sections:

- **Source document view (XML)** - Displays and allows the editing of XML files (documents).
- **XSLT/XQuery document view (XSLT/XQuery)** - Displays and allows the editing of XSL files(stylesheets) or XQuery documents.
- **Output document view** - Displays the output that results from inputting a document (XML) and a stylesheet (XSL) or XQuery document in the transformer. The transformation result is written dynamically while the transformation is processed. There are two types of output views: a text view (with XML syntax highlight) and an XHTML view. For large outputs, the XHTML view can be disabled (see *Debugger Settings*).
- **Control view** - The control view is used to configure and control the debugging operations. It also provides a set of *Information views* types. This pane has two sections:
  - *Control toolbar*
  - *Information views*



**Figure 264: Debugger Mode Interface**

XML documents and XSL stylesheets or XQuery documents that were opened in the Editor perspective are automatically sorted into the first two panes. When multiple files of each type are opened, the individual documents and stylesheets are separated using the familiar tab management system of the Editor perspective. Selecting a tab brings the document or stylesheet into focus and enables editing without the need to go back to the Editor perspective.

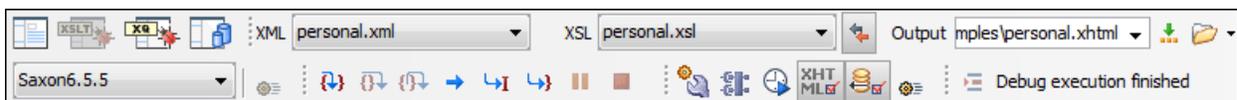
When editing in the Editor perspective the editor toolbar is displayed. In Debugger mode this toolbar is not available, however the functions are still accessible from *the Document menu* and *the editors contextual menus*.

Bookmarks are replaced in the Debugger perspective by breakpoints.

During debugging, the current execution node is highlighted in both document (XML) and XSLT/XQuery views.

## Control Toolbar

The toolbar contains all the actions needed to configure and control the debug process. The following actions are described as they appear in the toolbar from left to right.



**Figure 265: Control Toolbar**

- XML source selector** - The current selection represents the source document used as input by the transformation engine. A drop-down list contains all opened files (XML files being emphasized). This option allows you to use other file types also as source documents. In an XQuery debugging session this selection field can be set to the default value NONE, because usually XQuery documents do not require an input source.

- **XSL / XQuery selector** - The current selection represents the stylesheet or XQuery document to be used by the transformation engine. The selection list contains all opened files (XSLT / XQuery files being emphasized).
-  **Link with editor** - When enabled, the XML and XSLT/XQuery selectors display the names of the files opened in the central editor panels. This button is disabled by default.
- **Output selector** - The selection represents the output file specified in the associated transformation scenario.
-  **XSLT / XQuery parameters** - XSLT / XQuery parameters to be used by the transformation.
-  **Libraries** - Add and remove the Java classes and jars used as XSLT extensions.
-  **Turn on profiling** - Enables / Disables current transformation profiling.
-  **Enable XHTML output** - Enables the rendering of the output in the XHTML output view during the transformation process. For performance issues, disable XHTML output when working with very large files. Note that only XHTML conformant documents can be rendered by this view. In order to view the output result of other formats, such as HTML, save the **Text output** area to a file and use an external browser for viewing.

When starting a debug session from the editor perspective using the **Debug Scenario** action, the state of this toolbar button reflects the state of the **Show as XHTML** output option from the scenario.

-  **Turn on/off output to source mapping** - Enables or disables the output to source mapping between every line of output and the instruction element / source context that generated it.
-  **Debugger Preferences** - Quick link to [Debugger preferences page](#).
- **XSLT / XQuery engine selector** - Lists the [processors available for debugging XSLT and XQuery transformations](#).
-  **XSLT / XQuery engine advanced options** - Advanced options available for Saxon 9.4.0.4.
-  **Step into** - Starts the debugging process and runs until the next stylesheet node or the next XPath 2.0 expression step (next transformation step).
-  **Step over** - Executes the current stylesheet node (including its sub-elements) and goes to the next node in document order (usually the next sibling of the current node) or to the next step of an XPath 2.0 expression.



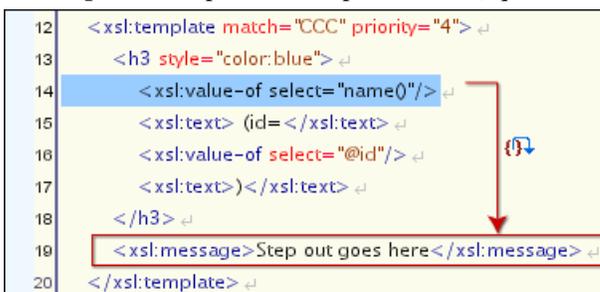
```

12 <xsl:template match="CCC" priority="4">
13   <h3 style="color:blue">
14     <xsl:value-of select="name0"/>
15     <xsl:text> (id=</xsl:text>
16     <xsl:value-of select="@id"/>
17     <xsl:text>)</xsl:text>
18   </h3>
19   <xsl:message>Step over goes here</xsl:message>
20 </xsl:template>

```

Figure 266: Step over

-  **Step out** - Steps out to the parent node (equivalent to the *Step over* on the parent).



```

12 <xsl:template match="CCC" priority="4">
13   <h3 style="color:blue">
14     <xsl:value-of select="name0"/>
15     <xsl:text> (id=</xsl:text>
16     <xsl:value-of select="@id"/>
17     <xsl:text>)</xsl:text>
18   </h3>
19   <xsl:message>Step out goes here</xsl:message>
20 </xsl:template>

```

Figure 267: Step out

-  **Run** - Starts the debugging process. The execution of the process is paused when a breakpoint is encountered. (see *breakpoints*).
  -  **Run to cursor** - Starts the debugging process and runs until one of the following conditions occur: the line of cursor is reached, a valid breakpoint is reached or the execution ends.
  -  **Run to end** - Runs the transformation until the end, without taking into account enabled breakpoints (if any).
  -  **Pause** - Interrupts the current transformation. This action is useful for long transformations (DocBook for instance) when you want to find out what point the transformation has reached. The transformation can be resumed after.
  -  **Stop** - Ends the transformation process.
  - **Show current execution nodes** - Positions the cursor at the current debug context. Possible displayed states:
    - entering () or leaving () an XML execution node;
    - entering () or leaving () an XSL execution node;
    - entering () or leaving () an XPath execution node.
-  **Note:** When you set a MarkLogic server as a processor, the **Show current execution nodes** button is named **Refresh current session context from server**. Click this button to refresh the information in all the views.

## Information View

The information view is comprised of two panes that are used to display various types of information used to understand the transformation process. For each information type there is a corresponding tab. While running a transformation, relevant events are displayed in the various information views. This enables the developer to obtain a clear view of the transformation progress. Using the debug controls developers can easily isolate parts of stylesheet therefore they may be understood and modified. The information types include:

Left side information views

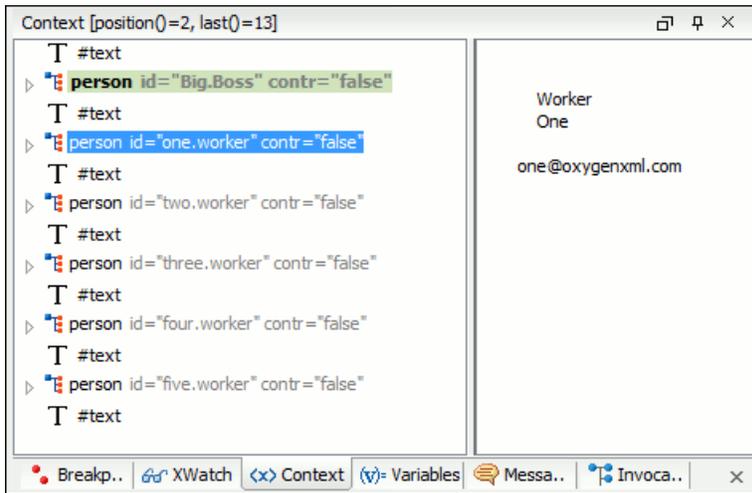
- *Context Node view*
- *XWatch view*
- *Breakpoints view*
- *Messages view* (XSLT only)
- *Variables view*

Right side information views

- *Stack view*
- *Trace view*
- *Templates view* (XSLT only)
- *Nodeset view*

### Context Node View

The context node is valid only for XSLT debugging sessions and is a source node corresponding to the XSL expression that is evaluated. It is also called the context of execution. The context node implicitly changes as the processor hits various steps (at the point where XPath expressions are evaluated). This node has the same value as evaluating '.' (dot) XPath expression in *XWatch view*. The value of the context node is presented as a tree in the view.



**Figure 268: The Context node view**

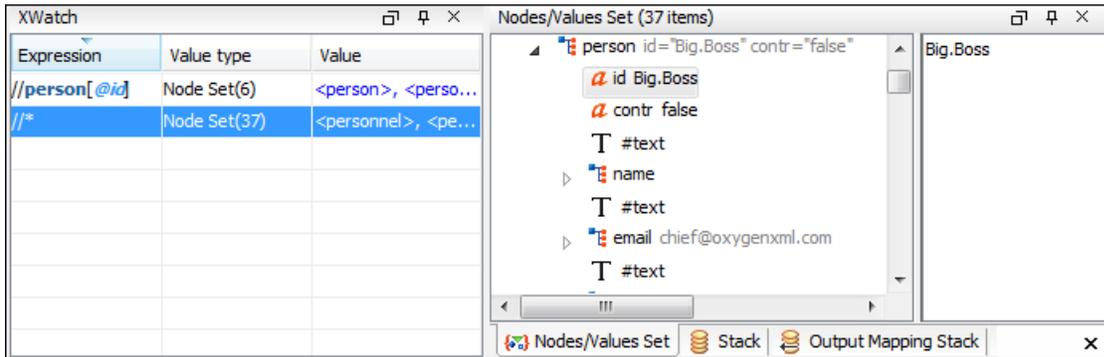
The context node is presented in a tree-like fashion. Nodes from a defined namespace bound to a prefix are displayed using the qualified name. If the namespace is not bound to a prefix, the namespace URI is presented before the node name. The value of the selected attribute or node is shown in the right side panel. The **Context** view also presents the current mode of the XSLT processor in case this mode differs from the default one.

The title bar displays the current element index and the number of elements that compose the current context (this information is not available if you choose Xalan or Saxon 6 as processing engine).

**XPath Watch (XWatch) View**

The **XWatch** view shows XPath expressions evaluated during the debugging process. Expressions are evaluated dynamically as the processor changes its source context.

When you type an XPath expression in the **Expression** column, Oxygen XML Editor supports you with syntax highlight and *content completion assistance*.



**Figure 269: The XPath watch view**

**Table 4: XWatch columns**

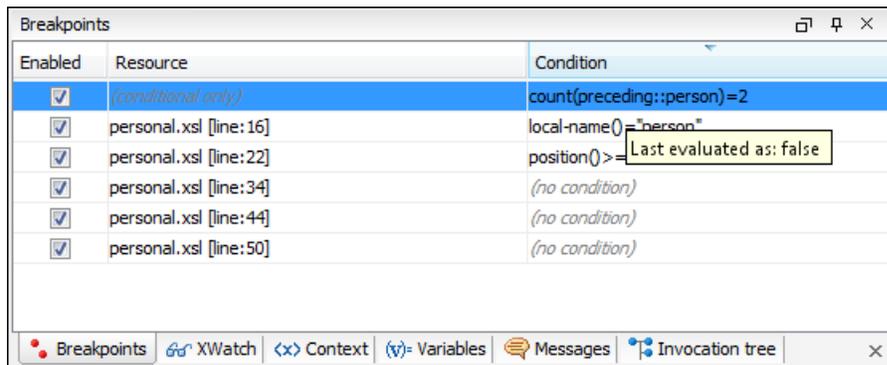
Column	Description
Expression	XPath expression to be evaluated (XPath 1.0 or 2.0 compliant).
Value	Result of XPath expression evaluation. Value has a type (see <i>the possible values</i> in the section <i>Variables View</i> on page 562). For <i>Node Set</i> results, the number of nodes in the set is shown in parenthesis.

 **Important:** Remarks about working with the **XWatch** view:

- Expressions referring to variables names are not evaluated.
- The expression list is not deleted at the end of the transformation (it is preserved between debugging sessions).
- To insert a new expression, click the first empty line of the **Expression** column and start typing. As an alternative, right click and select the **Add** action. Press **(Enter)** on the cell to add and evaluate.
- To delete an expression, click on its **Expression** column and delete its content. As an alternative, right click and select the **Remove** action. Press **(Enter)** on the cell to commit changes.
- If the expression result type is a *Node Set*, click it (**Value** column) and its value is displayed in the [Nodes/Values Set view](#).
- The **Copy**, **Add**, **Remove** and **Remove All** actions are available in every row's contextual menu.

### Breakpoints View

This view lists all breakpoints set on opened documents. Once you set a breakpoint it is automatically added in this list. Breakpoints can be set in XSLT/XQuery documents and in XML documents for XSLT debugging sessions. A breakpoint can have an associated break conditions which represent XPath expressions evaluated in the current debugger context. In order to be processed their evaluation result should be a boolean value. A breakpoint with an associated condition stops the execution of the Debugger only if the breakpoint condition is evaluated to **true**.



**Figure 270: The Breakpoints View**

**Table 5: Breakpoints columns**

Column	Description
Enabled	If checked, the current condition is evaluated and taken into account.
Resource	Resource file and number of the line where the breakpoint is set. The Entire path of resource file is available as tooltip.
Condition	XSLT/XQuery expression to be evaluated during debugging. The expression will be evaluated at every debug step.

 **Important:** Not all set breakpoints are valid. You should check that your breakpoint is valid:

- For example if the breakpoint is set on an empty line or commented line or the line is not reached by the processor (no template to match it, line containing only an end tag), that breakpoint is invalid.
- Clicking a record highlights the breakpoint line into the document.
- The breakpoints list is not deleted at the end of transformation (it is preserved between debugging sessions).

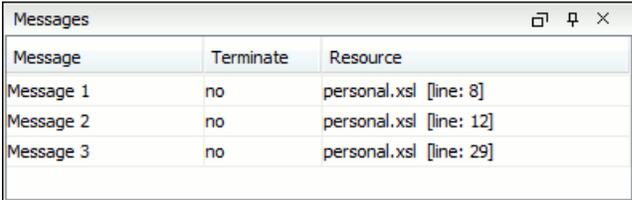
The following actions are available on the table's contextual menu:

- **Go to** - Moves the cursor on the breakpoint's source.

- **Enable** - Enables the breakpoint.
- **Disable** - Disables the breakpoint. A disabled breakpoint will not be evaluated by the Debugger.
- **Add** - Allows you to add a new breakpoint and breakpoint condition.
- **Edit** - Allows you to edit an existing breakpoint.
- **Remove** - Deletes the selected breakpoint.
- **Enable all** - Enables all breakpoints.
- **Disable all** - Disables all breakpoints.
- **Remove all** - Removes all breakpoints.

## Messages View

`xsl:message` instructions are one way to signal special situations encountered during transformation as well as a raw way of doing the debugging. This view is available only for XSLT debugging sessions and shows all `xsl:message` calls executed by the XSLT processor during transformation.



Message	Terminate	Resource
Message 1	no	personal.xml [line: 8]
Message 2	no	personal.xml [line: 12]
Message 3	no	personal.xml [line: 29]

**Figure 271: The Messages View**

**Table 6: Messages columns**

Column	Description
Message	Message content.
Terminate	Signals if processor terminates the transformation or not once it encounters the message (yes/no respectively)
Resource	Resource file where <code>xsl:message</code> instruction is defined and the message line number. The complete path of the resource is available as tooltip.

The following actions are available in the contextual menu:

- **Go to** - Highlight the XSL fragment that generated the message.
- **Copy Value** - Copies to clipboard message details (system ID, severity info, description, start location, terminate state).

### **Important:** Remarks

- Clicking a record from the table highlights the `xsl:message` declaration line.
- Message table values can be sorted by clicking the corresponding column header. Clicking the column header switches the sorting order between: ascending, descending, no sort.

## Stack View

This view shows the current execution stack of both source and XSLT/XQuery nodes. During transformation two stacks are managed: one of source nodes being processed and the other for XSLT/XQuery nodes being processed. Oxygen XML Editor shows both node types into one common stack. The source (XML) nodes are preceded by a red color icon while XSLT/XQuery nodes are preceded by a green color icon. The advantage of this approach is that you can always see the source scope on which a XSLT/XQuery instruction is executed (the last red color node on the stack). The stack is oriented upside down.

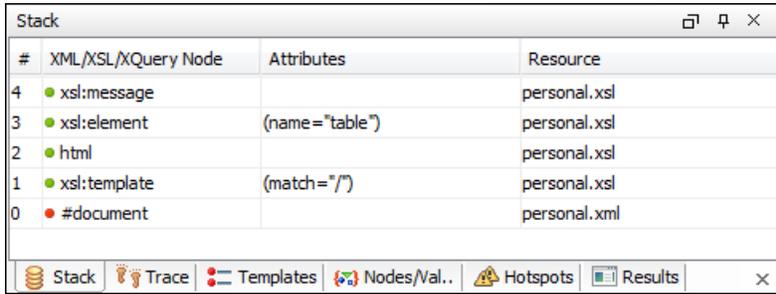


Figure 272: The Stack View

The contextual menu contains one action: **Go to**, which moves the selection in the editor panel to the line containing the XSLT element that is displayed on the selected line from the view.

Table 7: Stack columns

Column	Description
#	Order number, represents the depth of the node (0 is the stack base).
XML/XSLT/XQuery Node	Node from source or stylesheet document currently being processed. One particular stack node is the document root, noted as <b>#document</b> .
Attributes	Attributes of the node (a list of <code>id="value"</code> pairs).
Resource	Resource file where the node is located. The entire path is available as tooltip.

**Important:** Remarks:

- Clicking a record from the stack highlights that node's location inside resource.
- Using Saxon, the stylesheet elements are qualified with XSL proxy, while using Xalan you only see their names. (example: `xsl:template` using Saxon and `template` using Xalan).
- Only the Saxon processor shows element attributes.
- The Xalan processor shows also the built-in rules.

**Output Mapping Stack View**

The **Output Mapping Stack** view displays *context data* and presents the XSLT templates/XQuery elements that generated specific areas of the output.

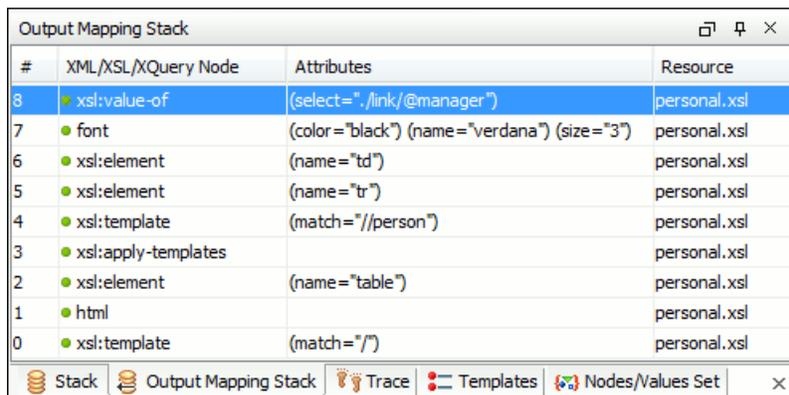


Figure 273: The Output Mapping Stack view

The **Go to** action of the contextual menu takes you in the editor panel at the line containing the XSLT element displayed in the **Output Mapping Stack** view.

**Table 8: Output Mapping Stack columns**

Column	Description
#	The order number in the stack of XSLT templates/XQuery elements. Number 0 corresponds to the bottom of the stack in the status of the XSLT/XQuery processor. The highest number corresponds to the top of the stack.
XSL/XQuery Node	The name of an XSLT template/XQuery element that participated in the generation of the selected output area.
Attributes	The attributes of the XSLT template/XQuery node.
Resource	The name of the file containing the XSLT template/XQuery element.

 **Important:** Remarks:

- Clicking a record highlights that XSLT template definition/XQuery element inside the resource (XSLT stylesheet file/XQuery file);
- Saxon only shows the applied XSLT templates having at least one hit from the processor. Xalan shows all defined XSLT templates, with or without hits;
- The table can be sorted by clicking the corresponding column header. When clicking a column header the sorting order switches between: ascending, descending, no sort;
- Xalan shows also the built-in XSLT rules.

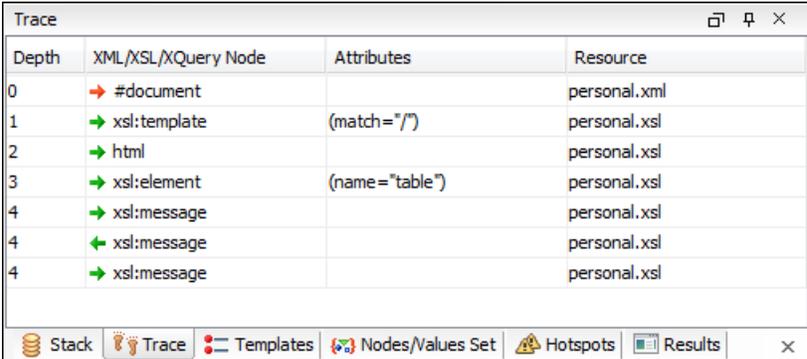
### Trace History View

Usually the XSLT/XQuery processors signal the following events during transformation:

-  - Entering a source (XML) node.
-  - Leaving a source (XML) node.
-  - Entering a XSLT/XQuery node.
-  - Leaving a XSLT/XQuery node.

The trace history catches all these events, so you can see how the process evolved. The red icon lines denote source nodes while the green icon lines denote XSLT/XQuery nodes.

It is possible to save the element trace in a structured XML document. The action is available on the context menu of the view. In this way you have the possibility to compare the trace results from different debug sessions.



Depth	XML/XSL/XQuery Node	Attributes	Resource
0	 #document		personal.xml
1	 xsl:template	(match="/")	personal.xsl
2	 html		personal.xsl
3	 xsl:element	(name="table")	personal.xsl
4	 xsl:message		personal.xsl
4	 xsl:message		personal.xsl
4	 xsl:message		personal.xsl

Stack Trace Templates Nodes/Values Set Hotspots Results

**Figure 274: The Trace History View**

The contextual menu contains the following actions:

- **Go to** - moves the selection in the editor panel to the line containing the XSLT element or XML element that is displayed on the selected line from the view;
- **Export to XML** - saves the entire trace list into XML format.

**Table 9: Trace History columns**

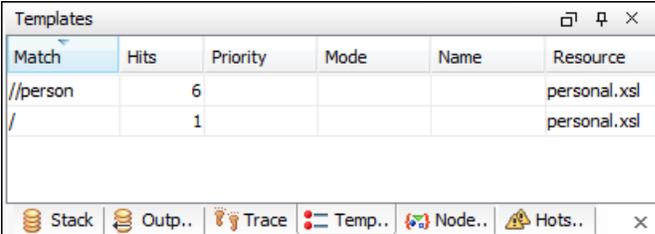
Column	Description
Depth	Shows you how deep the node is nested in the XML or stylesheet structure. The bigger the number, the more nested the node is. A depth 0 node is the document root.
XML/XSLT/XQuery Node	Represents the node from the processed source or stylesheet document. One particular node is the document root, noted as #document. Every node is preceded by an arrow that represents what action was performed on it (entering or leaving the node).
Attributes	Attributes of the node (a list of id="value" pairs).
Resource	Resource file where the node is located. The complete path of the resource file is provided as tooltip.

 **Important:** Remarks:

- Clicking a record highlights that node's location inside the resource.
- Only the Saxon processor shows the element attributes.
- The Xalan processor shows also the built-in rules.

### Templates View

The `xsl:template` is the basic element for stylesheets transformation. This view is only available during XSLT debugging sessions and shows all `xsl:template` instructions used by the transformation. By seeing the number of hits for each of the templates you get an idea of the stylesheet coverage by template rules with respect to the input source.



Match	Hits	Priority	Mode	Name	Resource
//person	6				personal.xml
/	1				personal.xml

**Figure 275: The Templates view**

The contextual menu contains one action: **Go to**, which moves the selection in the editor panel to the line containing the XSLT template that is displayed on the selected line from the view.

**Table 10: Templates columns**

Column	Description
Match	The match attribute of the <code>xsl:template</code> .
Hits	The number of hits for the <code>xsl:template</code> . Shows how many times the XSLT processor used this particular template.
Priority	The template priority as established by XSLT processor.

Column	Description
Mode	The mode attribute of the <code>xsl:template</code> .
Name	The name attribute of the <code>xsl:template</code> .
Resource	The resource file where the template is located. The complete path of the resource file is available as tooltip.

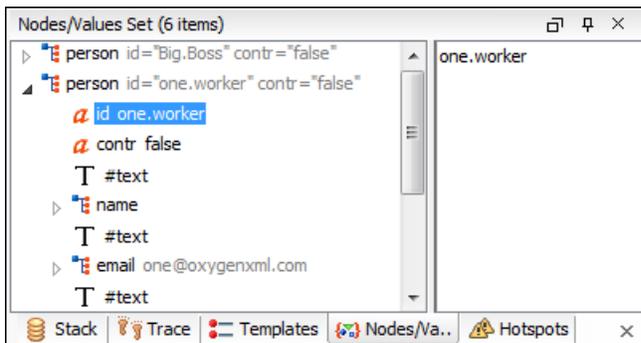
 **Important:** Remarks:

- Clicking a record highlights that template definition inside the resource.
- Saxon only shows the applied templates having at least one hit from the processor. Xalan shows all defined templates, with or without hits.
- Template table values can be sorted by clicking the corresponding column header. When clicking a column header the sorting order switches between: ascending, descending, no sort.
- Xalan shows also the built-in rules.

### Nodes/Values Set View

This view is always used in relation with *The Variables view* and *the XWatch view*1. It shows an XSLT node set value in a tree form. The node set view is updated as response to the following events:

- You click a variable having a node set value in one of the above 2 views.
- You click a tree fragment in one of the above 2 views.
- You click an XPath expression evaluated to a node set in one of the above 2 views.



**Figure 276: The Node Set view**

The nodes / values set is presented in a tree-like fashion. The total number of items is presented in the title bar. Nodes from a defined namespace bound to a prefix are displayed using the qualified name. If the namespace is not bound to a prefix the namespace URI is presented before the node name. The value of the selected attribute or node is shown in the right side panel.

 **Important:** Remarks:

- In case of longer values in the right side panel the interface shows three suspension points (...) at the end. A more detailed value is available as tooltip.
- Clicking a record highlights the location of that node into the source or stylesheet view.

### Variables View

Variables and parameters play an important role during an XSLT/XQuery transformation. Oxygen XML Editor uses the following icons to differentiate variables and parameters:

- **V** - Global variable.
- **{v}** - Local variable.
- **P** - Global parameter.

- **{P}** - Local parameter.

The following value types are available:

- **Boolean**
- **String**
- **Date** - XSLT 2.0 only.
- **Number**
- **Set**
- **Object**
- **Fragment** - Tree fragment.
- **Any**
- **Undefined** - The value was not yet set, or it is not accessible.

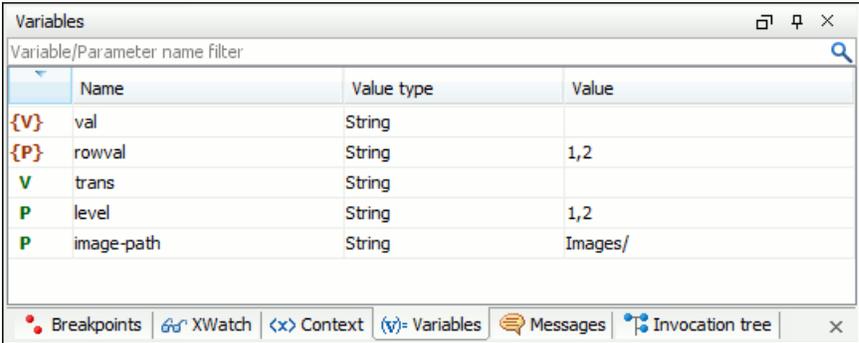
 **Note:**

When Saxon 6.5 is used, if the value is unavailable, then the following message is displayed in the **Value** field: "The variable value is unavailable".

When Saxon 9 is used:

- if the variable is not used, the **Value** field displays "The variable is declared but never used";
- if the variable value cannot be evaluated, the **Value** field displays "The variable value is unavailable".

- **Document**
- **Element**
- **Attribute**
- **ProcessingInstruction**
- **Comment**
- **Text**
- **Namespace**
- **Evaluating** - Value under evaluation.
- **Not Known** - Unknown types.



	Name	Value type	Value
{V}	val	String	
{P}	rowval	String	1,2
V	trans	String	
P	level	String	1,2
P	image-path	String	Images/

**Figure 277: The Variables View**

**Table 11: Variables columns**

Column	Description
Name	Name of variable / parameter.
Value type	Type of variable/parameter.
Value	Current value of variable / parameter.

The value of a variable (the **Value** column) can be copied to the clipboard for pasting it to other editor area with the action **Copy value** from the contextual menu of the table from the view. This is useful in case of long and complex values which are not easy to remember by looking at them once.

 **Important:** Remarks:

- Local variables and parameters are the first entries presented in the table.
- Clicking a record highlights the variable definition line.
- Variable values could differ depending on the transformation engine used or stylesheet version set.
- If the value of the variable is a node set or a tree fragment, clicking on it causes the *Node Set view* to be shown with the corresponding set of values.
- Variable table values can be sorted by clicking the corresponding column header. Clicking the column header switches between the orders: ascending, descending, no sort.

## Multiple Output Documents in XSLT 2.0

For XSLT 2.0 stylesheets that store the output in more than one file by using the `xsl:result-document` instruction the content of the file created in this way is displayed dynamically while the transformation is running in an output view. There is one view for each `xsl:result-document` instruction so that the output of different instructions is not mixed but is presented in different views.

## Working with the XSLT / XQuery Debugger

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This section describes how to work with the debugger in the most common use cases.

### Steps in a Typical Debug Process

To debug a stylesheet or XQuery document follow the procedure:

1. *Open the source XML document* and *the XSLT/XQuery document*.
2. If you are in the Editor perspective switch to the XSLT Debugger perspective or XQuery Debugger perspective with one of the actions (here explained for XSLT):
  - Menu **Window > Open perspective > XSLT Debugger** or the toolbar button  **XSLT Debugger**
  - Menu **Document > XML Document > Debug Scenario** or the toolbar button  **Debug Scenario**. This action initializes the Debugger perspective with the parameters of the transformation scenario. Any modification applied to the scenario parameters (the transformer engine, the XSLT parameters, the transformer extensions, etc) will be saved back in the scenario when exiting from the Debugger perspective.
3. Select the source XML document in the XML source selector of *the Control toolbar*. In case of XQuery debugging if your XQuery document has no implicit source set the source selector value to **NONE**.
4. Select the XSLT/XQuery document in the XSLT/XQuery selector of *the Control toolbar*.
5. Set XSLT/XQuery parameters from the button available on *the Control toolbar*.
6. *Set one or more breakpoints*.
7. Step through the stylesheet using the buttons available on *the Control toolbar*:
  -  **Step into**
  -  **Step over**
  -  **Step out**
  -  **Run**
  -  **Run to cursor**
  -  **Run to end**
  -  **Pause**

- ■ **Stop**

8. Examine the information in the Information views to find the bug in the transformation process.

You may find [the procedure for determining the XSLT template/XQuery element that generated an output section](#) useful for fixing bugs in the transformation.

## Using Breakpoints

The Oxygen XML Editor XSLT/XQuery Debugger allows you to interrupt XSLT/XQuery processing to gather information about variables and processor execution at particular points. To ensure breakpoints persistence between work sessions, they are saved at project level. You can set maximum 100 breakpoints per project.

### Inserting Breakpoints

To insert a breakpoint, follow these steps:

1. Place your cursor on the line where you want the breakpoint to be in the XML source document or the XSLT / XQuery document.

You can set breakpoints on XML source only for XSLT debugging sessions.

2. Select **Edit > Breakpoints > Breakpoints quick creation** or directly click the left side stripe of the editor panel.

### Removing Breakpoints

Only one action must be executed for removing a breakpoint:

Click the breakpoint icon on the left side stripe of the editor panel. As alternative go to menu **Edit > Breakpoints > Remove All**.

## Determining What XSLT / XQuery Expression Generated Particular Output

In order to quickly spot the XSLT templates or XQuery expressions with problems it is important to know what XSLT template in the XSLT stylesheet or XQuery expression in the XQuery document and what element in the source XML document generated a specified area in the output.

Some of the debugging capabilities, for example *Step in* can be used for this purpose. Using *Step in* you can see how output is generated and link it with the XSLT/XQuery element being executed in the current source context. However, this can become difficult on complex XSLT stylesheets or XQuery documents that generate a large output.

You can click on the text from the **Text** output view or **XHTML** output view and the editor will select the XML source context and the XSLT template/XQuery element that generated the text. Also inspecting the whole stack of XSLT templates/XQuery elements that determined the state of the XSLT/XQuery processor at the moment of generating the specified output area speeds up the debugging process.

1. Switch to the XSLT Debugger perspective or the XQuery Debugger perspective with one of the actions (here explained for XSLT):

- Go to menu **Window > Open perspective > XSLT Debugger** or the toolbar button  **XSLT Debugger**
- Go to menu **Document > XML Document > Debug scenario** or the toolbar button  **Debug scenario** . This action initializes the Debugger perspective with the parameters of the transformation scenario. Any modification applied to the scenario parameters (the transformer engine, the XSLT parameters, the transformer extensions, etc) will be saved back in the scenario when exiting from the Debugger perspective.

2. Select the source XML document in the XML source selector of [the Control toolbar](#). In case of XQuery debugging without an implicit source choose the NONE value.

3. Select the XSLT / XQuery document in the XSLT / XQuery selector of [the Control toolbar](#).

4. Select the XSLT / XQuery engine in the XSLT / XQuery engine selector of [the Control toolbar](#).

5. Set XSLT / XQuery parameters from the button available on [the Control toolbar](#).

6. Apply the XSLT stylesheet or XQuery transformation using the button  **Run to end** available on *the Control toolbar*.
7. Inspect the mapping by clicking a section of the output from the **Text** view tab or from the **XHTML** view tab of the *Output document view*.

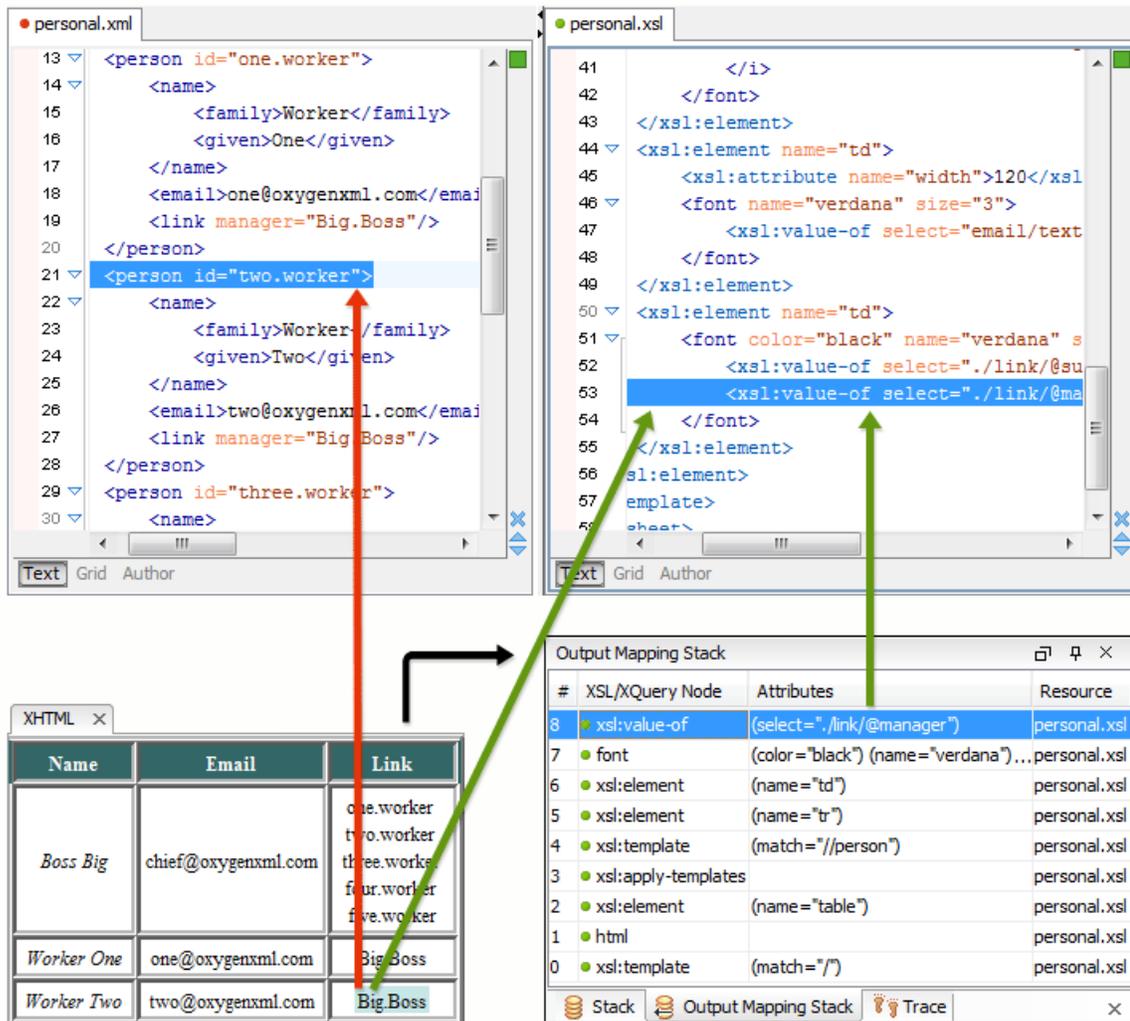
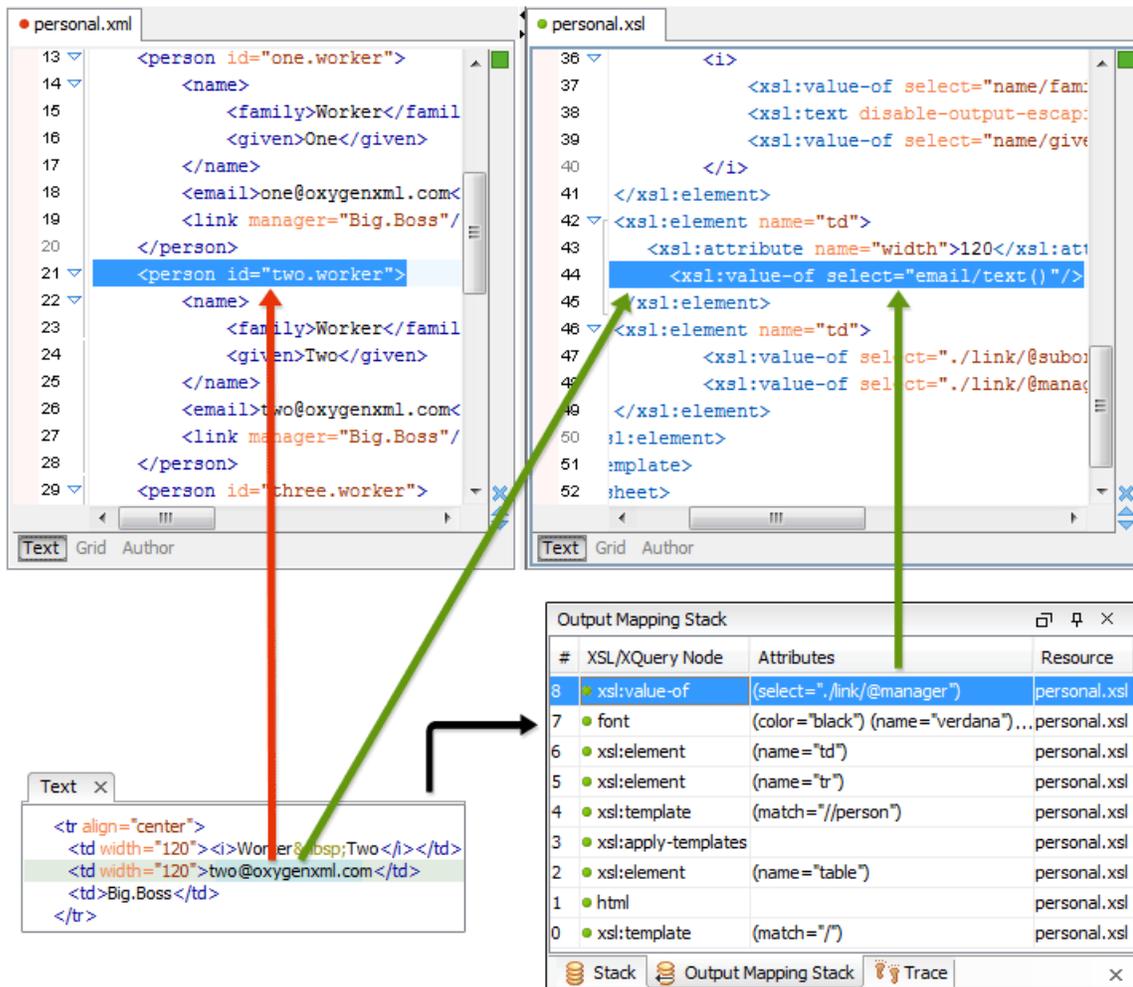


Figure 278: XHTML Output to Source Mapping



**Figure 279: Text Output to Source Mapping**

This action will highlight the XSLT / XQuery element and the XML source context. This XSLT template/XQuery element that is highlighted in the XSLT/XQuery editor represents only the top of the stack of XSLT templates/XQuery elements that determined the state of the XSLT/XQuery processor at the moment of generating the clicked output section. In case of complex transformations inspecting the whole stack of XSLT templates/XQuery elements speeds up the debugging process. This stack is available in [the Output Mapping Stack view](#).

## Debugging Java Extensions

The XSLT/XQuery debugger does not step into Java classes that are configured as XSLT/XQuery extensions of the transformation. To step into Java classes, inspect variable values and set breakpoints in Java methods, set up a Java debug configuration in an IDE like the Eclipse SDK as described in the following steps:

1. Create a debug configuration.
  - a) Set at least 256 MB as heap memory for the Java virtual machine (recommended 512 MB) by setting the `-Xmx` parameter in the debug configuration, for example `"-Xmx512m"`.
  - b) Make sure the `[Oxygen-install-folder]/lib/oxygen.jar` file and your Java extension classes are on the Java classpath.

The Java extension classes should be the same classes that were *set as an extension* of the XSLT/XQuery transformation in the Oxygen debugging perspective.

c) Set the class `ro.sync.exml.Oxygen` as the main Java class of the configuration.

The main Java class `ro.sync.exml.Oxygen` is located in the `oxygen.jar` file.

2. Start the debug configuration.

Now you can set breakpoints and inspect Java variables as in any Java debugging process executed in the selected IDE (Eclipse SDK, and so on.).

## Supported Processors for XSLT / XQuery Debugging

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The following built-in XSLT processors are integrated in the debugger and can be selected in the *Control Toolbar*:

- Saxon 9.4.0.4 HE (Home Edition) - a limited version of the Saxon 9 processor, capable of running XSLT 1.0, XSLT 2.0 basic and XQuery 1.0 transformations, available in both the XSLT debugger and the XQuery one,
- Saxon 9.4.0.4 PE (Professional Edition) - capable of running XSLT 1.0 transformations, XSLT 2.0 basic ones and XQuery 1.0 ones, available in both the XSLT debugger and the XQuery one,
- Saxon 9.4.0.4 EE (Enterprise Edition) - a schema aware processor, capable of running XSLT 1.0 transformations, XSLT 2.0 basic ones, XSLT 2.0 schema aware ones and XQuery 1.0 ones, available in both the XSLT debugger and the XQuery debugger,
- Saxon 6.5.5 - capable of running only XSLT 1.0 transformations, available only in the XSLT debugger,
- Xalan 2.7.1 - capable of running only XSLT 1.0 transformations, available only in the XSLT debugger.

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# Chapter 14

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## Performance Profiling of XSLT Stylesheets and XQuery Documents

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### Topics:

- [Overview](#)
- [Viewing Profiling Information](#)
- [Working with XSLT/XQuery Profiler](#)

This chapter explains the user interface and how to use the profiler for finding performance problems in XSLT transformations and XQuery ones.

## Overview

Whether you are trying to identify a performance issue that is causing your production XSLT/XQuery transformation to not meet customer expectations or you are trying to proactively identify issues prior to deploying your XSLT/XQuery transformation, using the XSLT/XQuery profiler feature is essential to helping you save time and ultimately ensure a better performing, more scalable XSLT/XQuery transformation.

The XSLT/XQuery profiling feature can use any available XSLT/XQuery processors that could be used for debugging and it is available from the debugging perspective.

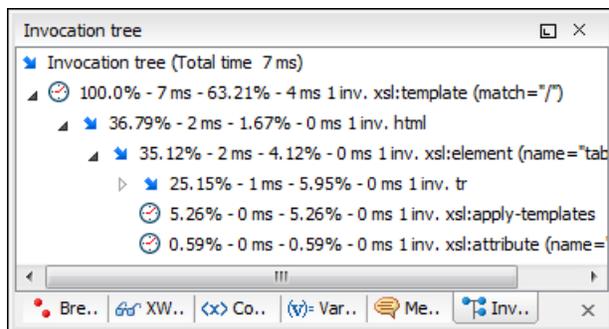
Enabling and disabling the profiler is controlled by the  *Profiler button* from the *debugger control toolbar*. The XSLT/XQuery profiler is off by default. This option is not available during a debugger session so you should set it before starting the transformation.

## Viewing Profiling Information

This section explains the views that display the profiling data collected by the profiles during the transformation.

### Invocation Tree View

This view shows a top-down call tree representing how XSLT instructions or XQuery expressions are processed.



**Figure 280: Invocation tree view**

The entries in the invocation tree have different meanings which are indicated by the displayed icons:

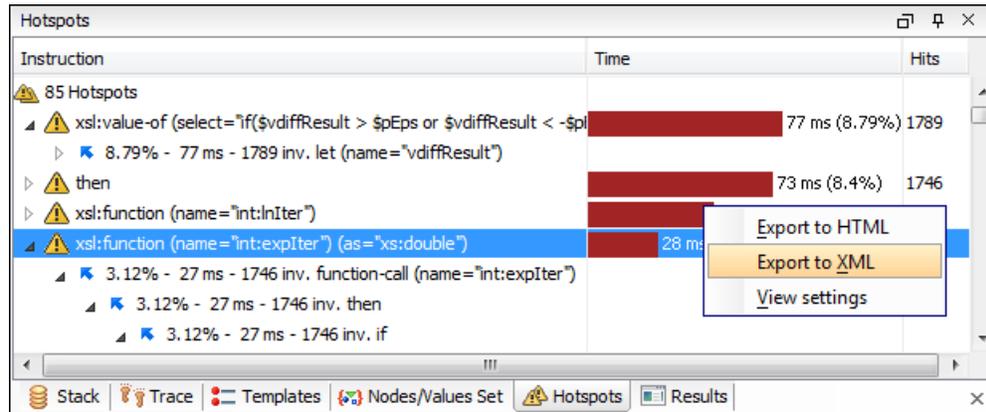
-  - Points to a call whose inherent time is insignificant compared to its call tree time.
-  - Points to a call whose inherent time is significant compared to its call tree time (greater than 1/3rd of its call tree time).

Every entry in the invocation tree has textual information attached which depends on the [XSLT/XQuery profiler settings](#) :

- A percentage number of total time which is calculated with respect to either the root of the tree or the calling instruction.
- A total time measurement in milliseconds or microseconds. This is the total execution time that includes calls into other instructions.
- A percentage number of inherent time which is calculated with respect to either the root of the tree or the calling instruction.
- An inherent time measurement in milliseconds or microseconds. This is the inherent execution time of the instruction.
- An invocation count which shows how often the instruction has been invoked on this path.
- An instruction name which contains also the attributes description.

## Hotspots View

This view shows a list of all instruction calls which lie above the threshold defined in the [XSLT/XQuery profiler settings](#).



**Figure 281: Hotspots View**

By opening a hotspot instruction entry, the tree of back-traces leading to that instruction call are calculated and shown.

Every hotspot is described by the values from the following columns:

- The instruction name.
- The inherent time in milliseconds or microseconds of how much time has been spent in the hotspot together with a bar whose length is proportional to this value. All calls into this instruction are summed up regardless of the particular call sequence.
- The invocation count of the hotspot.

If you click on the ⚠️ handle on the left side of a hotspot, a tree of back-traces will be shown.

Every entry in the backtrace tree has textual information attached to it which depends on the [XSLT/XQuery profiler settings](#):

- A percentage number which is calculated with respect either to the total time or the called instruction.
- A time measured in milliseconds or microseconds of how much time has been contributed to the parent hotspot on this path.
- An invocation count which shows how often the hotspot has been invoked on this path.
  - 👉 **Note:** This is not the number of invocations of this instruction.
- An instruction name which contains also its attributes.

## Working with XSLT/XQuery Profiler

Profiling activity is linked with debugging activity, so the first step in order to profile is to switch to debugging perspective and follow the corresponding procedure for debugging (see [Working with XSLT Debugger](#)).

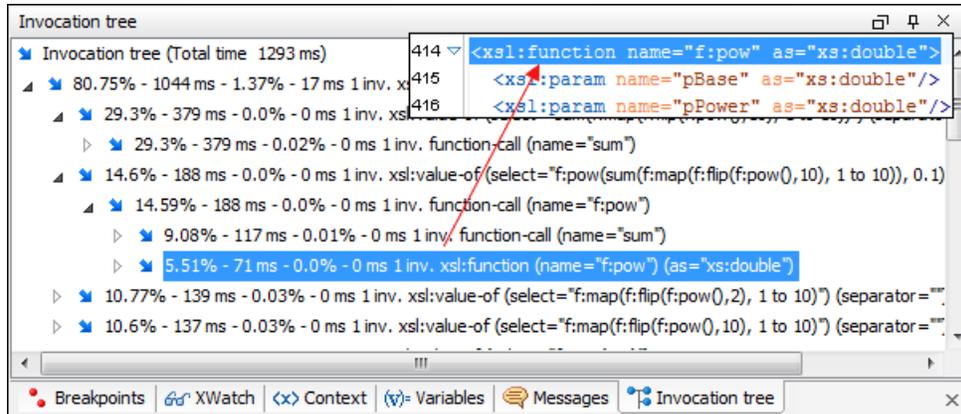
Immediately after turning the profiler on two new information views are added to the current debugger [information views](#):

- [Invocation tree view](#) on left side
- [Hotspots view](#) on right side

Profiling data is available only after the transformation ends successfully.

Looking to the right side (*Hotspots view*), you can immediately spot the time the processor spent in each instruction. As an instruction usually calls other instructions the used time of the called instruction is extracted from the duration time of the caller (the hotspot only presents the inherent time of the instruction).

Looking to the left side (*Invocation tree view*), you can examine how style instructions are processed. This result view is also named call-tree, as it represents the order of style processing. The profiling result shows the duration time for each of the style-instruction including the time needed for its called children.



**Figure 282: Source backmapping**

In any of the above views you can use the backmapping feature in order to find the XSLT stylesheet or XQuery expression definition. Clicking on the selected item cause Oxygen XML Editor to highlight the XSLT stylesheet or XQuery expression source line where the instruction is defined.

When navigating through the trees by opening instruction calls, Oxygen XML Editor automatically expands instructions which are only called by one other instruction themselves.

The profiling data can be saved into XML and HTML format. On any view you should right click , use the pop-up menu and select the corresponding choice. Basically saving HTML means saving XML and applying an XSLT stylesheet to render the report as XML. These stylesheets are included in the Oxygen XML Editor distribution (see the subfolder `frameworks/profiler/` of the Oxygen XML Editor installation folder) so you can make your own report based on the profiling raw data.

If you like to change the *XSLT/XQuery profiler settings* you should right click on view, use the pop-up menu and choose the corresponding **View settings** entry.



**Caution:** Profiling exhaustive transformation may run into an OutOfMemory error due to the large amount of information being collected. If this is the case you can close unused projects when running the profiling or use high values for Java VM options `-Xms` and `-Xmx`. If this does not help you can shorten your source xml file and try again.

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# Chapter 15

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## Comparing and Merging Documents

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### Topics:

- [Directories Comparison](#)
- [Files Comparison](#)
- [XML Diff API](#)

In large teams composed either of developers or technical writers, the usage of a shared repository for the source or document files is a must. Often many authors are changing the same file at the same time.

Finding what has been modified in your files and folders can be hard. If your data is changing, you can benefit from accurate identification and processing of changes in your files and folders with Oxygen XML Editor's features for comparing files and directories. These are powerful and easy to use tools that will do the job fast and thoroughly. With the new possibilities of differencing and merging, it is now easy to manage multiple changes.

Oxygen XML Editor provides a simple means of performing file and folder comparisons. You can see the differences in your files and folders and merge the changes.

There are two levels on which the comparison can be done, namely comparing directories or comparing individual files. These two operations are available from the **Tools** menu.

 **Note:** Oxygen XML Editor uses diff directories to compare archive files.

The comparison tool can also be started using command line arguments. In the installation folder there are two executable shells (`diffFiles.bat` and `diffDirs.bat` on Windows, `diffFiles.sh` and `diffDirs.sh` on Unix/Linux, `diffFilesMac.sh` and `diffDirsMac.sh` on Mac OS X). You can pass one or two command-line arguments to each of these shells. Both arguments can point to directories or archives (supported formats: *zip*, *docx*, and *xlsx*).

For example, to start the comparison between two Windows directories, use the following command:

```
diffDirs.bat "c:\Program Files" "c:\ant"
```

 **Note:** If there are spaces in the path names, surround the paths with quotes.

 **Note:** If you pass only one argument, you are prompted to manually choose the second directory or archive.

The same goes for the files diff utility as well.

## Directories Comparison

The directories comparison result is presented as a tree of files and directories. The directories that contain different files are expanded automatically, so you can focus directly on the differences. You can merge the directories contents using the copy actions. A double click or an Enter key on a line with a pair of files starts *comparing the file content* of the two files from that line in the **Compare Files** window. Please note that the content is compared only in case of known file types, that is the files associated with the built-in editors and the file types associated with a built-in editor when the user was prompted to specify such an association (when opening for the first time a file of an unknown type).

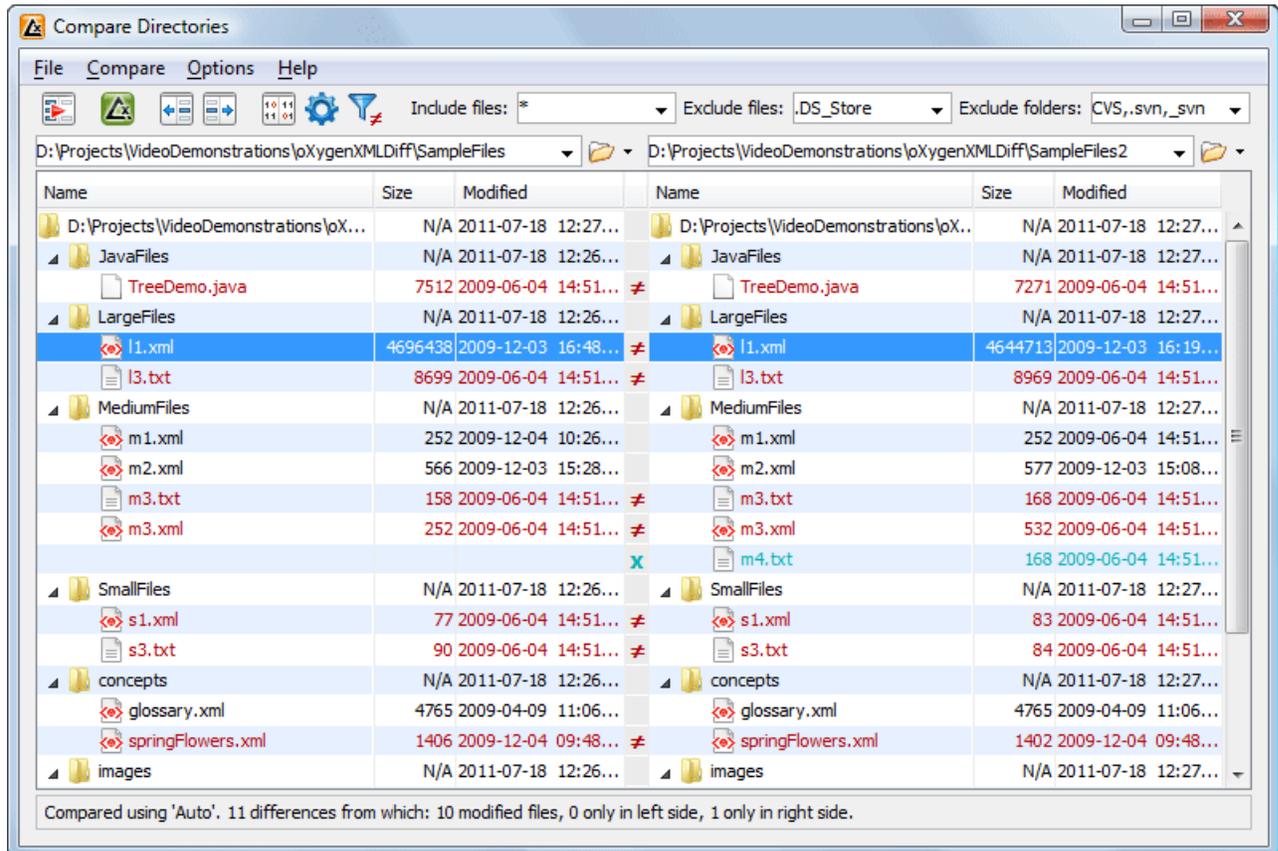


Figure 283: The Compare Directories Window

## Directories Comparison User Interface

This section explains the user interface of the **Directories Comparison** window.

### Compare Menu

This menu contains the following action:

- Perform Directories Differencing** - Looks for differences between the two directories displayed in the left and right side of the application window.
- Perform Files Differencing** - Compares the currently selected files.
- Copy Change from Right to Left** - Copies the selected change from the right side to the left side (if there is no file/folder in the right side, the left file/folder is deleted).
- Copy Change from Left to Right** - Copies the selected change from the left side to the right side (if there is no file/folder in the left side, the right file/folder is deleted).

## Compare Toolbar

The toolbar contains the following actions:



**Figure 284: The Compare toolbar**

-  **Perform directories differencing** - Looks for differences between the two directories displayed in the left and right side of the application window.
-  **Perform files differencing** - Compares the currently selected files.
-  **Copy Change from Right to Left** - Copies the selected change from the right side to the left side (if there is no file/folder in the right side, the left file/folder is deleted).
-  **Copy Change from Left to Right** - Copies the selected change from the left side to the right side (if there is no file/folder in the left side, the right file/folder is deleted).
-  **Binary Compare** - Performs a byte-level comparison on the selected files.
-  **Diff Options** - Opens the Directories Comparison preferences page.
-  **Show Only Modifications** - Displays a more uncluttered file structure by hiding all identical files.
- Files and folders filters - Differences can be filtered using three filter boxes: **Include files**, **Exclude files**, **Exclude folders**. They come with predefined values and are editable to allow more custom values. All of them accept multiple comma separated values and the \* and ? wildcards. For example, to filter out all jpeg and gif image files, edit the **Exclude files** filter box to read \* .jpeg, \* .png. Each filter keeps a list with the latest 15 filters applied in the drop-down list of the filter box.

## Directories Selector

To open the directories you want to compare, select a folder from each **Browse for local directory** button. The Diff Tool keeps track of the folders you are currently working with and those you opened in this window. You can see and select them from the two combo-boxes.

If you want to compare two archives' content you can select the archives from the **Browse for archive file** button.

-  **Tip:** By default the supported archives are treated as directories and the comparison is also done with the files inside them. You can disable this behaviour by unchecking the **Look in archives** checkbox from the [Diff preferences page](#).

## Comparison Result

The directory comparison result is presented using two tree-like structures, showing files and folders names, size and modification date.

Name	Size	Modified		Name	Size	Modified
length-bad.xml	140	2010-07-12 16:43:03		length-bad.xml	140	2010-07-12 16:43:03
length-bad1.xml	140	2010-07-12 16:43:04	≠	length-bad1.xml	125	2010-09-02 11:41:14
length-bad2.xml	143	2010-07-12 16:43:04	≠	length-bad2.xml	126	2010-09-02 11:41:07
length-good.xml	141	2010-07-12 16:43:03	≠	length-good.xml	126	2010-09-02 11:41:03
length.dtd	91	2010-07-12 16:43:03	X			
length.sch	648	2010-07-12 16:43:03	X			
name-bad.xml	171	2010-07-12 16:43:03	≠	name-bad.xml	155	2010-09-02 11:40:38
name.dtd	192	2010-07-12 16:43:03	≠	name.dtd	158	2010-09-02 11:42:09
name.sch	566	2010-07-12 16:43:04	≠	name.sch	351	2010-09-02 11:40:50
present-bad.xml	224	2010-07-12 16:43:04	≠	present-bad.xml	171	2010-09-02 11:41:47
present.dtd	130	2010-07-12 16:43:03	≠	present.dtd	60	2010-09-02 11:40:28
present.sch	482	2010-07-12 16:43:03	≠	present.sch	295	2010-09-02 11:41:51
required-bad1.xml	205	2010-07-12 16:43:03	≠	required-bad1.xml	163	2010-09-02 11:41:24
required-bad2.xml	189	2010-07-12 16:43:03	≠	required-bad2.xml	155	2010-09-02 11:41:18
required-good.xml	197	2010-07-12 16:43:03		required-good.xml	197	2010-07-12 16:43:03
required.dtd	128	2010-07-12 16:43:03	≠	required.dtd	91	2010-09-02 11:41:42
required.sch	612	2010-07-12 16:43:03	≠	required.sch	363	2010-09-02 11:41:38
author	N/A	2010-09-01 11:23:14		author	N/A	2010-09-02 11:42:38
author.sch	613	2010-07-12 16:43:04	X			
source1.xml	165	2010-07-12 16:43:04	X			
source2.xml	184	2010-07-12 16:43:04	X			
paragraph	N/A	2010-09-01 11:23:14		paragraph	N/A	2010-09-02 11:39:34

Compared using 'Timestamp (last modified date/time)'. 20 differences from which: 13 modified files, 7 only in left side, 0 only in right side.

**Figure 285: Comparison result**

A column holding graphic symbols separate the two tree-like structures. The graphic symbols can be:

- an "X" sign, when a file or a folder exists only in one of the compared directories;
- a "not-equal" sign, if a file exists in both directories, but the content is different. The same sign appears when a collapsed folder contains modified files.

The color used for painting the sign and the directory or file name can be customized in the [Directories Comparison / Appearance](#) preferences page. You can double-click the line marked with the "not-equal" sign to open a new **File Content Comparison** window, showing the differences between the two files.

## Compare Images

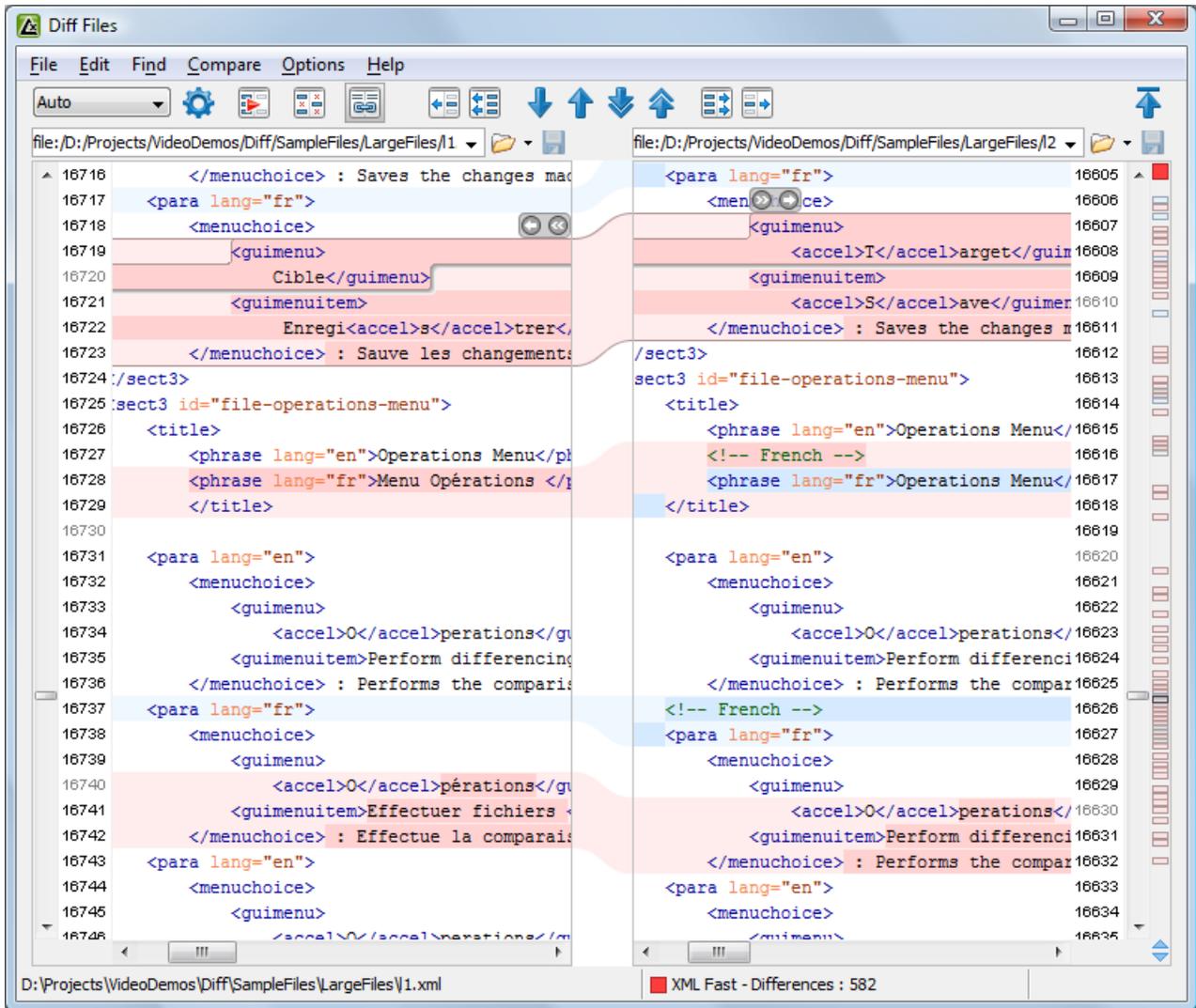
When double-clicking a line containing two different images a compare images dialog is displayed. The dialog presents the images in the left and right part scaled to fit the view available area. You can use the contextual menu actions to scale the images at their original size or scale them down to fit in the view area.

The supported image types are: GIF, JPG / JPEG, PNG, BMP.

## Files Comparison

The comparison of a pair of files is done by opening them in two editors arranged in a side-by-side layout. The line numbers on the side of each editor help you to identify quickly the locations of the differences.

You can edit both the source and the target file. The differences are refreshed when you save the modified document.



**Figure 286: The Compare Files Window**

Adjacent changes are grouped into blocks of changes. This layout allows an easier visual identification and focuses on a group of related changes.

A widget containing actions that can be used to copy or append changes from either of the two sides is displayed when you select a change:

-  and  - copy the content of the selected change from one side and appends it after the content of the corresponding change from the other side; as a result, the side towards the arrows point to, will contain the changes from both sides.
-  and  - replace the content of a change from one side with the content of the corresponding change from the other side.

Oxygen XML Editor offers six different diff algorithms to choose from for file comparison:

- two XML diff algorithms: **XML Fast** and **XML Accurate**,
- a **Syntax Aware** algorithm that gives very good results on all file types known by Oxygen XML Editor,
- three all-purpose algorithms: line based, word based and character based.

Any of these six algorithms can be used to perform differences on request, but Oxygen XML Editor offers also an automatic mode that selects the most appropriate one, based on the file content and size.

## Main Menu

This section explains the menu actions of the **Files Comparison** window.

### File Menu

The following actions are available:

- **Source** - The file is displayed in the left side of the application window
  - **Source** >  **Open** - Browses for a source file.
  - **Source** >  **Open URL** - Opens URL to be used as a source file. See [Open URL](#) for details.
  - **Source** >  **Open File from Archive** - Browses an archive content for a source file.
  - **Source** >  **Save** - Saves the changes made in the source file.
  - **Source** > **Save As...** - Displays the **Save As** dialog that allows you to save the source file with a new name.
- **Target** - The file is displayed in the right side of the application window
  - **Target** >  **Open** - Browses for a target file.
  - **Target** >  **Open URL** - Opens URL to be used as a target file. See [Open URL](#) for details.
  - **Target** >  **Open File from Archive** - Browses an archive content for a target file.
  - **Target** >  **Save** - Saves the changes made in the target file.
  - **Target** > **Save As...** - Displays the **Save As** dialog that allows you to save the target file with a new name.
- **Exit** - Quits the application.

### Edit Menu

The following actions are available:

-  **Cut** - Cut selection to clipboard from the local file currently opened in the focused **Compare** editor.
-  **Copy** - Copy selection to clipboard from the local file currently opened in the focused **Compare** editor.
-  **Paste** - Paste selection from clipboard in the local file currently opened in the focused **Compare** editor.
-  **Undo** - Undo edit changes in the local file currently opened in the focused **Compare** editor.
-  **Redo** - Redo edit changes in the local file currently opened in the focused **Compare** editor.

### Find Menu

The find actions are the following:

-  **Find/Replace** - Perform *find/replace* operations in the file currently opened in the focused **Editor**.
-  **Find Next** - Go to the next match using the same options of the last *find* operation. The action runs in the two editor panels.
-  **Find Previous** - Go to the previous match using the same options of the last *find* operation. The action runs in the two editor panels.

### Compare Menu

The following actions are available in this menu:

 **Perform Files Differencing** - Performs a comparison between the source and target files.

 **Next Block of Changes** - Jumps to the next block of changes. This action is disabled when the cursor is positioned on the last change block or when there are no changes in the document.

 **Note:** A change block groups one or more consecutive lines that contain at least one change.

-  **Previous Block of Changes** - Jumps to the previous block of changes. This action is disabled when the cursor is positioned on the first change block or when there are no changes in the document.
-  **Next Change** - Jumps to the next change from the current block of changes. When the last change from the current block of changes is reached, it highlights the next block of changes. This action is disabled when the cursor is positioned on the last change.
-  **Previous Change** - Jumps to the previous change from the current block of changes. When the first change from the current block of changes is reached, it highlights the previous block of changes. This action is disabled when the cursor is positioned on the first change.
-  **Last Change** - Jumps to the last change from the current file.
-  **First Change** - Jumps to the first change from the current file.
-  **Copy All Changes from Left to Right** - Copies all changes from source to target file.
-  **Copy All Changes from Right to Left** - Copies all changes from target to source file.
-  **Copy Change from Left to Right** - Copies the selected difference from source to target file.
-  **Copy Change from Right to Left** - Copies the selected difference from target to source file.
-  **Show Word Level Details** - Provides a word-level comparison of the selected change.
-  **Show Character Level Details** - Provides a character-level comparison of the selected change.

### Options Menu

- **Preferences** - Opens the options pages.
- **Menu Shortcut Keys** - Opens the **Menu Shortcut Keys** option page. Here you can configure all keyboard shortcuts available for menu items.
- **Reset Global Options** - Resets options to their default values.
- **Import Global Options** - Allows you to import an options set you have previously exported.
- **Export Global Options** - Allows you to export the current options set to a file.

### Help Menu

The **Help** menu contains the following options:

- **Help** - opens the **Help** dialog;
- **Report problem** - opens a dialog that allows the user to write the description of a problem that was encountered while using the application;
- **Improvement Program Options** - allows you to activate or deactivate the application Product Improvement Program;
- **Support center** - opens the Oxygen XML Editor Support Center web page in a browser.

## Compare Toolbar

This toolbar contains the operations that can be performed on the source and target files.



**Figure 287: The Compare Toolbar**

The following actions are available:

- **Algorithm** - This option box allows you to select one of the 6 available compare algorithms:

- *Characters* algorithm computes the differences at character level;
- *Words* algorithm computes the differences at word level;
- *Lines* algorithm computes the differences at line level, meaning that it compares two files looking for the first identical line of text. When it is found, it is considered a match. The content that precedes the match is considered to be a difference and marked accordingly. Then the algorithm continues to look for matching lines marking the content between them as differences.
- *Syntax Aware* for known file types, like the ones listed in the **New** dialog box, for example the XML file type (which includes, among others, XSLT files, XSL-FO files, XSD files, RNG files, NVDL files), the XQUERY file type (.xquery, .xq, .xqy, .xqm extensions), the DTD file type (.dtd, .ent, .mod extensions), the TEXT file type (.txt extension), the PHP file type (.php extension), etc.

This algorithm splits the files into sequences of *tokens* and computes the differences between them. A *token* can have a different meaning, depending on the type of the compared files. For example:

- when comparing XML files, a token can be one of the following:
  - the name of an XML tag;
  - the '<' character;
  - the '>' sequence of characters;
  - the name of an attribute inside an XML tag;
  - the '=' sign;
  - the '"' character;
  - an attribute value;
  - the text string between the start tag and the end tag (that is a text node which is a child of the XML element corresponding to the XML tag that encloses the text string).
- when comparing plain text files (identified by the .txt extension), a token can be any continuous sequence of word characters (letters, digit, the '\_' character) or any continuous sequence of whitespace characters including a newline character.
- *XML Fast* works on larger files but it is less precise than XML Accurate.
- *XML Accurate* works best on small XML files.
- *Auto* selects the most appropriate algorithm, based on the files content and size. By default, the **Auto** mode is selected.
-  **Diff Options** - Opens the [Files Comparison page](#).
-  **Perform Files Differencing** - Performs a comparison between the source and target files.
-  **Ignore Whitespaces** - Enables or disables the whitespace ignoring feature. Ignoring whitespace means that before performing the comparison, the application normalizes the content and trims its leading and trailing whitespaces.
-  **Synchronized scrolling** - Synchronizes scrolling of the two open files, so that a selected difference can be seen on both sides of the application window. This action enables/disables the previous described behavior.
-  **Copy Change from Right to Left** - Copies the selected difference from target to source file.
-  **Copy All Changes from Right to Left** - Copies all changes from target to source file.
-  **Next Block of Changes** - Jumps to the next block of changes. This action is disabled when the cursor is positioned on the last change block or when there are no changes in the document.
-  **Previous Block of Changes** - Jumps to the previous block of changes. This action is disabled when the cursor is positioned on the first change block or when there are no changes in the document.

-  **Next Change** - Jumps to the next change from the current block of changes. When the last change from the current block of changes is reached, it highlights the next block of changes. This action is disabled when the cursor is positioned on the last change.
-  **Previous Change** - Jumps to the previous change from the current block of changes. When the first change from the current block of changes is reached, it highlights the previous block of changes. This action is disabled when the cursor is positioned on the first change.
-  **Copy All Changes from Left to Right** - Copies all changes from source to target file.
-  **Copy Change from Left to Right** - Copies the selected difference from source to target file.
-  **First Change** - Jumps to the first change from the current file.

## Files Selector

To open the source and target files where you want to see the differences, use one of the **Browse for local**, **Browse for remote** or **Browse for archive** buttons. The Diff Tool keeps track of the files you are currently working with and those you opened in this window. You can see and select them from the two combo-boxes.

You can also save the changes in the source file or the target file by clicking the corresponding "Save" button.

## File Contents Panel

The files are opened in two side-by-side editors. The text view is used, offering a better view of the differences.

The two editors are kept in sync, so if you scroll the text in one of them, the other one also scrolls to show the difference side-by-side. The differences are indicated using highlights connected through colored areas. To navigate between differences, do one of the following:

- press the **Go to modification** buttons;
- select a change by clicking it in the overview ruler located in the right-most part of the window. The overview ruler contains a success indicator in its upper part. It turns green in case there are no differences or red if some differences are found.
- click a colored area between the text editors.

You can edit either the source or the target file. The differences are refreshed when you save the modified document.

Both editors provide a contextual menu that contains *edit*, *merge* and *navigation* actions.

The **Find/Replace** dialog is displayed by pressing **Ctrl+F** (**Cmd+F** on Mac). **Find/Replace** options are also available:

- **F3** used for performing another search using the last search configuration;
- **Shift+F3** for performing another search in backward direction using the last search configuration.

If the compared blocks of text are too large and you want to see the differences at a finer level, you can use the comparison at **Word** or **Character** level.

## Word Level Comparison

This option is only available if modifications exist between the source and the target file. You can go to Word Level Comparison by clicking the **Show word level details** menu item from the **Compare** menu.

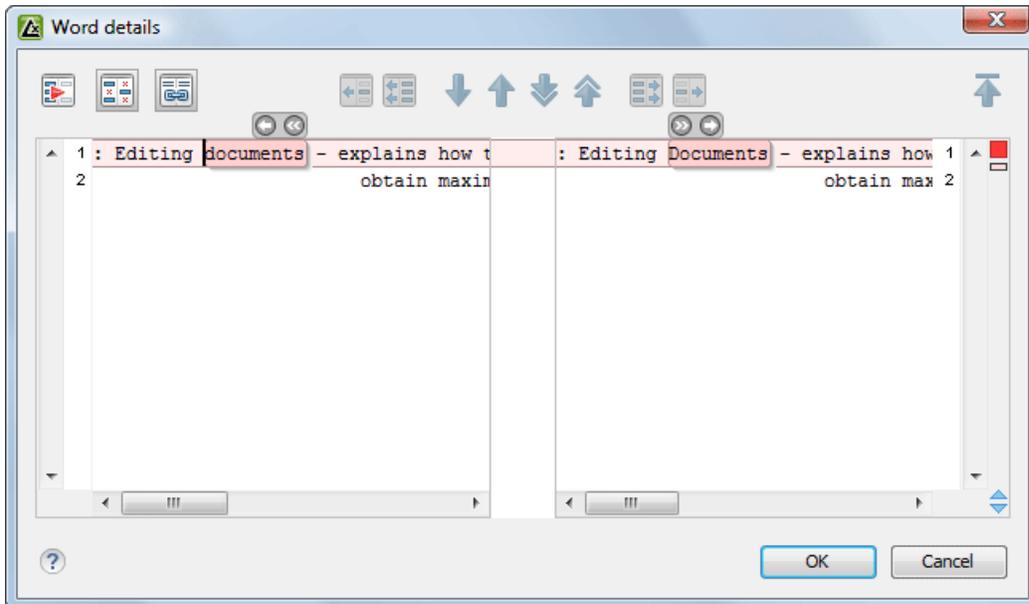


Figure 288: Word Level Comparison

## Character Level Comparison

This option is only available if modifications exist between the source and the target file. You can go to Character Level Comparison by clicking the **Show Character Level details** menu item from the **Compare** menu.

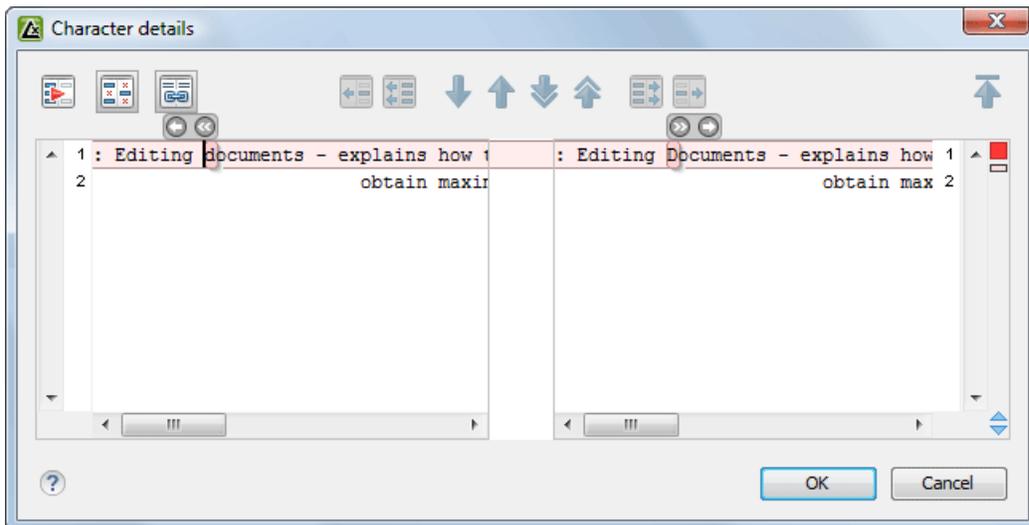


Figure 289: Character Level Comparison

## XML Diff API

The following interface is available for calling the XML diff processor from a custom Java application:

- `ro.sync.diff.api.DifferencePerformer` - It compares two resources of a given content type using a set of options. It has the following methods:
  - `performDiff` - Perform a diff operation between the two specified resources. It returns a list with the differences. The parameters are the following:
    1. `leftContentReader` - A value of type `java.io.Reader` that provides the content of the first resource.

2. `rightContentReader` - A value of type `java.io.Reader` that provides the content of the second resource.
  3. `leftSystemId` - A string value that is the location of the first resource.
  4. `rightSystemId` - A string value that is the location of the second resource
  5. `contentType` - A constant from the `ro.sync.diff.api.DiffContentTypes` interface.
  6. `diffOptions` - The user options controlling algorithm strength, ignore whitespaces, ignore comments, merge adjacent differences, etc. It is a value of type `ro.sync.diff.api.DiffOptions`.
  7. `diffProgressListener` - An object that will be notified about the progress of the diff operation. It is a value of type `ro.sync.diff.api.DiffProgressListener`.
- `stop` - Signal to the diff performer that it must stop.

An example of this interface can be found in the class `ro.sync.diff.api.sample.DiffXMLFilesSample` which is included in the [XML Diff SDK](#).



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# Chapter 16

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## Working with Archives

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### Topics:

- [Browsing and Modifying Archive Structure](#)
- [Working with EPUB](#)
- [Editing Files From Archives](#)

Oxygen XML Editor offers the means to manipulate files directly from ZIP type archives. By manipulation one should understand opening and saving files directly in archives, browsing and modifying archive structures. The archive support is available for all ZIP-type archives, which includes:

- ZIP archives
- EPUB books
- JAR archives
- Office Open XML (OOXML) files
- Open Document Format (ODF) files
- IDML files

This means that you can modify, transform, validate files directly from OOXML or ODF packages. The structure and content of an EPUB book, OOXML file or ODF file *can be opened, edited and saved* as for any other ZIP archive.

You can transform, validate and perform many other operations on files directly from an archive. When selecting an URL for a specific operation like transformation or validation you can click the  **Browse for archived file** button to navigate and choose the file from a certain archive.

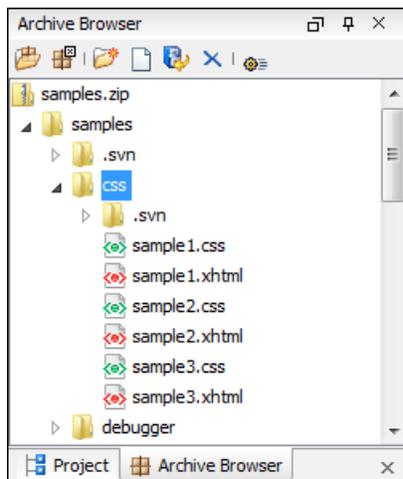
## Browsing and Modifying Archive Structure

You can open an archive in the **Archives Browser** view doing one of the following:

- Open an archive from the *Project view*;
- Choose an archive in the Oxygen XML Editor file chooser dialog;
- Drag an archive from the file explorer and drop it in the **Archives Browser** view.

When displaying an archive, the **Archive Browser** view locks the archive file. It is then automatically unlocked when the **Archive Browser** view is closed.

 **Important:** If a file is not recognized by Oxygen XML Editor as a supported archive type, you can add it from the *Archive preferences page*.



**Figure 290: Browsing an Archive**

The following operations are available on the **Archive Browser** toolbar:

-  **Reopen** - You can use this drop-down to reopen recently edited archives. Apart from the history of the recently edited archives, the drop-down also contains the **Clear history** and  **Open Archive** actions.
-  **Open Archive** menu - Provides access to the  **Open Archive...** action which opens a new archive in the browser. If the extension is not known as an archive extension, you will be directed to the *Archive preferences page* to add a new extension. The sub-menu keeps a list of recently open archive files and a **Clear history** action which allows you to delete the list.
-  **Close** - Closes the browsed archive and unlocks the archive file.
-  **New folder...** - Creates a folder as child of the selected folder in the browsed archive.
-  **New file...** - Creates a file as child of the selected folder in the browsed archive.
-  **Add files...** - Adds existing files as children of the selected folder in the browsed archive.

 **Note:**

You can also add files in the archive by dragging them from the file browser or **Project view** and dropping them in the **Archive Browser** view.

-  **Delete** - Deletes the selected resource in the browsed archive.
-  **Archive Options...** - Opens the *Archive preferences page*.

The following additional operations are available from the **Archive Browser** contextual menu:

-  **Open** - Opens a resource from the archive in the editor.

- **Extract...** - Extracts a resource from the archive in a specified folder.
-  **New folder...** - Creates a folder as child of the selected folder in the browsed archive.
-  **New file...** - Creates a file as child of the selected folder in the browsed archive.
- **Add files...** - Adds existing files as children of the selected folder in the browsed archive.
  -  **Note:** On Mac OS X, there is also available the **Add file...** action, which allows you to add one file at a time.
- **Rename** - Renames a resource in the archive.
-  **Find/Replace in Files** - Allows you to search for and replace specific pieces of text inside the archive.
- **Cut** - Cut the selected archive resource
- **Copy** - Copy the selected archive resource
- **Paste** - Paste a file or folder into the archive
  -  **Note:** You can add files in the archive by copying the files from the **Project view** and paste them into the **Archive view**.
- **Delete** - Remove a file or folder from archive
- **Preview** - Previews an image contained in the archive See the [Image Preview](#) section for more details.
- **Copy location** - Copies the URL location of the selected resource.
-  **Refresh** - Refreshes the selected resource.
- **Properties** - Views properties for the selected resource.

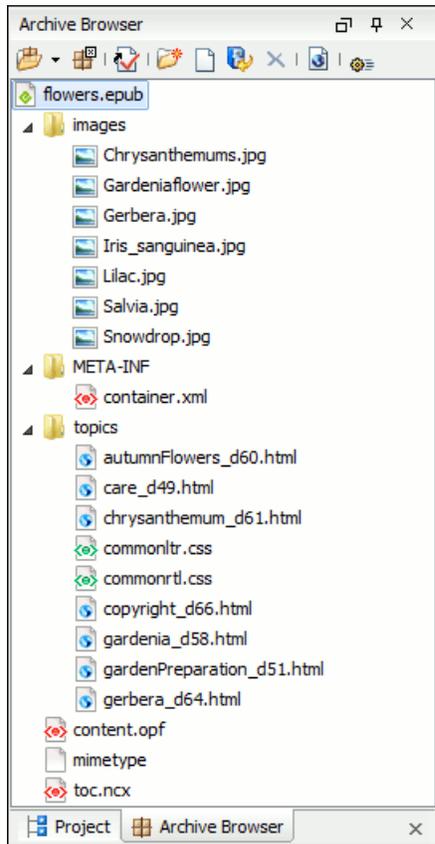
## Working with EPUB

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**EPUB** is a free and open electronic book standard by the International Digital Publishing Forum (IDPF). It was designed for *reflowable content*, meaning that the text display can be optimized for the particular display device used by the reader of the EPUB-formatted book. Oxygen XML Editor supports both EPUB 2.0 and EPUB 3.0.

EPUB files are opened in the **Archive Browser** view, exposing all their internal components:

- document content (XHTML and image files);
- packaging files;
- container files.



**Figure 291: EPUB file displayed in the Archive Browser view**

Here you can edit, delete and add files that compose the EPUB structure. To check that the EPUB file you are editing is valid, invoke the  **Validate and Check for Completeness** action. Oxygen XML Editor uses the open-source *EpubCheck* validator to perform the validation. This validator detects many types of errors, including OCF container structure, OPF and OPS mark-up, as well as internal reference consistency. All errors found during validation are displayed in a separate tab in the **Errors** view.

 **Note:** Invoke the  **Open in System Application** action to see how the EPUB is rendered in your system default EPUB reader application.

 **Note:** All changes made to the structure of an EPUB, or to the contents of the files inside an EPUB are immediately saved.

## Create an EPUB

To begin writing an EPUB file from scratch, do the following:

1. Select **File > New (Ctrl+N)** or press the  **New** toolbar button.
2. Choose **EPUB Book** template. Click **Create**. Choose the name and location of the file. Click **Save**. A skeleton EPUB file is saved on disk and open in the **Archive Browser** view.
3. Use the **Archive Browser** view specific actions to edit, add and remove resources from the archive.
4. Use the  **Validate and Check for Completeness** action to verify the integrity of the EPUB archive.

## Publish to EPUB

Oxygen XML Editor comes with built-in support for publishing Docbook and DITA XML documents directly to EPUB.

1. Open the **Configure Transformation Scenario** dialog and choose a predefined transformation scenario.

2. Start the transformation scenario.

## Editing Files From Archives

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You can open and edit files directly from an archive using the **Archive Browser** view. When saving the file back to archive, you are prompted to choose if you want the application to make a backup copy of the archive before saving the new content. If you choose **Never ask me again**, you will not be asked again to make backup copies. You can re-enable the dialog pop-up from the [Messages preferences page](#).



**Note:** All changes made to the structure of an archive, or to the contents of the files inside an archive are immediately saved.



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# Chapter 17

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## Working with Databases

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### Topics:

- [Relational Database Support](#)
- [Native XML Database \(NXD\) Support](#)
- [XQuery and Databases](#)
- [WebDAV Connection](#)
- [SharePoint Connection](#)
- [Configuring BaseX Support](#)

XML is a storage and interchange format for structured data and it is supported by all major database systems. Oxygen XML Editor offers the means of managing the interaction with some of the widely used databases, both relational ones and Native XML Databases. By interaction, one should understand browsing, querying, SQL execution support, content editing, importing from databases, generating XML Schema from database structure.

## Relational Database Support

Relational databases use a relational model and are based on tables linked by a common key. Oxygen XML Editor offers support for the following relational databases: IBM DB2, JDBC-ODBC Bridge, MySQL, Microsoft SQL Server, Oracle 11g:

- browsing the tables of these types of database in the **Data Source Explorer** view
- executing SQL queries against them
- calling stored procedures with input and output parameters

### Configuring Database Data Sources

This section describes the procedures for configuring the data sources for relational databases.

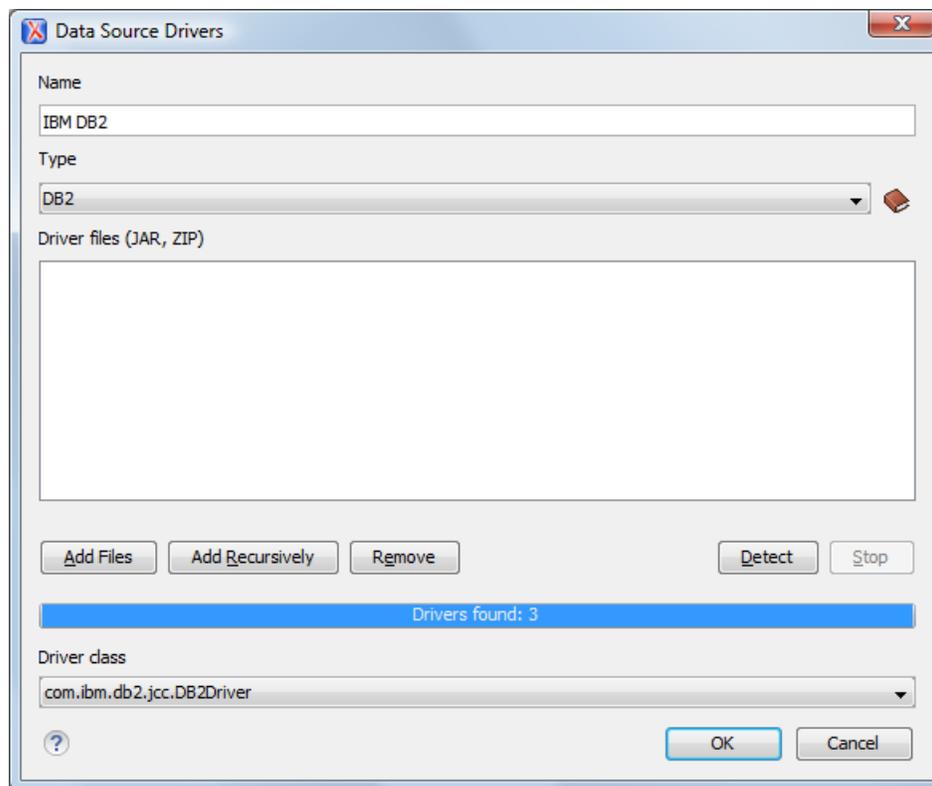
#### How to Configure an IBM DB2 Data Source

Available in the Enterprise edition only.

The steps for configuring a data source for connecting to an IBM DB2 server are the following:

1. Go to menu **Preferences > Data Sources**.
2. Click the **New** button in the **Data Sources** panel.

The dialog for configuring a data source will be opened.



**Figure 292: Data Source Drivers Configuration Dialog**

3. Enter a unique name for the data source.
4. Select **DB2** in the driver type combo box.
5. Add the driver files for IBM DB2 using the **Add** button.

The IBM DB2 driver files are:

- db2jcc.jar
- db2jcc\_license\_cisuz.jar
- db2jcc\_license\_cu.jar

In the [Download links for database drivers](#) section there are listed the URLs from where to download the drivers necessary for accessing IBM DB2 databases in Oxygen XML Editor.

6. Select the most suited **Driver class**.
7. Click the **OK** button to finish the data source configuration.

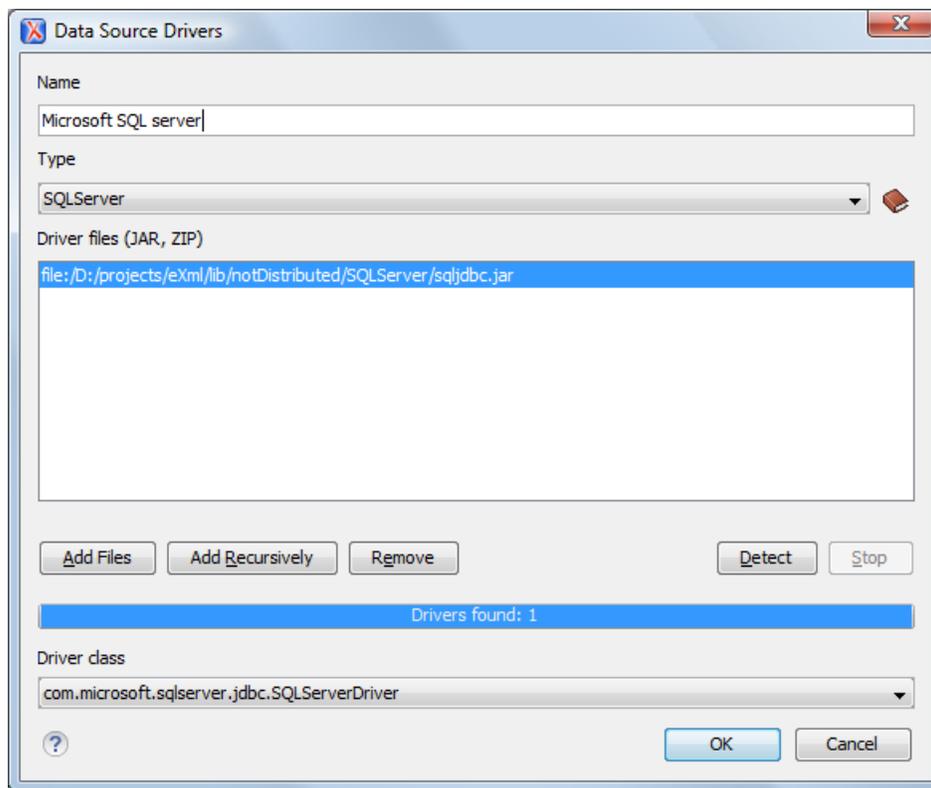
## How to Configure a Microsoft SQL Server Data Source

Available in the Enterprise edition only.

The steps for configuring a data source for connecting to a Microsoft SQL server are the following:

1. Go to menu **Preferences > Data Sources**.
2. Click the **New** button in the **Data Sources** panel.

The dialog for configuring a data source will be opened.



**Figure 293: Data Source Drivers Configuration Dialog**

3. Enter a unique name for the data source.
4. Select **SQLServer** in the driver type combo box.
5. Add the Microsoft SQL Server driver file using the **Add** button.

The SQL Server driver file is called `sqljdbc.jar`. In the [Download links for database drivers](#) section there are listed the URLs from where to download the drivers necessary for accessing Microsoft SQL Server databases in Oxygen XML Editor.

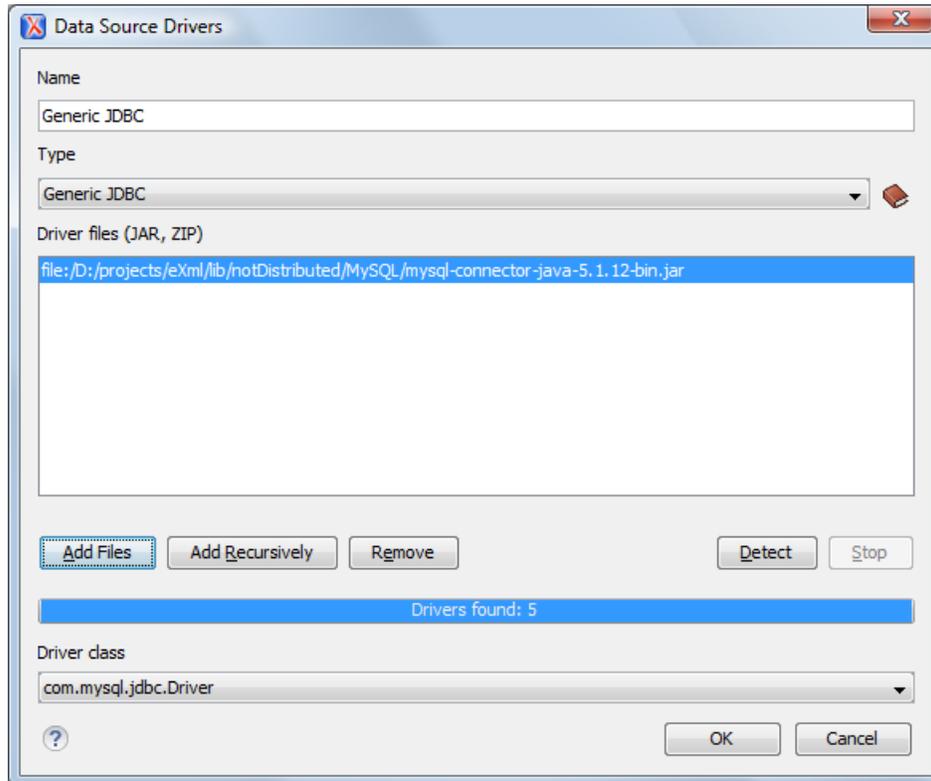
6. Select the most suited **Driver class**.
7. Click the **OK** button to finish the data source configuration.

## How to Configure a Generic JDBC Data Source

By default, Oxygen XML Editor contains a generic JDBC data source called **JDBC-ODBC Bridge**. Oxygen XML Editor can display and edit XML data stored in PostgreSQL and Microsoft SQL Server databases accessible through a JDBC 4 driver. To do this, configure a **Generic JDBC** data source that uses a JDBC 4 driver. The following procedure shows you how to configure a generic JDBC data source:

1. Go to menu **Preferences > Data Sources**.
2. Click the **New** button in the **Data Sources** panel.

The following dialog is displayed:



**Figure 294: Data Source Drivers Configuration Dialog**

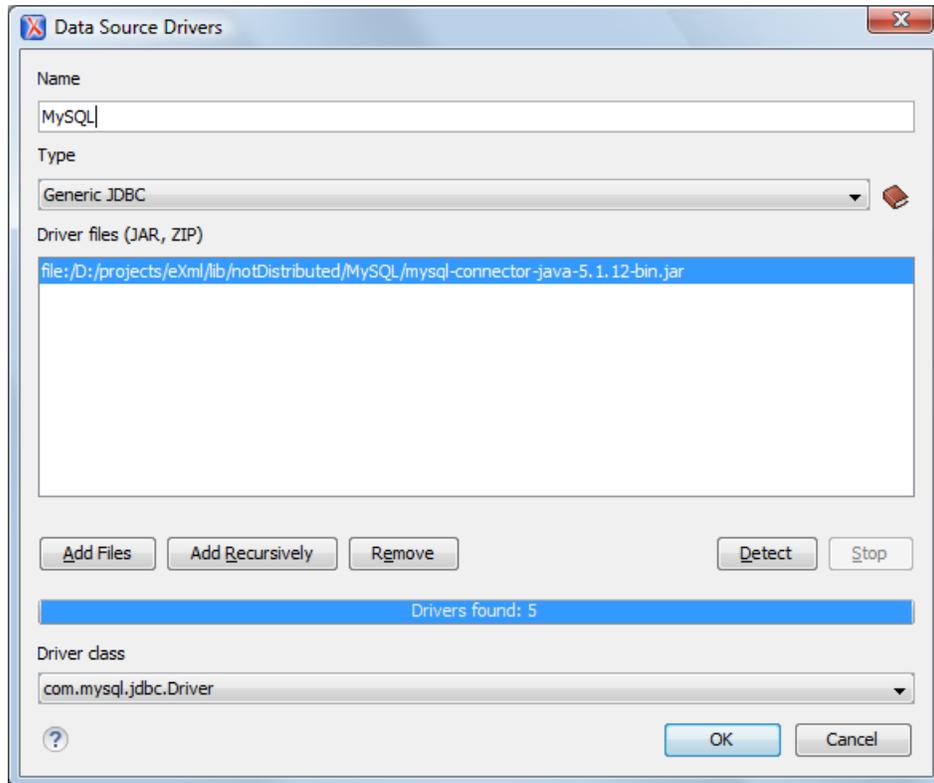
3. Enter a unique name for the data source.
4. Select **Generic JDBC** in the driver type combo box.
5. Add the driver file(s) using the **Add** button.
6. Select the most suited **Driver class**.
7. Click the **OK** button to finish the data source configuration.

## How to Configure a MySQL Data Source

Older versions of Oxygen XML Editor (up to version 11.2) include a built-in type of data sources called **MySQL** based on the JDBC driver for the MySQL 4 server. That type of data source is still available but is marked *outdated* because it does not support more recent versions of the MySQL server (starting from version 5.0) and it will be removed in a future version of Oxygen XML Editor. To connect to a MySQL server, create a data source of type Generic JDBC based on [the MySQL JDBC driver available on the MySQL website](#). The following steps describe how you can configure such a data source:

1. Go to menu **Preferences > Data Sources**.
2. Click the **New** button in the **Data Sources** panel.

The dialog for configuring a data source will be opened.



**Figure 295: Data Source Drivers Configuration Dialog**

3. Enter a unique name for the data source.
4. Select **Generic JDBC** in the driver type combo box.
5. Add the MySQL 5 driver files using the **Add** button.

The driver file for the MySQL server is called `mysql-com.jar`. In the [Download links for database drivers](#) section there are listed the URLs from where to download the drivers necessary for accessing MySQL databases in Oxygen XML Editor.

6. Select the most suited **Driver class**.
7. Click the **OK** button to finish the data source configuration.

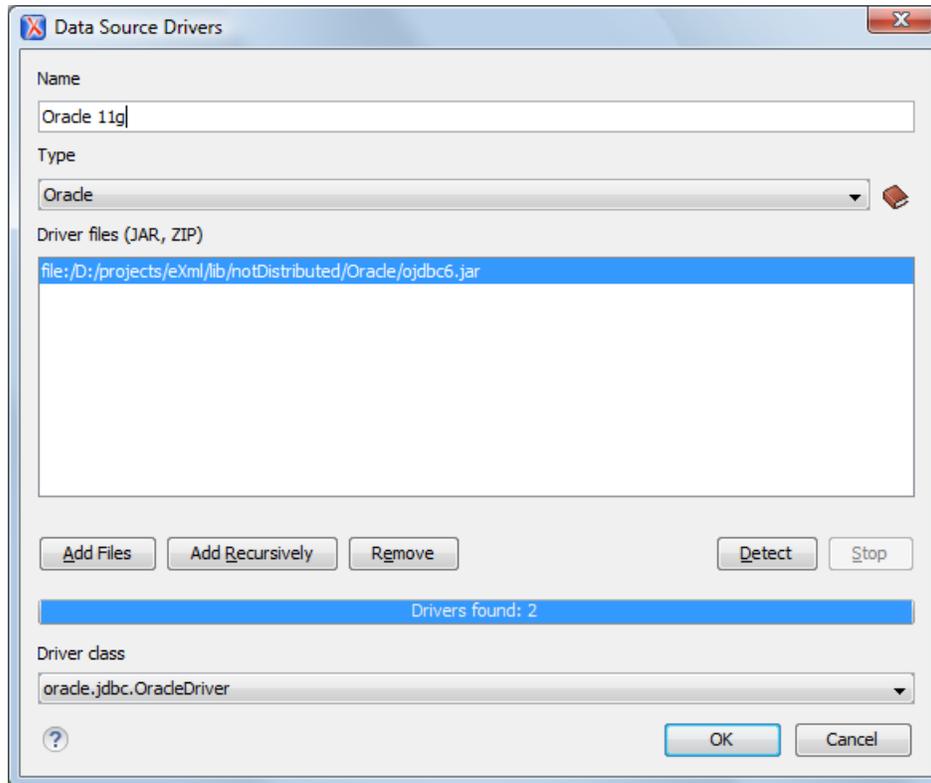
### How to Configure an Oracle 11g Data Source

Available in the Enterprise edition only.

The steps for configuring a data source for connecting to an Oracle 11g server are the following:

1. Go to menu **Preferences > Data Sources**.
2. Click the **New** button in the **Data Sources** panel.

The dialog for configuring a data source will be opened.



**Figure 296: Data Source Drivers Configuration Dialog**

3. Enter a unique name for the data source.
4. Select **Oracle** in the driver type combo box.
5. Add the Oracle driver file using the **Add** button.

The Oracle driver file is called `ojdbc5.jar`. In the [Download links for database drivers](#) section there are listed the URLs from where to download the drivers necessary for accessing Oracle databases in Oxygen XML Editor.

6. Select the most suited **Driver class**.
7. Click the **OK** button to finish the data source configuration.

### How to Configure a PostgreSQL 8.3 Data Source

The steps for configuring a data source for connecting to a PostgreSQL server are the following:

1. Go to menu **Preferences > Data Sources**.
2. Click the **New** button in the **Data Sources** panel.

The dialog for configuring a data source will be opened.

3. Enter a unique name for the data source.
4. Select **PostgreSQL** in the driver type combo box.
5. Add the PostgreSQL driver file using the **Add** button.

The PostgreSQL driver file is called `postgresql-8.3-603.jdbc3.jar`. In the [Download links for database drivers](#) section there are listed the URLs from where to download the drivers necessary for accessing PostgreSQL databases in Oxygen XML Editor.

6. Select the most suited **Driver class**.
7. Click the **OK** button to finish the data source configuration.

## Configuring Database Connections

This section describes the procedures for configuring the connections for relational databases:

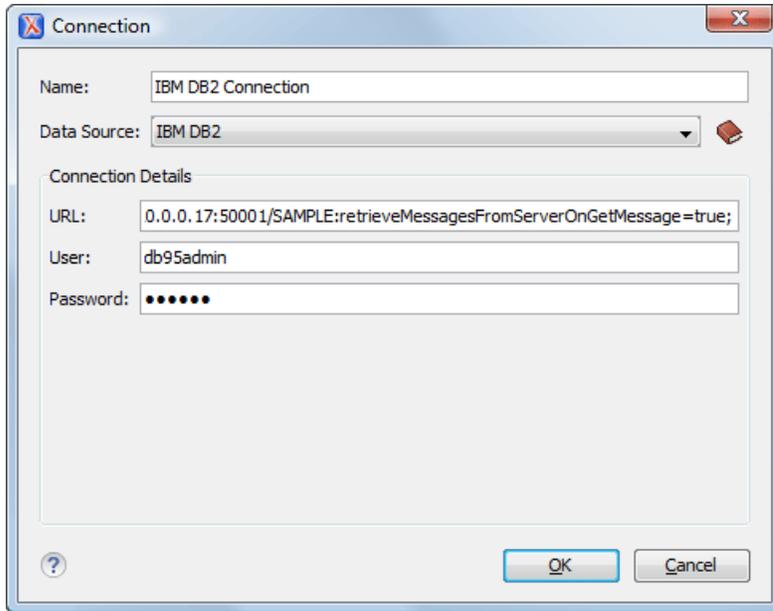
### How to Configure an IBM DB2 Connection

Available in the Enterprise edition only.

The steps for configuring a connection to an IBM DB2 server are the following:

1. Go to menu **Preferences > Data Sources**.
2. In the **Connections** panel click the **New** button.

The dialog for configuring a database connection will be displayed.



**Figure 297: The Connection Configuration Dialog**

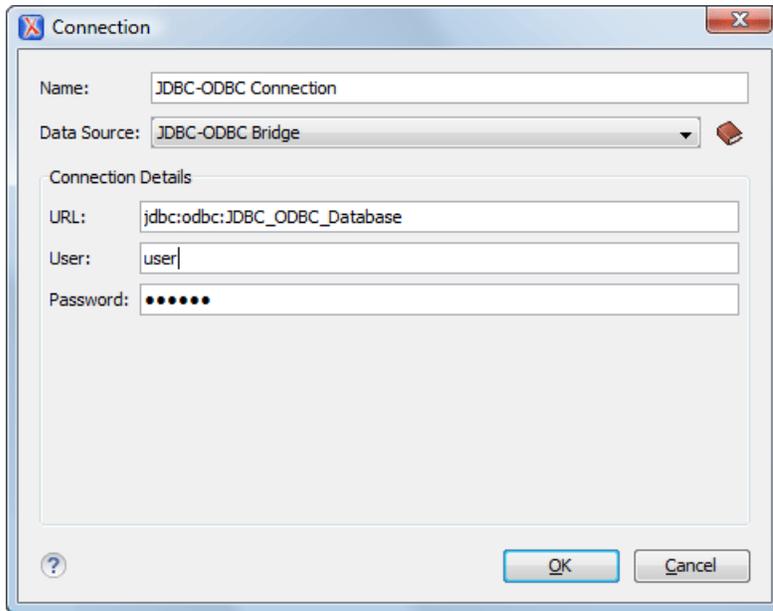
3. Enter a unique name for the connection.
4. Select an IBM DB2 data sources in the **Data Source** combo box.
5. Fill-in the connection details.
  - a) Fill-in the URL to the installed IBM DB2 engine.
  - b) Fill-in the user name to access the IBM DB2 engine.
  - c) Fill-in the password to access the IBM DB2 engine.
6. Click the **OK** button to finish the configuration of the database connection.

### How to Configure a JDBC-ODBC Connection

The steps for configuring a connection to an ODBC data source are the following:

1. Go to menu **Preferences > Data Sources**.
2. In the **Connections** panel click the **New** button.

The dialog for configuring a database connection will be displayed.



**Figure 298: The Connection Configuration Dialog**

3. Enter a unique name for the connection.
4. Select JDBC-ODBC bridge in the **Data Source** combo box.
5. Fill-in the connection details.
  - a) Fill-in the URL of the ODBC source.
  - b) Fill-in the user name of the ODBC source.
  - c) Fill-in the password of the ODBC source.
6. Click the **OK** button to finish the configuration of the database connection.

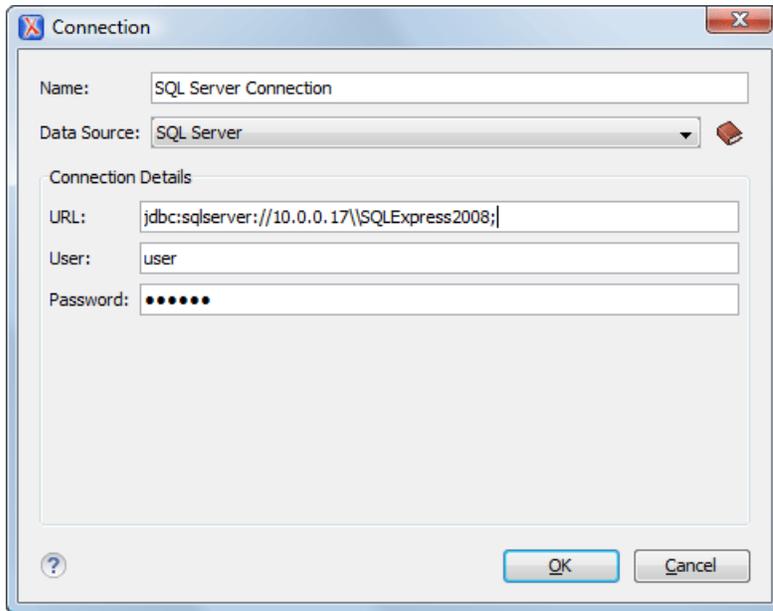
### How to Configure a Microsoft SQL Server Connection

Available in the Enterprise edition only.

The steps for configuring a connection to a Microsoft SQL Server server are the following:

1. Go to menu **Preferences > Data Sources**.
2. In the **Connections** panel click the **New** button.

The dialog for configuring a database connection will be displayed.



**Figure 299: The Connection Configuration Dialog**

3. Enter a unique name for the connection.
4. Select a SQL Server data source in the **Data Source** combo box.
5. Fill-in the connection details.
  - a) Fill-in the URL of the SQL Server server.  
If you want to connect to the server using Windows integrated authentication you must add `;integratedSecurity=true` to the end of the URL, so the URL will look like:
 

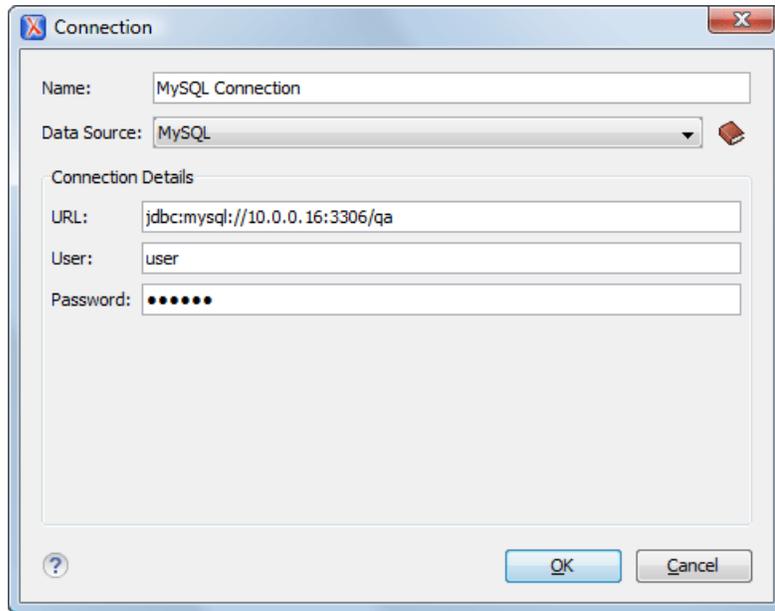
```
jdbc:sqlserver://localhost:1433;databaseName=test;integratedSecurity=true
```
  - b) Fill-in the user name for the connection to the SQL Server.
  - c) Fill-in the password for the connection to the SQL Server.
6. Click the **OK** button to finish the configuration of the database connection.

### How to Configure a MySQL Connection

The steps for configuring a connection to a MySQL server are the following:

1. Go to menu **Preferences > Data Sources**.
2. In the **Connections** panel click the **New** button.

The dialog for configuring a database connection will be displayed.



**Figure 300: The Connection Configuration Dialog**

3. Enter a unique name for the connection.
4. Select a MySQL data source in the **Data Source** combo box.
5. Fill-in the connection details.
  - a) Fill-in the URL of the MySQL server.
  - b) Fill-in the user name for the connection to the MySQL server.
  - c) Fill-in the password for the connection to the MySQL server.
6. Click the **OK** button to finish the configuration of the database connection.

### How to Configure a Generic JDBC Connection

The steps for configuring a connection to a generic JDBC database are the following:

1. Go to menu **Preferences > Data Sources**.
2. In the **Connections** panel click the **New** button.
 

The dialog for configuring a database connection will be displayed.
3. Enter a unique name for the connection.
4. Select a generic JDBC data source in the **Data Source** combo box.
5. Fill-in the connection details.
  - a) Fill-in the URL of the generic JDBC database, with the following format: `jdbc: <subprotocol>: <subname>`.
  - b) Fill-in the user name for the connection to the generic JDBC database.
  - c) Fill-in the password for the connection to the generic JDBC database.
6. Click the **OK** button to finish the configuration of the database connection.

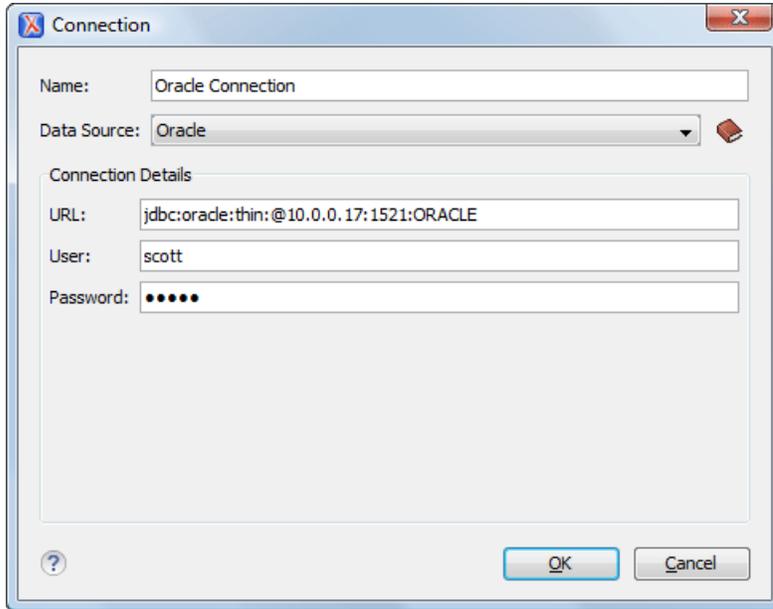
### How to Configure an Oracle 11g Connection

Available in the Enterprise edition only.

The steps for configuring a connection to an Oracle 11g server are the following:

1. Go to menu **Preferences > Data Sources**.
2. In the **Connections** panel click the **New** button.

The dialog for configuring a database connection will be displayed.



**Figure 301: The Connection Configuration Dialog**

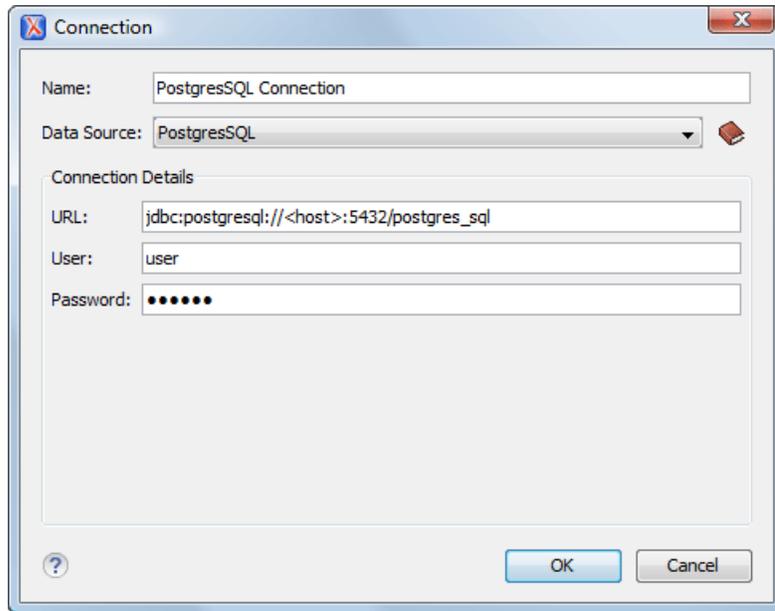
3. Enter a unique name for the connection.
4. Select an Oracle 11g data source in the **Data Source** combo box.
5. Fill-in the connection details.
  - a) Fill-in the URL of the Oracle server.
  - b) Fill-in the user name for the connection to the Oracle server.
  - c) Fill-in the password for the connection to the Oracle server.
6. Click the **OK** button to finish the configuration of the database connection.

### How to Configure a PostgreSQL 8.3 Connection

The steps for configuring a connection to a PostgreSQL 8.3 server are the following:

1. Go to menu **Preferences > Data Sources**.
2. In the **Connections** panel click the **New** button.

The dialog for configuring a database connection will be displayed.



**Figure 302: The Connection Configuration Dialog**

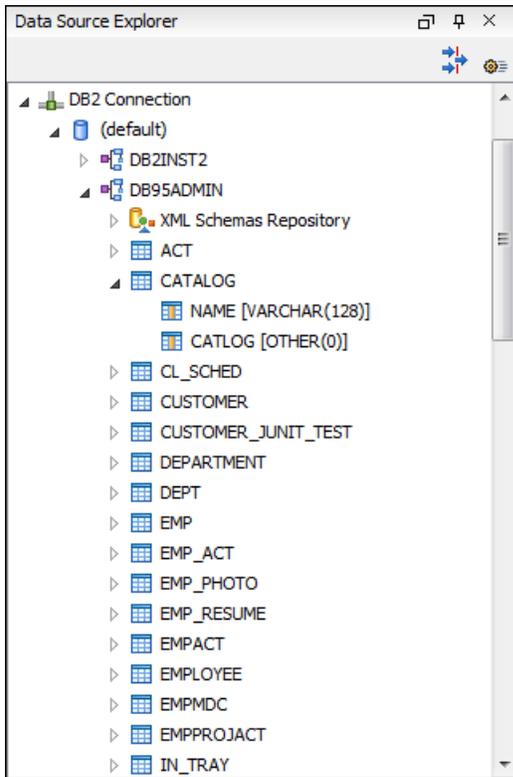
3. Enter a unique name for the connection.
4. Select a PostgreSQL 8.3 data source in the **Data Source** combo box.
5. Fill-in the connection details.
  - a) Fill-in the URL of the PostgreSQL 8.3 server.
  - b) Fill-in the user name for the connection to the PostgreSQL 8.3 server.
  - c) Fill-in the password for the connection to the PostgreSQL 8.3 server.
6. Click the **OK** button to finish the configuration of the database connection.

## Resource Management

This section explains the resource management actions for relational databases.

### Data Source Explorer View

This view presents in a tree-like fashion the database connections configured in the **Options > Preferences > Data Sources** preferences page. You can connect to a database simply by expanding the connection node. The database structure can be expanded up to column level. Oxygen XML Editor supports multiple simultaneous database connections and the connections tree provides an easy way to browse them.



**Figure 303: Data Source Explorer View**

The following objects are displayed in the **Data Source Explorer** view:

-  **Connection**
-  **Catalog (Collection)**
-  **XML Schema Repository**
-  **XML Schema Component**
-  **Schema**
-  **Table**
-  **System Table**
-  **Table Column**

A  **collection** (called *catalog* in some databases) is a hierarchical container for  **resources** and further sub-collections. There are two types of resources:

-  **XML resource** - an XML document or a document fragment, selected by a previously executed XPath query.
-  **non XML resource**

 **Note:** For some connections you can add or move resources into a container by dragging them from:

- **Project view;**
- the default file system application (Windows Explorer on Windows or Finder on Mac OS X, for example);
- or from another database container.

The following actions are available in the view's toolbar:

- The  **Filters** button opens the **Data Sources / Table Filters Preferences page**, allowing you to decide which table types will be displayed in the **Data Source Explorer** view.

- The  **Configure Database Sources** button opens the **Data Sources** [preferences page](#) where you can configure both data sources and connections.

### Actions Available at Connection Level in Data Source Explorer View

The contextual menu of a  **Connection** node of the tree from the **Data Source Explorer** view contains the following actions:

-  **Refresh** - Performs a refresh of the selected node's subtree.
- **Disconnect** - Closes the current database connection. If a table is already open, you are warned to close it before proceeding.
-  **Configure Database Sources** - Opens the **Data Sources** [preferences page](#) where you can configure both data sources and connections.

### Actions Available at Catalog Level in Data Source Explorer View

The contextual menu of a  **Catalog** node of the tree from the **Data Source Explorer** view contains the following actions:

-  **Refresh** - Performs a refresh of the selected node's subtree.

### Actions Available at Schema Level in Data Source Explorer View

The contextual menu of a  **Schema** node of the tree from the **Data Source Explorer** view contains the following actions:

-  **Refresh** - Performs a refresh of the selected node's subtree.

### Actions Available at Table Level in Data Source Explorer View

The contextual menu of a  **Table** node of the tree from the **Data Source Explorer** view contains the following actions:

-  **Refresh** - Performs a refresh of the selected node's subtree.
-  **Edit** - Opens the selected table in the **Table Explorer** view.
-  **Export to XML** - Opens the **Export Criteria** dialog (a thorough description of this dialog can be found in the [Import from Database](#) chapter).

## XML Schema Repository Level

This section explains the actions available at XML Schema Repository level.

### Oracle's XML Schema Repository Level

The Oracle database supports XML schema repository (XSR) in the database catalogs. The contextual menu of a  **XML Schema Repository** node of the tree from the **Data Source Explorer** view contains the following actions:

-  **Refresh** - Performs a refresh of the selected node's subtree.
- **Register** - Opens a dialog for adding a new schema file in the XML repository. To add an XML Schema, enter the schema URI and location on your file system. Local scope means that the schema will be visible only to the user who registers it. Global scope means that the schema is public.

 **Note:** Registering a schema may involve dropping/creating types. Hence you need type-related privileges such as DROP TYPE, CREATE TYPE, and ALTER TYPE. You need privileges to delete and register the XML schemas involved in the registering process. You need all privileges on XMLType tables that conform to the registered schemas. For XMLType columns, the ALTER TABLE privilege is needed on corresponding tables. If there are schema-based XMLType tables or columns in other database schemas, you need privileges such as the following:

- CREATE ANY TABLE
- CREATE ANY INDEX
- SELECT ANY TABLE

- UPDATE ANY TABLE
- INSERT ANY TABLE
- DELETE ANY TABLE
- DROP ANY TABLE
- ALTER ANY TABLE
- DROP ANY INDEX

To avoid having to grant all these privileges to the schema owner, Oracle recommends that the registration be performed by a DBA if there are XML schema-based XMLType table or columns in other users' database schemas.

### *IBM DB2's XML Schema Repository Level*

The contextual menu of a  **XML Schema Repository** node of the tree from the **Data Source Explorer** view contains the following actions:

-  **Refresh** - Performs a refresh of the selected node's subtree.
- **Register** - Opens a dialog for adding a new schema file in the XML Schema repository. In this dialog the following fields can be set:
  - **XML schema file** - Location on your file system.
  - **XSR name** - Schema name.
  - **Comment** - Short comment (optional).
  - **Schema location** - Primary schema name (optional).

Decomposition means that parts of the XML documents are stored into relational tables. Which parts map to which tables and columns is specified into the schema annotations.

Schema dependencies management is done by using the **Add** and **Remove** buttons.

The actions available at  **Schema** level are the following:

-  **Refresh** - Performs a refresh of the selected node (and it's subtree).
- **Unregister** - Removes the selected schema from the XML Schema Repository.
-  **View** - Opens the selected schema in Oxygen XML Editor.

### *Microsoft SQL Server's XML Schema Repository Level*

The contextual menu of a  **XML Schema Repository** node of the tree from the **Data Source Explorer** view contains the following actions:

-  **Refresh** - Performs a refresh of the selected node's subtree.
- **Register** - Opens a dialog for adding a new schema file in the DB XML repository. In this dialog you enter a collection name and the necessary schema files. XML Schema files management is done by using the **Add** and **Remove** buttons.

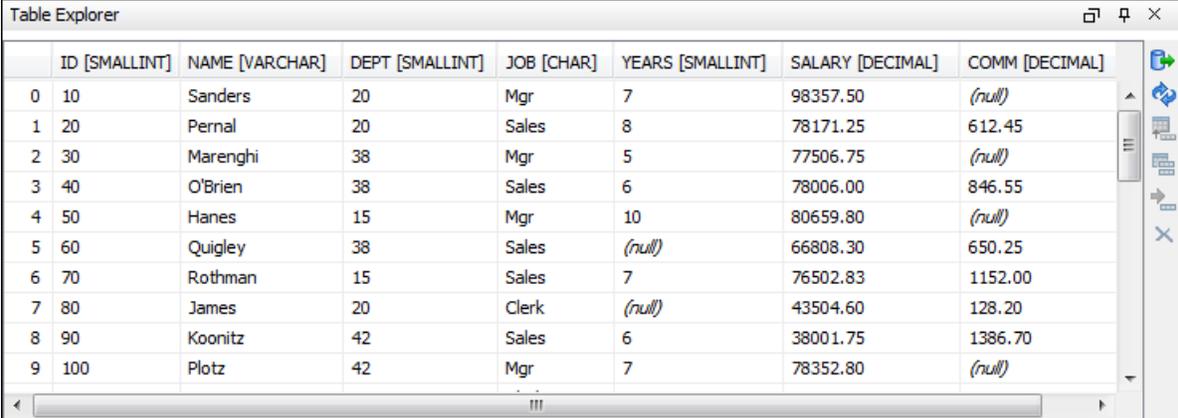
The actions available at  **Schema** level are the following:

-  **Refresh** - Performs a refresh of the selected node (and it's subtree).
- **Add** - Adds a new schema to the XML Schema files.
- **Unregister** - Removes the selected schema from the XML Schema Repository.
-  **View** - Opens the selected schema in Oxygen XML Editor.

### **Table Explorer View**

Every table from the **Data Source Explorer** view can be displayed and edited in the **Table Explorer** view by pressing the **Edit** button from the contextual menu or by double-clicking one of its fields. To modify a cell's content, double click

it and start typing. When editing is finished, Oxygen XML Editor will try to update the database with the new cell content.



	ID [SMALLINT]	NAME [VARCHAR]	DEPT [SMALLINT]	JOB [CHAR]	YEARS [SMALLINT]	SALARY [DECIMAL]	COMM [DECIMAL]
0	10	Sanders	20	Mgr	7	98357.50	(null)
1	20	Pernal	20	Sales	8	78171.25	612.45
2	30	Marenghi	38	Mgr	5	77506.75	(null)
3	40	O'Brien	38	Sales	6	78006.00	846.55
4	50	Hanes	15	Mgr	10	80659.80	(null)
5	60	Quigley	38	Sales	(null)	66808.30	650.25
6	70	Rothman	15	Sales	7	76502.83	1152.00
7	80	James	20	Clerk	(null)	43504.60	128.20
8	90	Koonitz	42	Sales	6	38001.75	1386.70
9	100	Plotz	42	Mgr	7	78352.80	(null)

**Figure 304: The Table Explorer View**

You can sort the content of a table by one of its columns by clicking on its column header.

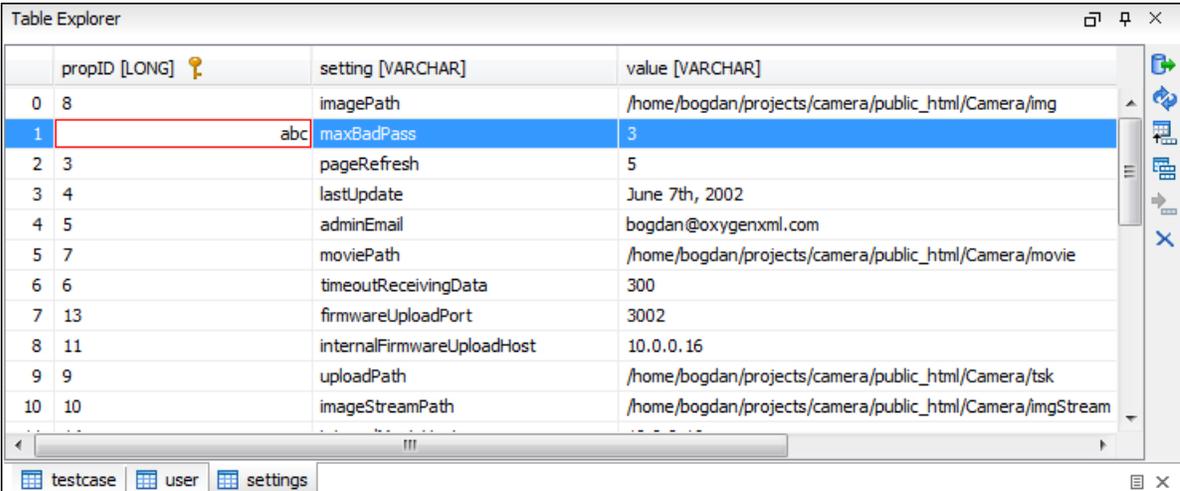
Note the following:

- The first column is an index (does not belong to the table structure).
- Every column header contains the field name and its data type.
- The primary key columns are marked with this symbol:  .
- Multiple tables are presented in a tabbed manner

For performance issues, you can set the maximum number of cells that will be displayed in the **Table Explorer** view (the **Limit the number of cells** field from the *Data Sources* Preferences page). If a table having more cells than the value set in Oxygen XML Editor's options is displayed in the **Table Explorer** view, a warning dialog will inform you that the table is only partially shown.

You will be notified if the value you have entered in a cell is not valid (and thus it cannot be updated).

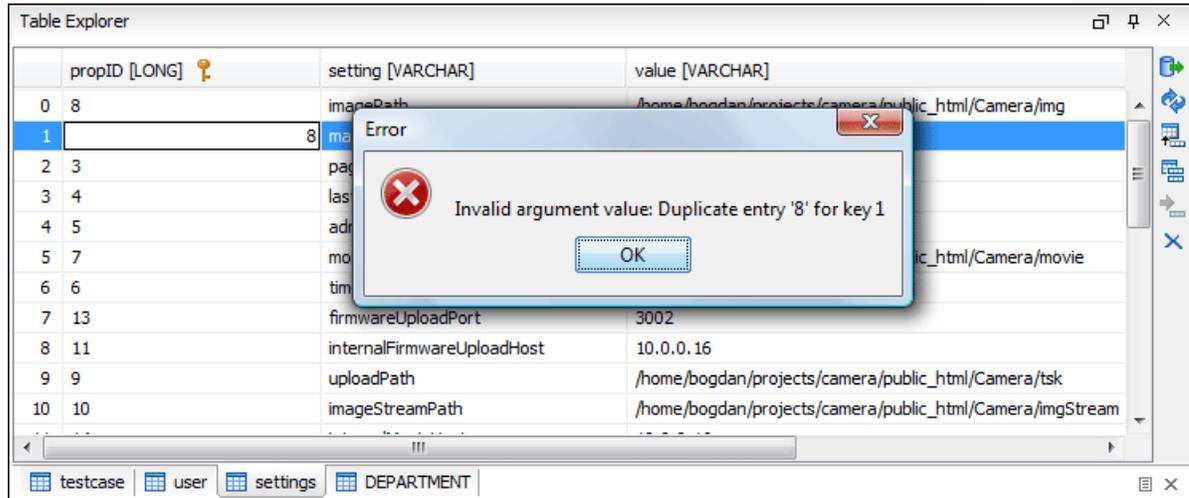
- If the content of the edited cell does not belong to the data type of the column, the cell will be marked by a red square and it will remain in editing state until a correct value is inserted. For example, in the following figure `propID` contains `LONG` values. If a character or string was inserted, the cell will look like this:



	propID [LONG] 	setting [VARCHAR]	value [VARCHAR]
0	8	imagePath	/home/bogdan/projects/camera/public_html/Camera/img
1	abc	maxBadPass	3
2	3	pageRefresh	5
3	4	lastUpdate	June 7th, 2002
4	5	adminEmail	bogdan@oxygenxml.com
5	7	moviePath	/home/bogdan/projects/camera/public_html/Camera/movie
6	6	timeoutReceivingData	300
7	13	firmwareUploadPort	3002
8	11	internalFirmwareUploadHost	10.0.0.16
9	9	uploadPath	/home/bogdan/projects/camera/public_html/Camera/tsk
10	10	imageStreamPath	/home/bogdan/projects/camera/public_html/Camera/imgStream

**Figure 305: Cell containing an invalid value.**

- If the constraints of the database are not met (like primary key constraints for example), an Information dialog will appear, notifying you of the reason the database has not been updated. For example, if you'd try to set the primary key `propID` for the second record in the table to 10 also, you would get the following message:



**Figure 306: Duplicate entry for primary key**

The usual edit actions (**Cut**, **Copy**, **Paste**, **Select All**, **Undo**, **Redo**) are available in the popup menu of the edited cell.

The contextual menu available on every cell has the following actions:

- Set NULL - Sets the content of the cell to (null). This action is disabled for columns that cannot be null.
- **Insert row** - Inserts an empty row in the table.
- **Duplicate row** - Makes a copy of the selected row and adds it in the **Table Explorer** view. You should note that the new row will not be inserted in the database table until all conflicts are solved.
- **Commit row** - Commits the selected row.
- **Delete row** - Deletes the selected row.
- **Copy** - Copies the content of the cell.
- **Paste** - Performs paste in the selected cell.

Some of the above actions are also available on the **Table Explorer** toolbar:

- **Export to XML** - Opens the **Export Criteria** dialog (a thorough description of this dialog can be found in the [Import from database](#) chapter) .
- **Refresh** - Performs a refresh of the selected node's subtree.
- **Insert row** - Inserts an empty row in the table.
- **Duplicate row** - Makes a copy of the selected row and adds it in the **Table Explorer** view. You should note that the new row will not be inserted in the database table until all conflicts are solved.
- **Commit row** - Commits the selected row.
- **Delete row** - Deletes the selected row.

## SQL Execution Support

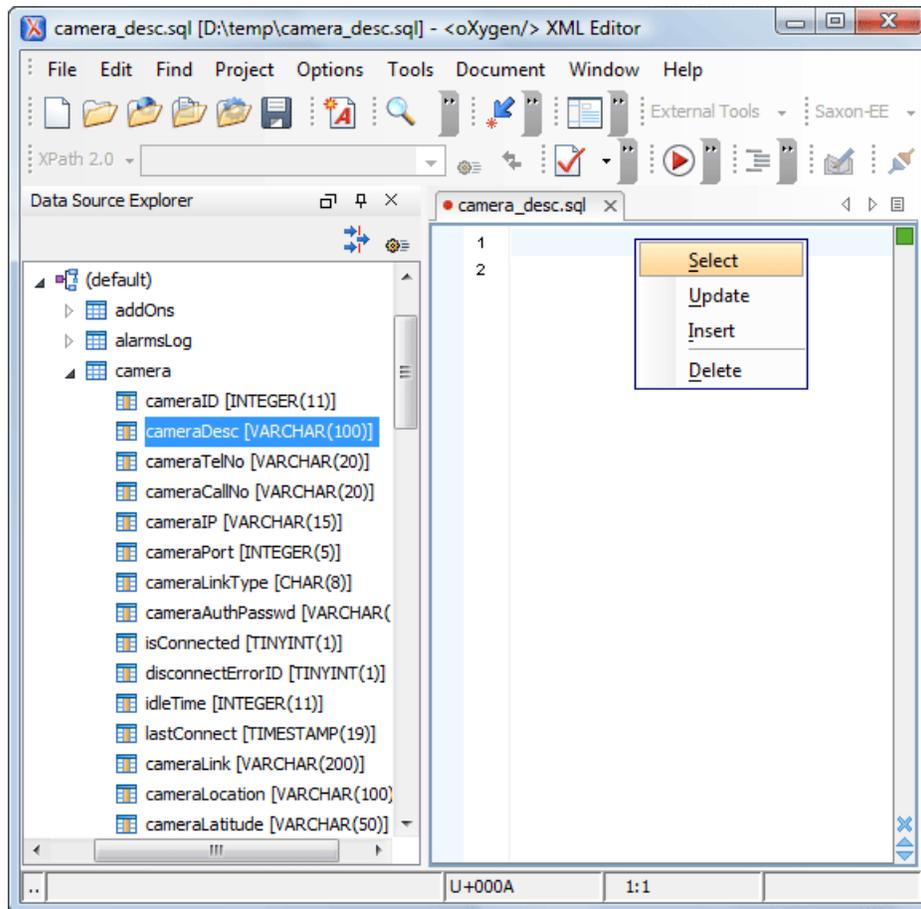
Oxygen XML Editor's support for writing SQL statements includes syntax highlight, folding and drag&drop (DND) from the **Data Source Explorer** view. It also includes transformation scenarios for executing the statements and the results are displayed in the **Table Explorer** view.

### Drag and Drop from Data Source Explorer View

Drag and drop (DND) from the **Data Source Explorer** view to the SQL editor allows creating SQL statements quickly by inserting the names of tables and columns in the SQL statements.

1. Configure a database connection (see the procedure specific for your database server).
2. Browse to the table you will use in your statement.
3. Drag the table or a column of the table into the editor where a SQL file is open.

DND is available both on the table and on its fields. A popup menu is displayed in the SQL editor.



**Figure 307: SQL statement editing with DND**

4. Select the type of statement from the popup menu.

If you dragged a table depending on your choice, one of the following statements are inserted into the document:

- `SELECT `field1`, `field2`, ... FROM `catalog`.`table`` (for this example: `SELECT `DEPT`, `DEPTNAME`, `LOCATION` FROM `test`.`department``)
- `UPDATE `catalog`.`table` SET `field1`=, `field2`=, ...` (for this example: `UPDATE `test`.`department` SET `DEPT`=, `DEPTNAME`=, `LOCATION`=`)
- `INSERT INTO `catalog`.`table` (`field1`, `field2`, ...) VALUES (, , )` (for this example: `INSERT INTO `test`.`department` (`DEPT`, `DEPTNAME`, `LOCATION`) VALUES (, , )`)
- `DELETE FROM `catalog`.`table`` (for this example: `DELETE FROM `test`.`department``)

If you dragged a column depending on your choice, one of the following statements are inserted into the document:

- `SELECT `field` FROM `catalog`.`table`` (for this example: `SELECT `DEPT` FROM `test`.`department``)
- `UPDATE `catalog`.`table` SET `field`=` (for this example: `UPDATE `test`.`department` SET `DEPT`=`)
- `INSERT INTO `catalog`.`table` (`field1`) VALUES ()` (for this example: `INSERT INTO `test`.`department` (`DEPT`) VALUES ()`)

- DELETE FROM `catalog`.`table` (for this example: DELETE FROM `test`.`department` WHERE `DEPT` =)

## SQL Validation

Currently, SQL validation support is offered for IBM DB2. Please note that if you choose a connection that doesn't support SQL validation you will receive a warning when trying to validate. The SQL document will be validated using the connection from the associated transformation scenario.

## Executing SQL Statements

The steps for executing an SQL statement on a relational database are the following:

1. Configure a *transformation scenario* from the  **Configure Transformation Scenario** button from the **Transformation** toolbar.

A SQL transformation scenario needs a database connection. You can configure a connection from the  **Preferences** button from the scenario dialog.

The dialog that appears contains the list of existing scenarios that apply to SQL documents.

2. Set parameter values for SQL placeholders from the **Parameters** button from the scenario dialog. For example in `SELECT * FROM `test`.`department` where DEPT = ? or DEPTNAME = ?` two parameters can be configured for the place holders (?) in the transformation scenario.

When the SQL statement will be executed, the first placeholder will be replaced with the value set for the first parameter in the scenario, the second placeholder will be replaced by the second parameter value and so on.

 **Restriction:** When a stored procedure is called in an SQL statement executed on an SQL Server database mixing in-line parameter values with values specified using the **Parameters** button of the scenario dialog is not recommended. It is due to a limitation of the SQL Server driver for Java applications. An example of stored procedure call that is not recommended is: `call dbo.Test(22, ?)`.

3. Execute the SQL scenario from the **Transform now** button of the scenario dialog.

The result of a SQL transformation will be *displayed in a view* at the bottom of the Oxygen XML Editor window.

4. View more complex return values of the SQL transformation in a separate editor panel.

A more complex value returned by the SQL query (for example an XMLTYPE value or a CLOB one) cannot be displayed entirely in the result table.

- a) Right click on the cell containing the complex value.
- b) Select the action **Copy cell** from the popup menu.  
The action will copy the value in the clipboard.
- c) Paste the value where you need it.

For example you can paste the value in an opened XQuery editor panel of Oxygen XML Editor.

## Native XML Database (NXD) Support

Native XML databases have an XML-based internal model and their fundamental unit of storage is XML. Oxygen XML Editor offers support for the following native XML databases:

- Berkeley DB XML
- eXist
- MarkLogic
- Documentum xDb (X-Hive/DB) 10
- Oracle XML DB

## Configuring Database Data Sources

This section describes the procedures for configuring the data sources for native databases.

### How to Configure a Berkeley DB XML Data Source

The latest instructions on how to configure Berkeley DB XML support in Oxygen XML Editor can be found on our [website](#).

Oxygen XML Editor supports Berkeley DB XML versions 2.3.10, 2.4.13, 2.4.16 & 2.5.16.

1. Go to menu **Preferences > Data Sources**.
2. Click the **New** button in the **Data Sources** panel.
3. Enter a unique name for the data source.
4. Select *Berkeley DBXML* from the **Driver type** combo box.
5. Press the **Add** button to add the Berkeley DB driver files.

The driver files for the Berkeley DB database are the following:

- db.jar (check for it into DBXML\_DIR / lib or DBXML\_DIR / jar)
- dbxml.jar (check for it into DBXML\_DIR / lib or DBXML\_DIR / jar)

Where DBXML\_DIR is the Berkeley DB XML database root directory. For example on Windows it is: C:\Program Files\Oracle\Berkeley DB XML <version>.

6. Click the **OK** button to finish the data source configuration.

### How to Configure an eXist Data Source

The latest instructions on how to configure eXist support in Oxygen XML Editor can be found on our [website](#).

Oxygen XML Editor supports eXist database server versions 1.3, 1.4 and 1.5.

1. Go to menu **Preferences > Data Sources**.
2. Click the **New** button in the **Data Sources** panel.
3. Enter a unique name for the data source.
4. Select *eXist* from the **Driver type** combo box.
5. Press the **Add** button to add the eXist driver files.

The following driver files should be added in the dialog box for setting up the eXist datasource. They are found in the installation directory of the eXist database server. Please make sure you copy the files from the installation of the eXist server where you want to connect from Oxygen.

- exist.jar
- lib/core/xmlldb.jar
- lib/core/xmlrpc-client-3.1.x.jar
- lib/core/xmlrpc-common-3.1.x.jar
- lib/core/ws-commons-util-1.0.x.jar

 **Note:** For eXist database server version 1.5 and 2.0, the following driver files must also be added in the dialog box for setting up the datasource:

- lib/core/slf4j-api-1.x.x.jar
- lib/core/slf4j-log4j12-1.x.x.jar
- lib/core/slf4j-simple-1.x.x.jar

The version number from the driver file names may be different for your eXist server installation.

6. Click the **OK** button to finish the data source configuration.

## How to Configure a MarkLogic Data Source

Available in the Enterprise edition only.

The latest instructions on how to configure MarkLogic support in Oxygen XML Editor can be found on our [website](#).

1. Go to menu **Preferences > Data Sources**.
2. Click the **New** button in the **Data Sources** panel.
3. Enter a unique name for the data source.
4. Select *MarkLogic* from the **Type** combo box.
5. Press the **Add** button to add the MarkLogic driver file ( `marklogic-xcc-{server_version}`, where *{server\_version}* is the MarkLogic server version.)

You can download the driver file from: <http://community.marklogic.com/download>.

6. Click the **OK** button to finish the data source configuration.

## How to Configure a Documentum xDb (X-Hive/DB) 10 Data Source

Available in the Enterprise edition only.

The latest instructions on how to configure support for Documentum xDb (X-Hive/DB) 10 (X-Hive/DB version 9) in Oxygen XML Editor can be found on our [website](#).

1. Go to menu **Preferences > Data Sources**.
2. Click the **New** button in the **Data Sources** panel.
3. Enter a unique name for the data source.
4. Select *XHive* from the **Driver type** combo box.
5. Press the **Add** button to add the XHive driver files.

The driver files for the Documentum xDb (X-Hive/DB) 10 database are found in the Documentum xDb (X-Hive/DB) 10 lib directory from the server installation folder:

- `antlr-runtime.jar`
- `aspectjrt.jar`
- `icu4j.jar`
- `xhive.jar`
- `google-collect.jar`

6. Click the **OK** button to finish the data source configuration.

## Configuring Database Connections

This section describes the procedures for configuring the connections for native databases.

### How to Configure a Berkeley DB XML Connection

Oxygen XML Editor supports Berkeley DB XML versions 2.3.10, 2.4.13, 2.4.16 & 2.5.16. The steps for configuring a connection to a Berkeley DB XML database are the following:

1. Go to menu **Preferences > Data Sources**.
2. Click the **New** button in the **Connections** panel.
3. Enter a unique name for the connection.
4. Select one of the previously configured data sources from the **Data Source** combo box.
5. Fill-in the connection details.
  - a) Set the path to the Berkeley DB XML database directory in the **Environment home directory field**. Use a directory with write access. Do NOT use the installation directory where Berkeley DB XML is installed if you do not have write access to that directory.
  - b) Select the **Verbosity** level: DEBUG, INFO, WARNING, or ERROR.

- c) Optionally, you can select the check-box **Join existing environment**.

If checked, an attempt is made to join an existing environment in the specified home directory and all the original environment settings are preserved. If that fails, try reconfiguring the connection with this option unchecked.

6. Click the **OK** button to finish the connection configuration.

### How to Configure an eXist Connection

The steps for configuring a connection to an eXist database are the following:

1. Go to menu **Preferences > Data Sources**.
2. Click the **New** button in the **Connections** panel.
3. Enter a unique name for the connection.
4. Select one of the previously configured data sources from the **Data Source** combo box.
5. Fill-in the connection details.
  - a) Set the URI to the installed eXist engine in the **XML DB URI** field.
  - b) Set the user name in the **User** field.
  - c) Set the password in the **Password** field.
  - d) Enter the start collection in the **Collection** field.

eXist organizes all documents in hierarchical collections. Collections are like directories. They are used to group related documents together. This text field allows the user to set the default collection name.

6. Click the **OK** button to finish the connection configuration.

### How to Configure a MarkLogic Connection

Available in the Enterprise edition only.

The steps for configuring a connection to a MarkLogic database are the following:

1. Go to menu **Preferences > Data Sources**.
2. Click the **New** button in the **Connections** panel.
3. Enter a unique name for the connection.
4. Select one of the previously configured data sources from the **Data Source** combo box.
5. Fill-in the connection details.
  - a) The host name or IP address of the installed MarkLogic engine in the **XDBC Host** field.
 

Oxygen XML Editor uses XCC connector to interact with MarkLogic XDBC server and requires the basic authentication schema to be set. Starting with version MarkLogic 4.0 the default authentication method when you create a HTTP or WebDAV Server is digest, so make sure to change it to basic.
  - b) Set the port number of the MarkLogic engine the **Port** field.
  - c) Set the user name to access the MarkLogic engine in the **User** field.
  - d) Set the password to access the MarkLogic engine in the **Password** field.
  - e) Optionally set the URL used for browsing the MarkLogic database in the **Data Source Explorer** view in the **WebDAV URL** field.
6. Click the **OK** button to finish the connection configuration.

### How to Configure an Documentum xDb (X-Hive/DB) 10 Connection

The steps for configuring a connection to a Documentum xDb (X-Hive/DB) 10 database are the following.

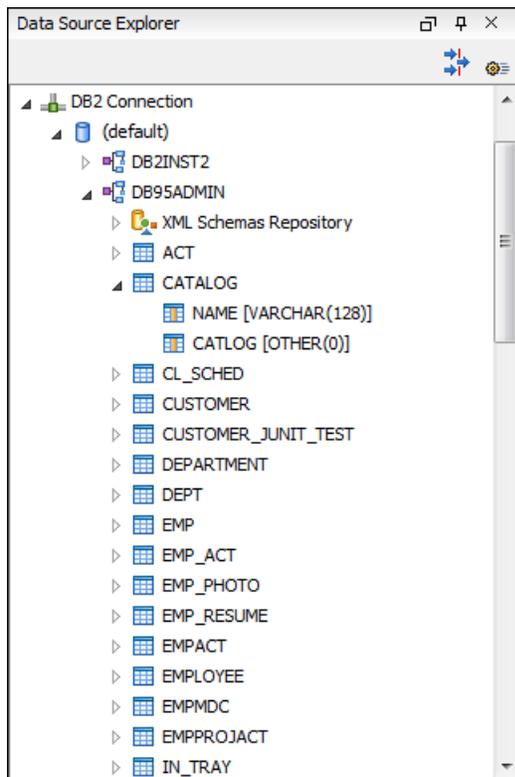
 **Note:** The bootstrap type of X-Hive/DB connections is not supported in Oxygen XML Editor. The following procedure explains the *xhive://* protocol connection type.

1. Go to menu **Preferences > Data Sources**.
2. Click the **New** button in the **Connections** panel.

3. Enter a unique name for the connection.
4. Select one of the previously configured data sources from the **Data Source** combo box.
5. Fill-in the connection details.
  - a) Set the URL property of the connection in the **URL** field.  
If the property is a URL of the form *xhive://host:port*, the Documentum xDb (X-Hive/DB) 10 connection will attempt to connect to a Documentum xDb (X-Hive/DB) 10 server running behind the specified TCP/IP port.
  - b) Set the user name to access the Documentum xDb (X-Hive/DB) 10 engine in the **User** field.
  - c) Set the password to access the Documentum xDb (X-Hive/DB) 10 engine in the **Password** field.
  - d) Set the name of the database to access from the Documentum xDb (X-Hive/DB) 10 engine in the **Database** field.
  - e) Check the checkbox **Run XQuery in read / write session (with committing)** if you want to end the session with a commit, otherwise the session ends with a rollback.
6. Click the **OK** button to finish the connection configuration.

## Data Source Explorer View

This view presents in a tree-like fashion the database connections configured in the **Options > Preferences > Data Sources** preferences page. You can connect to a database simply by expanding the connection node. The database structure can be expanded up to column level. supports multiple simultaneous database connections and the connections tree provides an easy way to browse them.



**Figure 308: Data Source Explorer View**

The following objects are displayed in the **Data Source Explorer** view:

-  **Connection**
-  **Catalog (Collection)**
-  **XML Schema Repository**
-  **XML Schema Component**
-  **Schema**

-  **Table**
-  **System Table**
-  **Table Column**

A  **collection** (called *catalog* in some databases) is a hierarchical container for  **resources** and further sub-collections. There are two types of resources:

-  **XML resource** - an XML document or a document fragment, selected by a previously executed XPath query.
-  **non XML resource**

 **Note:** For some connections you can add or move resources into a container by dragging them from:

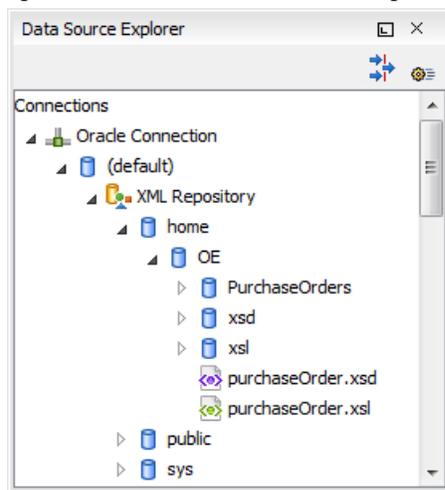
- **Project view;**
- the default file system application (Windows Explorer on Windows or Finder on Mac OS X, for example);
- or from another database container.

The following actions are available in the view's toolbar:

- The  **Filters** button opens the **Data Sources / Table Filters Preferences page**, allowing you to decide which table types will be displayed in the **Data Source Explorer** view.
- The  **Configure Database Sources** button opens the **Data Sources preferences page** where you can configure both data sources and connections.

## Oracle XML DB Browser

Oracle XML DB is a feature of the Oracle database. It provides a high-performance, native XML storage and retrieval technology. Oxygen XML Editor allows the user to browse the native Oracle XML Repository and perform various operations on the resources in the repository.



**Figure 309: Browsing the Oracle XML DB Repository**

The actions available at XML Repository level are the following:

-  **Refresh** - Performs a refresh of the XML Repository.
- **Add container** - Adds a new child container to the XML Repository
-  **Add resource** - Adds a new resource to the XML Repository.

The actions available at container level are the following:

-  **Refresh** - Performs a refresh of the selected container.
- **Add container** - Adds a new child container to the current one
-  **Add resource** - Adds a new resource to the folder.

- **Delete** - Deletes the current container.
- **Properties** - Shows various properties of the current container.

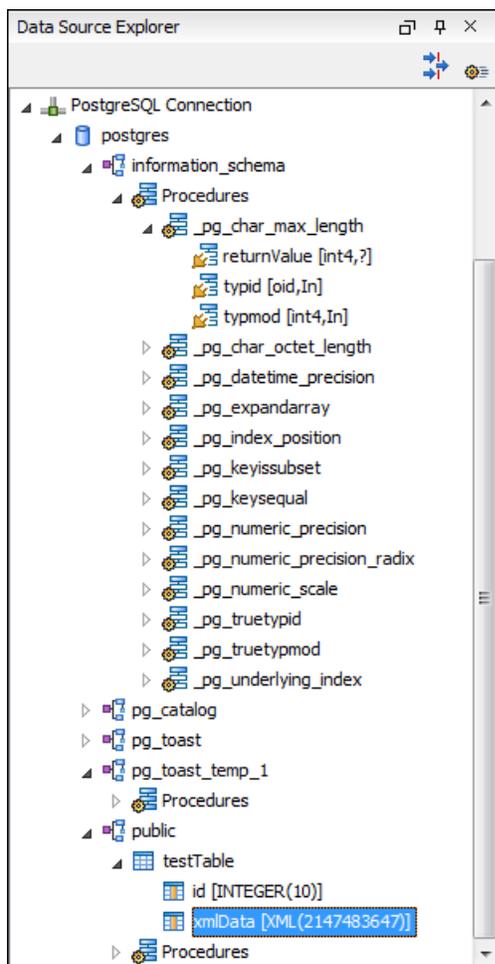
The actions available at resource level are the following:

-  **Refresh** - Performs a refresh of the selected resource.
-  **Open** - Opens the selected resource in the editor.
- **Rename** - Renames the current resource.
- **Move** - Moves the current resource to a new container (also available through drag and drop).
- **Delete** - Deletes the current resource.
- **Copy location** - Allows you to copy to clipboard an application specific URL for the resource which can then be used for various actions like opening or transforming the resources.
- **Properties** - Shows various properties of the current resource.
- **Compare** - This action is available in the contextual menu of two selected resources. Select this action to compare the resources using Diff Files.

For running XQuery transformation on collections from XML Repository please see [a tutorial from Oracle](#).

### PostgreSQL Connection

Oxygen XML Editor allows the user to browse the structure of the PostgreSQL database in the **Data Source Explorer** view and open the tables in the **Table Explorer** view.



**Figure 310: Browsing a PostgreSQL repository**

The actions available at container level are the following:

-  **Refresh** - Performs a refresh of the selected container.

The actions available at resource level are the following:

-  **Refresh** - Performs a refresh of the selected database table.
-  **Edit** - Opens the selected database table in the **Table Explorer** view.
-  **Export to XML ...** - Exports the content of the selected database table as an XML file using *the dialog from importing data from a database*.
- **Compare** - This action is available in the contextual menu of two selected resources. Select this action to compare the resources using Diff Files.

## Berkeley DB XML Connection

This section explains the actions that are available on a Berkeley DB XML connection.

### Actions Available at Connection Level

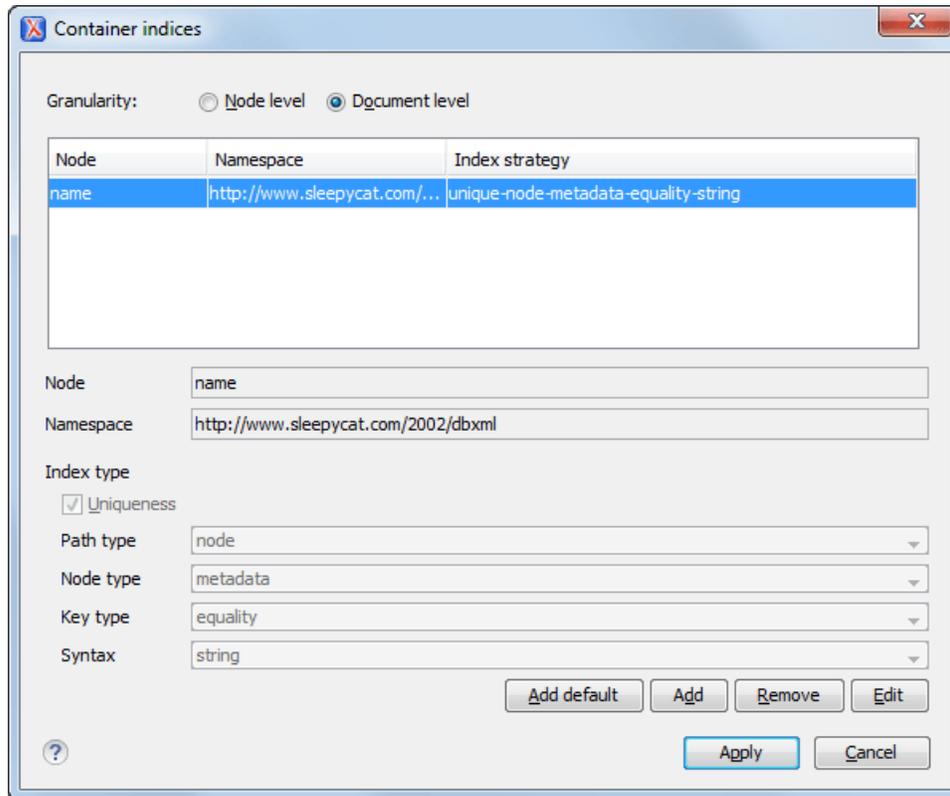
In a Berkeley DB XML repository the actions available at connection level in the **Data Source Explorer** view are the following:

-  **Refresh** - Performs a refresh of the selected node's subtree.
- **Disconnect** - Closes the current database connection.
-  **Configure Database Sources** - Opens *the Data Sources preferences page* where you can configure both data sources and connections.
- **Add container** - Adds a new container in the repository with the following attributes.
  - **Name** - The name of the new container.
  - **Container type** - At creation time, every container must have a type defined for it. This container type identifies how XML documents are stored in the container. As such, the container type can only be determined at container creation time; you cannot change it on subsequent container opens. Containers can have one of the following types specified for them:
    - **Node container** - XML documents are stored as individual nodes in the container. That is, each record in the underlying database contains a single leaf node, its attributes and attribute values if any, and its text nodes, if any. Berkeley DB XML also keeps the information it needs to reassemble the document from the individual nodes stored in the underlying databases. This is the default, and preferred, container type.
    - **Whole document container** - The container contains entire documents. The documents are stored without any manipulation of line breaks or whitespace.
  - **Allow validation** - If checked it causes documents to be validated when they are loaded into the container. The default behavior is to not validate documents.
  - **Index nodes** - If checked it causes indices for the container to return nodes rather than documents. The default is to index at the document level. This property has no meaning if the container type is whole document container.
- **Properties** - Shows a dialog containing a list of the Berkeley connection properties: version, home location, default container type, compression algorithm, etc.

### Actions Available at Container Level

In a Berkeley DB XML repository the actions available at container level in the **Data Source Explorer** view are the following:

-  **Add Resource** - Adds a new XML resource to the selected container.
- **Rename** - Allows you to specify a new name for the selected container.
-  **Delete** - Removes the selected container from the database tree.
- **Edit indices** - Allows you to edit the indices for the selected container.



**Figure 311: Container indices**

The fields of the dialog are the following:

- Granularity:
  - **Document level** granularity is good for retrieving large documents.
  - **Node level** granularity is good for retrieving nodes from within documents.
- Add / Edit indices:
  - **Node** - The node name.
  - **Namespace** - The index namespace
  - Index strategy:
    - **Index type:**
      - **Uniqueness** - Indicates whether the indexed value must be unique within the container
    - **Path type:**
      - **node** - Indicates that you want to index a single node in the path
      - **edge** - Indicates that you want to index the portion of the path where two nodes meet
    - **Node type:**
      - **element** - An element node in the document content.
      - **attribute** - An attribute node in the document content.
      - **metadata** - A node found only in a document's metadata content.
    - **Key type:**
      - **equality** - Improves the performances of tests that look for nodes with a specific value
      - **presence** - Improves the performances of tests that look for the existence of a node regardless of its value

- **substring** - Improves the performance of tests that look for a node whose value contains a given substring
- **Syntax types** - The syntax describes what sort of data the index will contain and is mostly used to determine how indexed values are compared.

-  **Refresh** - Performs a refresh of the selected node's subtree.
- **Properties** - Displays a dialog with a list of properties of the Berkeley container like: container type, auto indexing, page size, validate on load, compression algorithm, number of documents, etc.

### Actions Available at Resource Level

In a Berkeley DB XML repository the actions available at resource level in the **Data Source Explorer** view are the following:

-  **Refresh** - Performs a refresh of the selected resource.
-  **Open** - Opens the selected resource in the editor.
- **Rename** - Allows you to change the name of the selected resource.
- **Move** - Allows you to move the selected resource in a different container in the database tree (also available through drag and drop).
-  **Delete** - Removes the selected resource from the container.
- **Copy location** - Allows you to copy to clipboard an application specific URL for the resource which can then be used for various actions like opening or transforming the resources.
- **Compare** - This action is available in the contextual menu of two selected resources. Select this action to compare the resources using Diff Files.

### eXist Connection

This section explains the actions that are available on an eXist connection.

#### Actions Available at Connection Level

For an eXist database the actions available at connection level in the **Data Source Explorer** view are the following:

-  **Configure Database Sources** - Opens the **Data Sources preferences page** where you can configure both data sources and connections.
- **Disconnect** - Closes the current database connection.
-  **Refresh** - Performs a refresh of the selected node's subtree.

#### Actions Available at Container Level

For an eXist database the actions available at container level in the **Data Source Explorer** view are the following:

- **New File** - Creates a file in the selected container
- **New Collection** - Creates a collection
- **Import Folders** - Adds recursively the content of specified folders from the local filesystem
-  **Import Files** - Adds a set of XML resources from the local filesystem
- **Cut** - Cuts the selected containers
- **Copy** - Copies the selected containers

 **Note:** You can add or move resources into container by dragging them from Project view, the default file system application (Windows Explorer on Windows or Finder on Mac OS X, for example) or from another database container.

- **Paste** - Paste resources into selected container
- **Rename** - Allows you to change the name of the selected collection
-  **Delete** - Removes the selected collection

-  **Refresh** - Performs a refresh of the selected container
- **Properties** - Allows the user to view various useful properties associated with the container, like: name, creation date, owner, group, permissions.

### Actions Available at Resource Level

For an eXist database the actions available at resource level in the **Data Source Explorer** view are the following:

-  **Refresh** - Performs a refresh of the selected resource.
  -  **Open** - Opens the selected resource in the editor.
  - **Rename** - Allows you to change the name of the selected resource.
  - **Cut** - Cuts the selected resources
  - **Copy** - Copies the selected resources.
-  **Note:** You can add or move resources into container by dragging them from Project view, the default file system application (Windows Explorer on Windows or Finder on Mac OS X, for example) or from another database container.
-  **Delete** - Removes the selected resource from the collection.
  - **Copy location** - Allows you to copy to clipboard an application-specific URL for the resource which can then be used for various actions like opening or transforming the resources.
  - **Properties** - Allows the user to view various useful properties associated with the resource.
  - **Save As** - Allows you to save the name of the selected binary resource as a file on disk.
  - **Compare** - This action is available in the contextual menu of two selected resources. Select this action to compare the resources using Diff Files.

### MarkLogic Connection

Once you configure a MarkLogic connection, you can use the **Data Source Explorer** view to display all the application servers configured on the server. You can expand each application server and view all the modules that it is configured to use. The **Data Source Explorer** view allows you to open and edit these modules.

-  **Note:** To browse modules located in a database, directory properties must be associated with them. These directory properties are generated automatically if the *directory creation* property of the database is set to automatic. In case this property is set to *manual* or *manual-enforced*, add the directory properties of the modules manually, using the XQuery function `xdmp:directory-create()`.

#### Manually Adding Directory Properties

For two documents with the `/code/modules/main.xqy` and `/code/modules/imports/import.xqy` IDs, run this query:

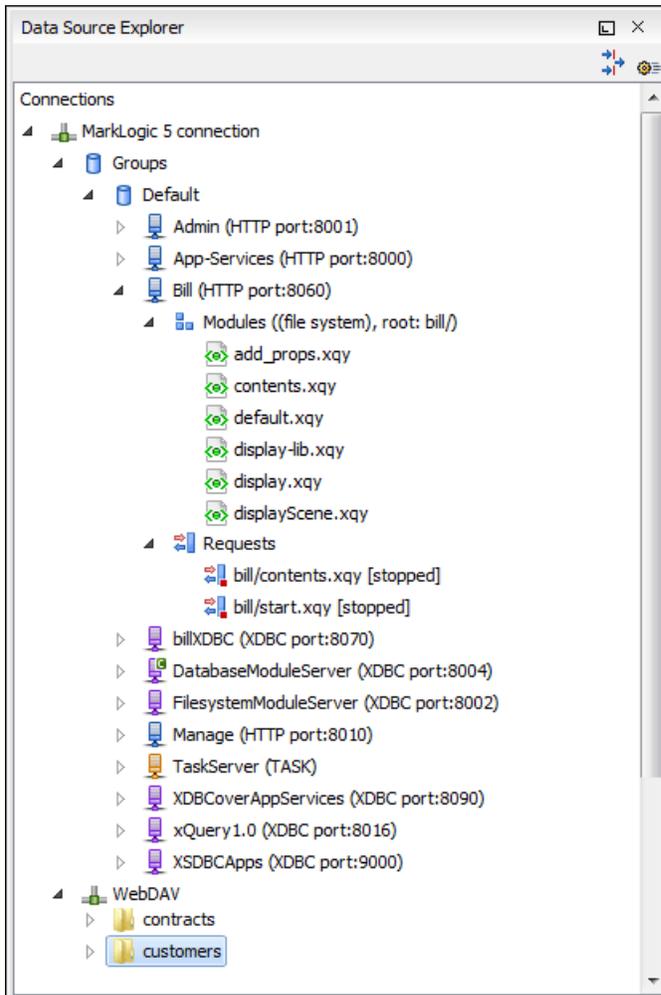
```
(xdmp:directory-create( '/code/modules/ ' ),
xdmp:directory-create( '/code/modules/imports/ ' )).
```

For further information about directory properties go to: <http://blakeley.com/blogfile/2012/03/19/directory-assistance/>

When you execute or debug XQuery files opened from this view, the imported modules are better identified by the MarkLogic server. In a module, you are also able to add breakpoints that the debugger takes into account.

-  **Note:** Add breakpoints in the modules of the application server that executes the debugging.
-  **Note:** Open XQuery modules from the application server involved in the debugging or execution process.

In the **Requests** container of each application server Oxygen XML Editor presents both the queries stopped for debugging and the queries that are still running.



**Figure 312: MarkLogic Connection in Data Source Explorer**

To manage resources for a MarkLogic database through WebDAV, configure a WebDAV URL in [the MarkLogic connection](#).

The following actions are available in the contextual menu of the WebDAV connection:

- connection level actions:
  - **Configure Database Sources...** - opens the **Data Sources preferences page**. Here you can configure both data sources and connections;
  - **New Folder...** - creates a new folder on the server;
  - **Import Files...** - allows you to add a new file on the server;
  - **Refresh** - performs a refresh of the connection;
  - **Find/Replace in Files...** - Allows you to find and replace text in multiple files from the server.
- folder level actions:
  - **New File** - creates a new file on the server in the current folder;
  - **New Folder...** - creates a new folder on the server;
  - **Import Folders...** - imports folders on the server;
  - **Import Files** - allows you to add a new file on the server in the current folder;
  - **Cut** - removes the current selection and places it in the clipboard;

-  **Copy** - copies the current selection;
- **Rename** - allows you to change the name of the selected folder;
-  **Delete** - removes the selected folder;
-  **Refresh** - refreshes the sub-tree of the selected node;
-  **Find/Replace in Files...** - Allows you to find and replace text in multiple files from the server.
- file level actions:
  -  **Open** - Allows you to open the selected file in the editor.
  -  **Cut** - removes the current selection and places it in the clipboard;
  -  **Copy** - copies the current selection;
  - **Copy Location** - copies an application specific URL for the selected resource to the clipboard. You can use this URL for various actions like opening or transforming the resources;
  - **Rename** - allows you to change the name of the selected file;
  -  **Delete** - removes the selected file;
  -  **Refresh** - performs a refresh of the selected node;
  -  **Properties** - displays the properties of the current file in a dialog;
  -  **Find/Replace in Files...** - Allows you to find and replace text in multiple files from the server.
  - **Compare** - This action is available in the contextual menu of two selected resources. Select this action to compare the resources using Diff Files.

### Documentum xDb (X-Hive/DB) Connection

This section explains the actions that are available on a Documentum xDb (X-Hive/DB) 10 connection.

#### Actions Available at Connection Level

For a Documentum xDb (X-Hive/DB) 10 database the actions available at connection level in the **Data Source Explorer** view are the following:

-  **Refresh** - Performs a refresh of the selected node's subtree.
- **Disconnect** - Closes the current database connection.
-  **Configure Database Sources** - Opens the **Data Sources [preferences page](#)** where you can configure both data sources and connections.
- **Add library** - Allows you to add a new library.
-  **Insert XML Instance** - Allows you to add a new XML resource directly into the database root. See [Documentum xDb \(X-Hive/DB\) 10 Parser Configuration](#) for more details.
-  **Insert non XML Instance** - Allows you to add a new non XML resource directly into the database root.
- **Properties** - Displays the connection properties.

#### Actions Available at Catalog Level

For a Documentum xDb (X-Hive/DB) 10 database the actions available at catalog level in the **Data Source Explorer** view are the following:

-  **Refresh** - Performs a refresh of the selected catalog.
- **Add AS models** - Allows you to add a new abstract schema model to the selected catalog.
- **Set default schema** - Allows you to set a default DTD to be used for parsing. It is not possible to set a default XML Schema.
- **Clear default schema** - Allows you to clear the default DTD. The action is available only if there is a DTD set as default.
- **Properties** - Displays the catalog properties.

### Actions Available at Schema Resource Level

For a Documentum xDb (X-Hive/DB) 10 database the actions available at schema resource level in the **Data Source Explorer** view are the following:

-  **Refresh** - Performs a refresh of the selected schema resource.
-  **Open** - Opens the selected schema resource in the editor.
- **Rename** - Allows you to change the name of the selected schema resource.
- **Save As** - Allows you to save the selected schema resource as a file on disk.
-  **Delete** - Removes the selected schema resource from the catalog
- **Copy location** - Allows you to copy to clipboard the URL of the selected schema resource.
- **Set default schema** - Allows you to set the selected DTD to be used as default for parsing. The action is available only for DTD.
- **Clear default schema** - Allows you to unset the selected DTD. The action is available only if the selected DTD is the current default to be used for parsing.

### Actions Available at Library Level

For a Documentum xDb (X-Hive/DB) 10 database the actions available at library level in the **Data Source Explorer** view are the following:

-  **Refresh** - Performs a refresh of the selected library.
- **Add library** - Adds a new library as child of the selected library.
- **Add local catalog** - Adds a catalog to the selected library. By default, only the root-library has a catalog, and all models would be stored there.
-  **Insert XML Instance** - Allows you to add a new XML resource to the selected library. See [Documentum xDb \(X-Hive/DB\) 10 Parser Configuration](#) for more details.
-  **Insert non XML Instance** - Allows you to add a new non XML resource to the selected library.
- **Rename** - Allows you to specify a new name for the selected library.
- **Move** - Allows you to move the selected library to a different one (also available through drag and drop).
-  **Delete** - Removes the selected library.
- **Properties** - Displays the library properties.

### Actions Available at Resource Level

When an XML instance document is added For a Documentum xDb (X-Hive/DB) 10 database the actions available at resource level in the **Data Source Explorer** view are the following:

-  **Refresh** - Performs a refresh of the selected resource.
-  **Open** - Opens the selected resource in the editor.
- **Rename** - Allows you to change the name of the selected resource.
- **Move** - Allows you to move the selected resource in a different library in the database tree (also available through drag and drop).

 **Note:** You can copy or move resources by dragging them from another database catalog.

- **Save As** - Allows you to save the selected binary resource as a file on disk.
-  **Delete** - Removes the selected resource from the library.
- **Copy location** - Allows you to copy to clipboard the URL of the selected resource.
- **Add AS model** - Allows you to add an XML schema to the selected XML resource.
- **Set AS model** - Allows you to set an active AS model for the selected XML resource.
- **Clear AS model** - Allows you to clear the active AS model of the selected XML resource.
- **Properties** - Displays the resource properties. Available only for XML resources.
- **Compare** - This action is available in the contextual menu of two selected resources. Select this action to compare the resources using Diff Files.

Validation of an XML resource stored in an Documentum xDb (X-Hive/DB) 10 database is done against the schema associated with the resource in the database.

### Documentum xDb (X-Hive/DB) 10 Parser Configuration for Adding XML Instances

When an XML instance document is added to a Documentum xDb (X-Hive/DB) 10 connection or library it is parsed with an internal XML parser of the database server. The following options are available for configuring this parser:

- DOM Level 3 parser configuration parameters. More about each parameter can be found here: [DOM Level 3 Configuration](#).
- Documentum xDb (X-Hive/DB) 10 specific parser parameters (for more information please consult the Documentum xDb (X-Hive/DB) 10 manual):
  - **xhive-store-schema** - If checked, the corresponding DTD's or XML schemas are stored in the catalog during validated parsing.
  - **xhive-store-schema-only-internal-subset** - Stores only the internal subset of the document (not any external subset). This options modifies the **xhive-store-schema** one (only has a function when that parameter is set to true, and when DTD's are involved). Select this option this option if you only want to store the internal subset of the document (not the external subset).
  - **xhive-ignore-catalog** - Ignores the corresponding DTD's and XML schemas in the catalog during validated parsing.
  - **xhive-psvi** - Stores **psvi** information on elements and attributes. Documents parsed with this feature turned on, give access to **psvi** information and enable support of data types by XQuery queries.
  - **xhive-sync-features** - Convenience setting. With this setting turned on, parameter settings of `XhiveDocumentIf` are synchronized with the parameter settings of `LSParser`. Note that parameter settings **xhive-psvi** and **schema-location** are always synchronized.

### Troubleshooting

*Cannot save the file. DTD factory class org.apache.xerces.impl.dv.dtd.DTDDVFactoryImpl does not extend from DTDDVFactory*

I am able to access my XML Database in the Data Source Explorer and open files for reading but when I try to save changes to a file, back into the database, I receive the following error: "Cannot save the file. DTD factory class org.apache.xerces.impl.dv.dtd.DTDDVFactoryImpl does not extend from DTDDVFactory." How can I fix this?

### Answer:

xhive.jar contains a MANIFEST.MF with a classpath:

```
Class-Path: core/antlr-runtime.jar core/aspectjrt.jar core/fastutil-shrunked.jar
            core/google-collect.jar core/icu4j.jar core/lucene-regex.jar core/lucene.jar
            core/serializer.jar core/xalan.jar core/xercesImpl.jar
```

Because the driver was configured to use `xhive.jar` directly from the `xDB` installation (where many other jars are located), `core/xercesImpl.jar` from the `xDB` installation directory is loaded even though it is not specified in the list of jars from the data source driver configuration (it is in the classpath from `xhive.jar`'s `MANIFEST.MF`). A simple workaround for this issue is to copy **ONLY** the jar files used in the driver configuration to a separate folder and configure the data source driver to use them from there.

## XQuery and Databases

XQuery is a native XML query language which is useful for querying XML views of relational data to create XML results. It provides the mechanism to efficiently and easily extract information from Native XML Databases (NXD) and relational data as well. The following database systems supported in Oxygen XML Editor offer XQuery support:

- *Native XML Databases:*
  - Berkeley DB XML

- eXist
- MarkLogic (validation support not available)
- Documentum xDb (X-Hive/DB) 10
- *Relational Databases:*
  - IBM DB2
  - Microsoft SQL Server (validation support not available)
  - Oracle (validation support not available)

## Build Queries With Drag and Drop From Data Source Explorer View

When a query is edited in the XQuery editor the XPath expressions can be composed quickly with drag and drop actions from the **Data Source Explorer** view to the editor panel.

1. *Configure the data source* to the relational database.
2. *Configure the connection* to the relational database.
3. Browse the connection in the **Data Source Explorer** view up to the table or column that you want to insert in the query.
4. Drag the table name or the column name to the XQuery editor panel.
5. Drop the table name / column name where the XPath expression is needed.

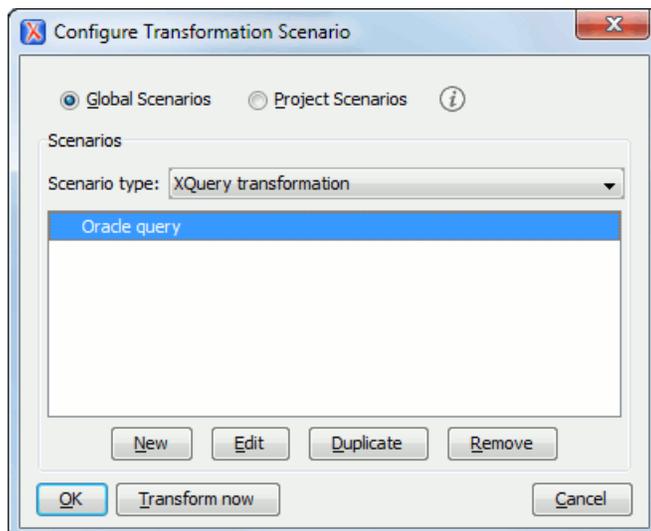
An XPath expression that selects the dragged name will be inserted in the XQuery document at caret position.

## XQuery Transformation

XQuery is designed to retrieve and interpret XML data from any source, whether it is a database or a document. Data is stored in relational databases but often it is required that data is extracted and transformed as XML when interfacing to other components and services. Also, it is an XPath-based querying language supported by most NXD vendors. To perform a query you need an XQuery transformation scenario.

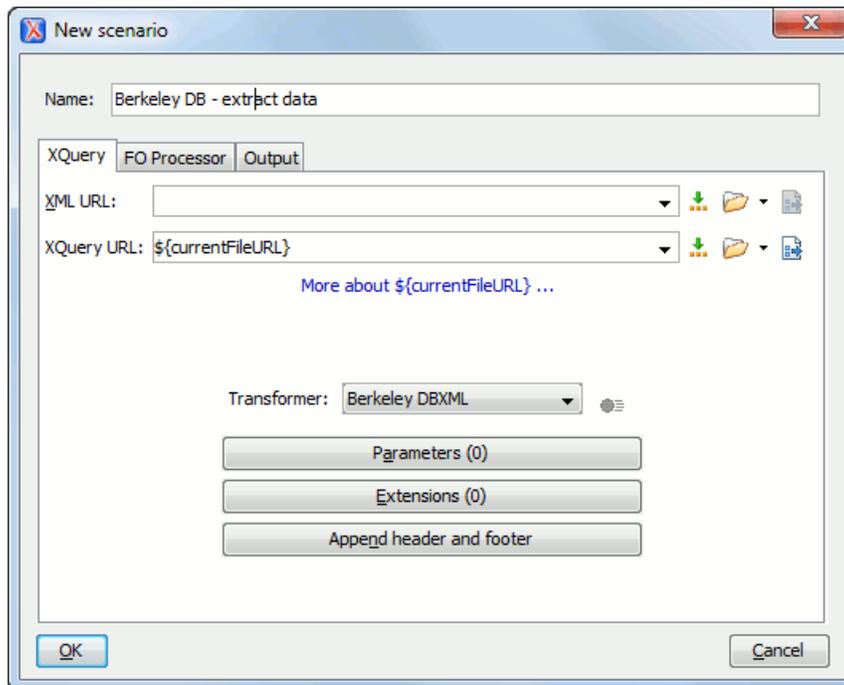
1. Configure a data source for the database.  
The data source can be *relational* or *XML native*.
2. Configure an XQuery transformation scenario.
  - a) Click the  **Configure Transformation Scenario** toolbar button or go to menu **Document > Transformation > Configure Transformation Scenario**.

The dialog for configuring a scenario will be opened.



- b) Click the **New** button of the dialog.

The dialog for editing an XQuery scenario will be opened.



**Figure 313: Edit Scenario Dialog**

- c) Insert the scenario name in the dialog for editing the scenario.  
 d) Choose the database connection in the **Transformer** combo box.  
 e) Configure any other parameters if necessary.

For an XQuery transformation the output tab has an option called **Sequence** which allows you to execute an XQuery in lazy mode. The amount of data extracted from the database is controlled from option *Size limit on Sequence view*. If you choose **Perform FO Processing** in the **FO Processor** tab, the **Sequence** option is ignored.

- f) Click the **OK** button to finish editing the scenario.

Once the scenario is associated with the XQuery file, the query can include calls to specific XQuery functions implemented by that engine. The available functions depend on the target database engine selected in the scenario. For example for eXist and Berkeley DB XML *the content completion assistant* lists the functions supported by that database engine. This is useful for inserting in the query only calls to the supported functions (standard XQuery functions or extension ones).

 **Note:** An XQuery transformation is executed against a Berkeley DB XML server as a transaction using the query transaction support of the server.

### 3. Run the scenario.

To view a more complex value returned by the query that cannot be displayed entirely in the XQuery query result table at the bottom of the Oxygen XML Editor window, for example an XMLTYPE value or a CLOB value, do the following actions:

- right click on that table cell
- select the action **Copy cell** from the popup menu for copying the value in the clipboard
- paste the value where you need it, for example an opened XQuery editor panel of Oxygen XML Editor.

## XQuery Database Debugging

This section describes the procedures for debugging XQuery transformations that are executed against MarkLogic databases and Berkeley DB XML ones.

### Debugging with MarkLogic

To start a debug session against the MarkLogic engine, configure a [MarkLogic data source](#) and a [MarkLogic connection](#). Make sure that the debugging support is enabled in the MarkLogic server which Oxygen XML Editor accesses. On the server-side, debugging must be activated in the XDBC server and in the *Task Server* section of the server control console (the switch *debug allow*). In case the debugging is not activated, the MarkLogic server reports the DBG-TASKDEBUGALLOW error.

The MarkLogic XQuery debugger integrates seamlessly into the [XQuery Debugger perspective](#). If you have a MarkLogic scenario configured for the XQuery file, you can choose to [debug the scenario](#) directly. If not, switch to the XQuery Debugger perspective, open the XQuery file in the editor and select the MarkLogic connection in the XQuery engine selector from the [debug control toolbar](#). For general information about how a debugging session is started and controlled see the [Working with the Debugger](#) section.

In case you want to debug an XQuery file stored on the MarkLogic server, we recommend you to use the **Data Source Explorer** view to open the module and start the debugging session. This improves resolving of any imported modules.

Before starting a debugging session, we recommend you to link the MarkLogic connection with an Eclipse project. To do this, go to the **Data Source Explorer** view and select **Link to project** in the contextual menu of the MarkLogic connection. The major benefit of linking a debugging session with a project is that you can add breakpoints in the XQuery modules stored on the server. You are also able to access these modules from the Eclipse navigator and run debugging sessions starting from them.

Oxygen XML Editor supports collaborative debugging. This feature allows multiple users of Oxygen XML Editor to participate in the same debugging session. You can start a debugging session and from a certain point another user can continue it.

In a MarkLogic debugging session, when you add a breakpoint on a line where the debugger never stops, Oxygen XML Editor displays a warning message. These warnings are displayed for breakpoints you add either in the main XQuery (which you can open locally or from the server), or for breakpoints you add in any XQuery opened from the connection that participates at the debugging session.

### Peculiarities and Limitations of the MarkLogic Debugger

MarkLogic debugger has the following peculiarities and limitations:

- Debugging support is available only for MarkLogic server versions 4.0 or newer;
- For MarkLogic server versions 4.0 or newer there are three XQuery syntaxes which are supported: '0.9-ml' (inherited from MarkLogic 3.2), '1.0-ml' and '1.0';
- The local debugger user interface presents all the debugging steps that the MarkLogic server executes and the results or possible errors of each step;
- All declared variables are presented as strings. The **Value** column of the **Variables** view contains the expression from the variable declaration. It can be evaluated by copying the expression with the **Copy value** action from the contextual menu of [the Variables view](#) and pasting it in [the XWatch view](#);
- No support for [Output to Source Mapping](#);
- No support for [showing the trace](#);
- You can set [Breakpoints](#) in imported modules in one of the following cases:
  - when you open the module from the context of the application server involved in the debugging, using the **data source explorer**;
  - when the debugger automatically opened the modules in the Editor.
- Set no breakpoints in modules from the same server which are not involved in the current debugging session;
- No support for [profiling](#) when an XQuery transformation is executed in the debugger.

## Debugging Queries Which Import Modules

When debugging queries on a MarkLogic database which import modules stored in the database the recommended steps for placing a breakpoint in a module are the following:

1. Start the debugging session with the action  **Debug Scenario** from the **Transformation** toolbar or the  **XQuery Debugger** toolbar button.
2.  **Step into** repeatedly until reaching the desired module.
3. Add the module to the current *project* for easy access.
4. Set breakpoints in the module as needed.
5. *Continue debugging* the query.

When starting a new debugging session make sure that the modules which you will debug are already opened in the editor. This is necessary so that the breakpoints in modules will be considered. Also make sure there are no other opened modules which are not involved in the current debugging session.

## Debugging with Berkeley DB XML

The Berkeley DB XML database added a debugging interface starting with version 2.5. The current version is 2.5.13 and it is supported in Oxygen XML Editor's XQuery Debugger. *The same restrictions and peculiarities* apply for the Berkeley debugger as for the MarkLogic one.

## WebDAV Connection

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This section explains how to work with a WebDAV connection in the **Data Source Explorer** view.

### How to Configure a WebDAV Connection

By default Oxygen XML Editor is configured to contain a WebDAV data source connection called **WebDAV (S)FTP**. Based on this data source you can create a WebDAV connection for browsing and editing data from a database that provides a WebDAV interface. The connection will be available in *the Data Source Explorer view*. The steps for configuring a WebDAV connection are the following:

1. Go to menu **Preferences > Data Sources**.
2. In the **Connections** panel click the **New** button.
3. Enter a unique name for the connection.
4. Select one of the WebDAV data sources in the **Data Source** combo box.
5. Fill-in the connection details:
  - a) Set the URL to the WebDAV repository in the field **WebDAV URL**.
  - b) Set the user name to access the WebDAV repository in the field **User**.
  - c) Set the password to access the WebDAV repository in the field **Password**.
6. Click the **OK** button.

### WebDAV Connection Actions

This section explains the actions that are available on a WebDAV connection in the **Data Source Explorer** view.

#### Actions Available at Connection Level

The contextual menu of a WebDAV connection in the **Data Source Explorer** view contains the following actions:

-  **Configure Database Sources...** - opens the **Data Sources preferences page**. Here you can configure both data sources and connections;
- **Disconnect** - stops the connection;
-  **Import Files...** - allows you to add a new file on the server;

- **New Folder...** - creates a new folder on the server;
-  **Refresh** - performs a refresh of the connection;
-  **Find/Replace in Files...** - Allows you to find and replace text in multiple files from the server.

### Actions Available at Folder Level

The contextual menu of a folder node in a WebDAV connection in the **Data Source Explorer** view contains the following actions:

- **New File** - creates a new file on the server in the current folder;
- **New Folder...** - creates a new folder on the server
- **Import Folders...** - imports folders on the server;
-  **Import Files** - allows you to add a new file on the server in the current folder;
-  **Cut** - removes the current selection and places it in the clipboard;
-  **Copy** - copies the current selection;
- **Rename** - allows you to change the name of the selected folder;
-  **Delete** - removes the selected folder;
-  **Refresh** - refreshes the sub-tree of the selected node;
-  **Find/Replace in Files...** - Allows you to find and replace text in multiple files from the server.

### Actions Available at File Level

The contextual menu of a file node in a WebDAV connection in the **Data Source Explorer** view contains the following actions:

-  **Open** - Allows you to open the selected file in the editor;
-  **Cut** - removes the current selection and places it in the clipboard;
-  **Copy** - copies the current selection;
- **Copy Location** - copies an application specific URL for the selected resource to the clipboard. You can use this URL for various actions like opening or transforming the resources;
- **Rename** - allows you to change the name of the selected file;
-  **Delete** - removes the selected file;
-  **Refresh** - performs a refresh of the selected node;
-  **Properties** - displays the properties of the current file in a dialog;
-  **Find/Replace in Files...** - Allows you to find and replace text in multiple files from the server.

## SharePoint Connection

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This section explains how to work with a SharePoint connection in the **Data Source Explorer** view.

 **Note:** The SharePoint connection is available in the Enterprise edition.

### How to Configure a SharePoint Connection

By default Oxygen XML Editor is configured to contain a SharePoint data source connection called **SharePoint**. Based on this data source you create a SharePoint connection to a SharePoint server. The connection will be available in *the Data Source Explorer view*. The steps for configuring a SharePoint connection are the following:

1. Go to menu **Preferences > Data Sources**.
2. In the **Connections** panel click the **New** button.
3. Enter a unique name for the connection.

4. Select SharePoint in the **Data Source** combo box.
5. Fill-in the connection details:
  - a) Set the URL to the SharePoint repository in the field **SharePoint URL**.
  - b) Set the server domain in the **Domain** field.
  - c) Set the user name to access the SharePoint repository in the **User** field.
  - d) Set the password to access the SharePoint repository in the **Password** field.

## SharePoint Connection Actions

This section explains the actions that are available on a SharePoint connection in the **Data Source Explorer** view.

### Actions Available at Connection Level

The contextual menu of a SharePoint connection in the **Data Source Explorer** view contains the following actions:

-  **Configure Database Sources...** - opens the **Data Sources** [preferences page](#). Here you can configure both data sources and connections;
- **Disconnect** - stops the connection;
- **New Folder...** - creates a new folder on the server;
-  **Import Files...** - allows you to add a new file on the server;
-  **Refresh** - performs a refresh of the connection;
-  **Find/Replace in Files...** - Allows you to find and replace text in multiple files from the server.

### Actions Available at Folder Level

The contextual menu of a folder node in a SharePoint connection in the **Data Source Explorer** view contains the following actions:

- **New File** - creates a new file on the server in the current folder;
- **New Folder...** - creates a new folder on the server
- **Import Folders...** - imports folders on the server;
-  **Import Files** - allows you to add a new file on the server in the current folder;
-  **Cut** - removes the current selection and places it in the clipboard;
-  **Copy** - copies the current selection;
- **Rename** - allows you to change the name of the selected folder;
-  **Delete** - removes the selected folder;
-  **Refresh** - refreshes the sub-tree of the selected node;
-  **Find/Replace in Files...** - Allows you to find and replace text in multiple files from the server.

### Actions Available at File Level

The contextual menu of a file node in a SharePoint connection in the **Data Source Explorer** view contains the following actions:

-  **Open** - Allows you to open the selected file in the editor;
-  **Cut** - removes the current selection and places it in the clipboard;
-  **Copy** - copies the current selection;
- **Copy Location** - copies an application specific URL for the selected resource to the clipboard. You can use this URL for various actions like opening or transforming the resources;
- **Check Out** - checks out the selected document on the server;
- **Check In** - checks in the selected document on the server. This action opens the **Check In** dialog. In this dialog, the following options are available:

- **Minor Version** - increments the minor version of the file on the server;
  - **Major Version** - increments the major version of the file on the server;
  - **Overwrite** - overwrites the latest version of the file on the server;
  - **Comment** - allows you to comment on a file that you check in;
  - **Discard Check Out** - discards the previous checkout operation, making the file available for editing to other users;
  - **Rename** - allows you to change the name of the selected file;
  -  **Delete** - removes the selected file;
  -  **Refresh** - performs a refresh of the selected node;
  -  **Properties** - displays the properties of the current file in a dialog;
  -  **Find/Replace in Files...** - Allows you to find and replace text in multiple files from the server;
-  **Note:** The **Check In**, **Check Out**, and **Discard Check Out** options are available in the Enterprise edition only.

## Configuring BaseX Support

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This section explains how to configure the BaseX XML database support. This BaseX support is composed of two parts:

- Resource management in **Data Source Explorer** view.
- XQuery execution.

### Resource management

Resource management is available by creating an WebDAV connection to the BaseX server.

First of all make sure that the BaseX HTTP Server is started. Information about how to start it can be found [here](#). The configuration file for the HTTP server is named `.basex` and it is found in the BaseX installation directory. This file might help finding out the port on which the HTTP server is running. The default port for BaseX WebDAV is 8984.

To check if everything is working, you can try opening an WebDAV URL inside a browser and see if it works. For example the following URL gets an document from a database named TEST:  
`http://localhost:8984/webdav/TEST/etc/factbook.xml`

Once you are sure that the BaseX WebDAV service is working, you can configure the WebDAV connection in Oxygen XML Editor as describe in [How to Configure a WebDAV Connection](#) on page 627. The WebDAV URL should look something like this: `http://{hostname}:{port}/webdav/`. If the BaseX server is running on your own machine and it has the default configuration, the data required by the WebDAV connection is:

- WebDAV URL: `http://localhost:8984/webdav`.
- User: `admin`.
- Password: `admin`.

Once the WebDAV connection is created it will be available for browsing in [the Data Source Explorer view](#).

### XQuery execution

XQuery execution is possible through an XQJ connection.

#### BaseX XQJ Data Source

First of all you will have to create an XQJ data source as described in [How to Configure an XQJ Data Source](#) on page 548. The BaseX XQJ API-specific files that must be added in the configuration dialog are `xqj-api-1.0.jar`, `xqj2-0.1.0.jar` and `basex-xqj-1.2.3.jar` (the version names of the JAR file may differ). These libraries can be downloaded from [here](#). As an alternative, the libraries can also be found in BaseX installation directory, in the `lib` subdirectory.

## BaseX XQJ Connection

The next step is to create an XQJ connection as described in [How to Configure an XQJ Connection](#) on page 548.

For a default BaseX configuration, the following connection details apply (please modify them when necessary):

- *Port*: 1984
- *serverName*: localhost
- *user*: admin
- *password*: admin

## XQuery execution

Now that the XQJ connection is configured, just open in Oxygen XML Editor the XQuery file you wish to execute and create a *Transformation Scenario* as described in [XQuery Transformation](#) on page 520. In the **Transformer** combo described [in the scenario dialog](#), select the name of the XQJ connection you have just created. Apply the create scenario and the XQuery will be executed.



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# Chapter 18

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## Importing Data

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**Topics:**

- [Introduction](#)
- [Import from Database](#)
- [Import from MS Excel Files](#)
- [Import from HTML Files](#)
- [Import from Text Files](#)

This chapter describes how you can import data stored in text format, Excel sheet, or relational database tables, into XML documents.

## Introduction

Computer systems and databases contain data in incompatible formats and one of the most time-consuming activities has been to exchange data between these systems. Converting the data to XML can greatly reduce complexity and create data that can be read by different types of applications.

This is why Oxygen XML Editor offers support for importing text files, MS Excel files, Database Data, and HTML files into XML documents. The XML documents can be further converted into other formats using the *Transform features*.

## Import from Database

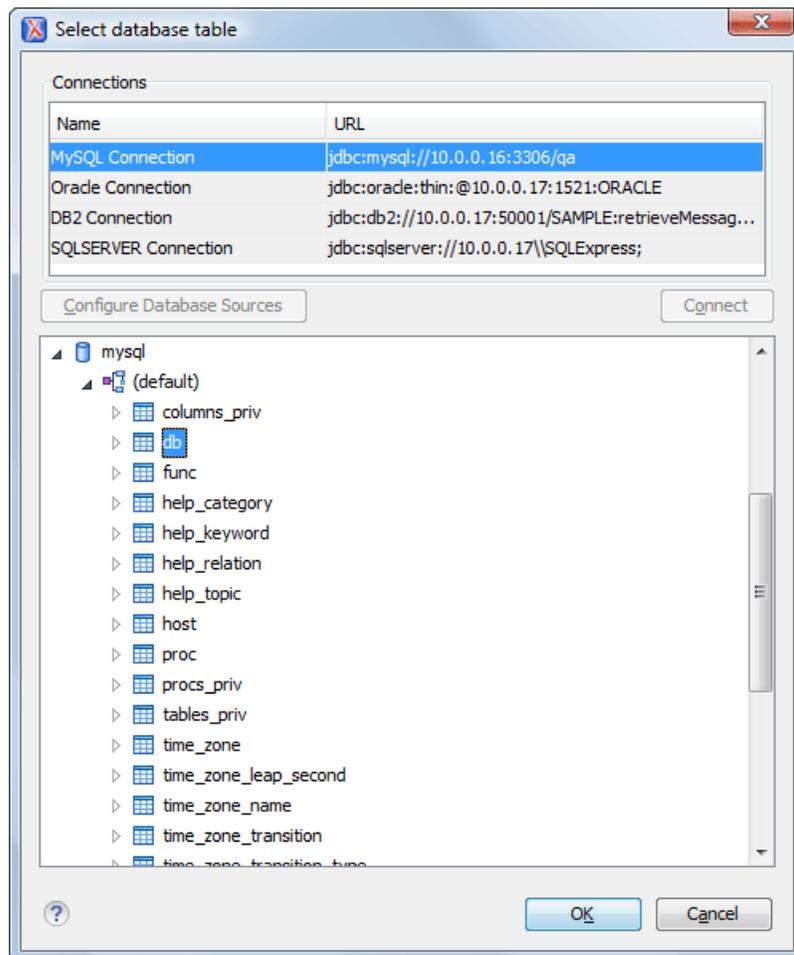
This section explains how to import data from a database into Oxygen XML Editor.

### Import Table Content as XML Document

The steps for importing the data from a relational database table are the following:

1. Go to menu **File > Import > Database Data...**

Clicking this action opens a dialog with all the defined database connections:

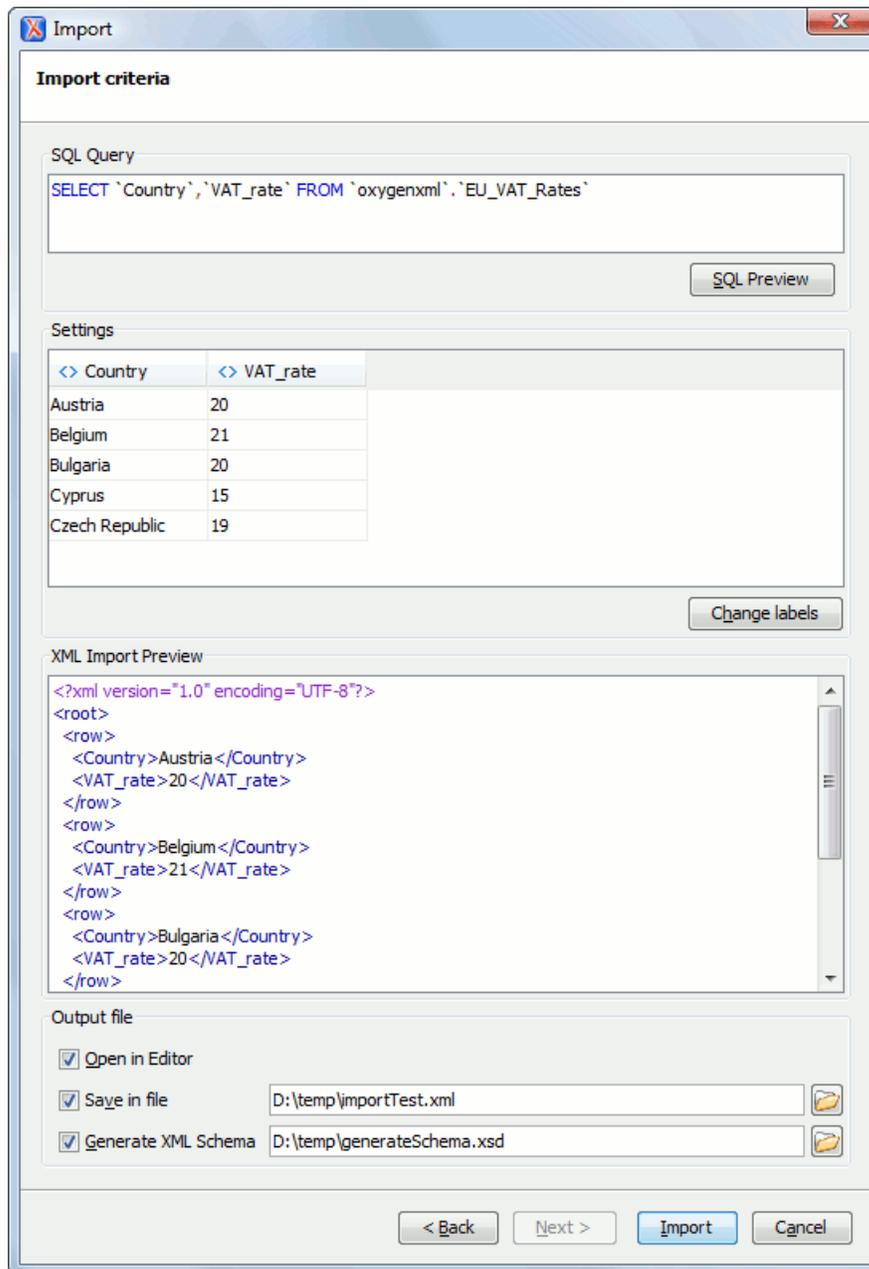


**Figure 314: Select Database Table Dialog**

2. Select the connection to the database that contains the data.  
Only connections configured on relational data sources can be used to import data.

3. If you want to edit, delete or add a data source or connection click on the **Configure Database Sources** button. The **Preferences/Data Sources** option page is opened.
4. Click **Connect**.
5. From the catalogs list, click on a schema and choose the required table.
6. Click the **OK** button.

The **Import Criteria** dialog opens next, with a default query string in the **SQL Query** pane:



**Figure 315: Import from Database Criteria Dialog**

The dialog contains the following items:

- **SQL Preview** - If the **SQL Preview** button is pressed, it shows the labels that are used in the XML document and the first five lines from the database into the **Import settings** panel. All data items in the input are converted by default to element content, but this can be overridden by clicking the individual column headers. Clicking once on a column header (ex **Heading0**) causes the data from this column to be used as attribute values of the

row elements. Click a second time and the column's data is ignored when generating the XML file. You can cycle through these three options by continuing to click the column header. The following symbols decorate the column header to indicate the type of content that column is converted to:

- <> symbols for data columns converted to element content
  - = symbol for data columns converted to attribute content
  - x symbol for ignored data
  - **Change labels** - This button opens a new dialog, allowing you to edit the names of the root and row elements, change the XML name and the conversion criterion. The XML names can be edited by double-clicking the desired item and entering the required label. The conversion criterion can also be modified by selecting from the drop-down list **ELEMENT**, **ATTRIBUTE**, or **SKIPPED**.
  - **Open in editor** - If checked, the new XML document created from the imported text file is open in the editor.
  - **Save in file** - If checked, the new XML document is saved at the specified path.
-  **Note:** If only **Open in editor** is checked, the newly created document is open in the editor, but as an unsaved file.
- **Generate XML Schema** - Allows you to specify the path of the generated XML Schema file.

#### 7. Click the **SQL Preview** button.

The **SQL Query** string is editable. You can specify which fields are considered.

Use aliases if the following are true:

- the query string represents a join operation of two or more tables
- columns selected from different tables have the same name

The use of aliases avoids the confusion of two columns being mapped to the same name in the result document of the importing operation.

```
select s.subcat_id,
       s.nr as s_nr,
       s.name,
       q.q_id,
       q.nr as q_nr,
       q.q_text
from faq.subcategory s,
     faq.question q
where ...
```

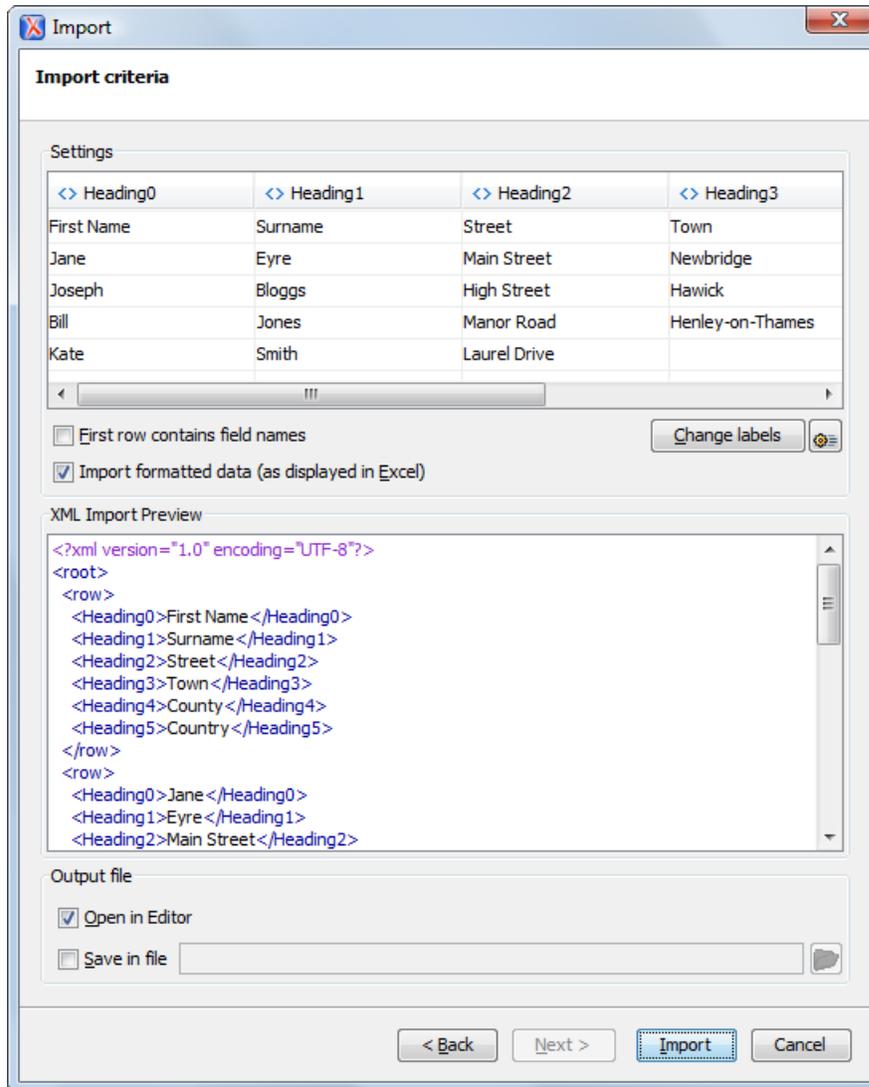
The input data is displayed in a tabular form in the **Import Settings** panel. The **XML Import Preview** panel contains an example of what the generated XML looks like.

## Convert Table Structure to XML Schema

The structure of a table from a relational database can be imported in Oxygen XML Editor as an XML Schema. This feature is activated by the **Generate XML Schema** option from the **Import criteria** dialog used in [the procedure for importing table data](#) as an XML instance document.

## Import from MS Excel Files

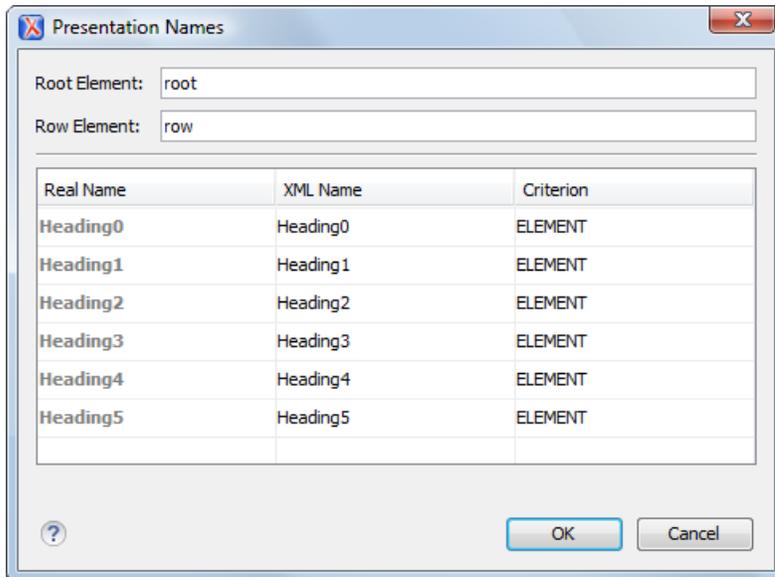
Oxygen XML Editor offers support for importing MS Excel Files. To import Excel files, go to **File > Import > MS Excel file** and in the **Import** dialog box select the file you want to import. In the **Available Sheets** section of this dialog, the sheets of the document you are importing are presented. Select a sheet and click next to move on to the second **Import** dialog box.



**Figure 316: The "Import" Dialog Box - Import Criteria**

The **Settings** section presents the data from the Excel sheet in a tabular form. It also contains the following options:

- **First row contains field names** - uses the content from the first row to name the columns;
- **Import formatted data (as displayed in Excel)** - keeps the Excel styling;
- **Change labels** - opens the **Presentation Names** dialog box;



**Figure 317: The "Presentation Names" Dialog Box**

The following options are available in this dialog:

- **Root Element** - allows you to edit the name of the Root element;
- **Row Element** - allows you to edit the name of the Row element;
- **Real Name** - contains the original name of each Heading;
- **XML Name** - allows you to modify the names of the Headings;
- **Criterion** - allows you to transform the Heading elements to attributes of the Root element.
- **Import settings** - opens the XML / Import preferences page.

The **XML Import Preview** section displays the Excel document in an XML format.

The **Output File** section contains the following options:

- **Open in Editor** - opens the imported document in the Editor;
- **Save in File** - saves the imported document in the specified location.

When you finish configuring the options in these dialogs, click **Import**.

## Import from MS Excel 2007-2010 (.x/sx)

You need to add additional JAR libraries to Oxygen XML Editor To import XML from Excel 2007-2010 (.xlsx) documents.

First you need to download the latest stable release of the Apache POI project from <http://poi.apache.org/download.html>.

From the downloaded project locate and add the following .jar files in the lib directory of the installation folder of Oxygen XML Editor :

- dom4j-1.6.1.jar ;
- poi-ooxml-3.8-20120326.jar ;
- poi-ooxml-schemas-3.8-20120326.jar ;
- xmlbeans-2.3.0.jar .

## Import from HTML Files

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HTML is one of the formats that can be imported as an XML document. The steps needed are:

1. Go to menu **File > Import > HTML File ...**  
The **Import HTML** dialog is displayed.
2. Enter the URL of the HTML document.
3. Select the type of the result XHTML document:
  - XHTML 1.0 Transitional
  - XHTML 1.0 Strict
4. Click the **OK** button.

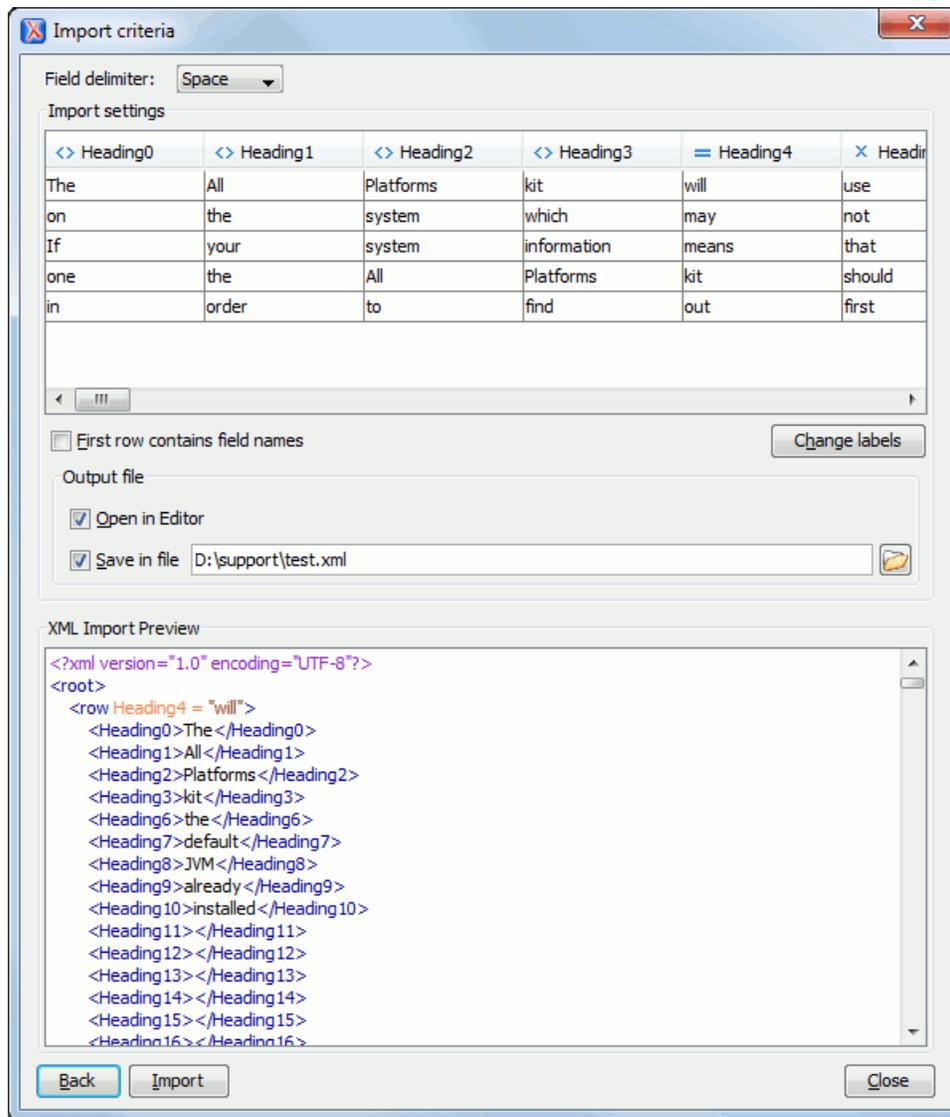
The resulted document is an XHTML file containing a DOCTYPE declaration referring to the XHTML DTD definition on the Web. The parsed content of the imported file is transformed to XHTML Transitional or XHTML Strict depending on what radio button you chose when performing the import operation.

## Import from Text Files

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The steps for importing a text file into an XML file are the following:

1. Go to menu **File > Import > Text File...**  
The **Select text file** dialog box is displayed.
2. Select the URL of the text file.
3. Select the encoding of the text file.
4. Click the **OK** button.  
The **Import Criteria** dialog box is displayed:



**Figure 318: Import from text file**

The input data is displayed in a tabular form. The **XML Import Preview** panel contains an example of what the generated XML document looks like. The names of the XML elements and the transformation of the first five lines from the text file are displayed in the **Import settings** section. All data items in the input are converted by default to element content, but this can be overridden by clicking the individual column headers. Clicking once a column header causes the data from this column to be used as attribute values of the row elements. Click the second time and the column's data is ignored when generating the XML file. You can cycle through these three options by continuing to click the column header. The following symbols decorate the column header to indicate the type of content that column is converted to:

- <> symbols for data columns converted to element content
- = symbol for data columns converted to attribute content
- x symbol for ignored data

5. Select the field delimiter for the import settings:

- Comma;
- Semicolon;
- Tab;
- Space;

- Pipe.

6. Set other optional settings of the conversion.

The dialog offers the following settings:

- **First row contains field names** - If the option is enabled, you will notice that the table has moved up. The default column headers are replaced (where such information is available) by the content of the first row. In other words, the first row is interpreted as containing the field names. The changes are also visible in the preview of the XML document. To return to default settings (where the first row is interpreted as containing data and not fields names), simply uncheck the option.
- **Change labels** - This button opens a new dialog, allowing you to edit the names of the root and row elements, change the XML name and the conversion criterion.

The XML names can be edited by double-clicking the desired item and entering the required label. The conversion criterion can also be modified by selecting one of the drop-down list options: **ELEMENT**, **ATTRIBUTE**, or **SKIPPED**.

- **Open in editor** - If checked, the new XML document created from the imported text file is opened in the editor.
- **Save in file** - If checked, the new XML document is saved at the specified path.

 **Note:** If only **Open in editor** is checked, the newly created document is opened in the editor, but as an unsaved file.



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# Chapter 19

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## Content Management System (CMS) Integration

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### Topics:

- [Integration with Documentum \(CMS\)](#)

This chapter explains how you can integrate Oxygen XML Editor with a content management system (CMS), to edit the data stored in the CMS directly in Oxygen XML Editor. Only the integration with the Documentum (CMS) is explained but other CMSs can use the [plugin support](#) for similar integrations.

## Integration with Documentum (CMS)

Oxygen XML Editor provides support for browsing and managing Documentum repositories in the Data Source Explorer. You can easily create new resources on the repository, copy and move them using contextual actions or the drag and drop support, edit and transform the documents in the editor. The operations that can be performed on repository resources are described in the [Documentum \(CMS\) actions](#) section.

Oxygen XML Editor supports Documentum (CMS) version 6.5 or later with *Documentum Foundation Services 6.5* or later installed.



### Attention:

It is recommended to use the latest 1.6.x Java version. It is possible that the Documentum (CMS) support will not work properly if you use other Java versions.

## Configure Connection to Documentum Server

This section explains how to configure a connection to a Documentum server.

### How to Configure a Documentum (CMS) Data Source

Available in the Enterprise edition only.

To configure a Documentum (CMS) data source you need the Documentum Foundation Services Software Development Kit (*DFS SDK*) corresponding to your server version. The *DFS SDK* can be found in the Documentum (CMS) server installation kit or it can be downloaded from [EMC Community Network](#).



**Note:** The *DFS SDK* can be found in the form of an archive named, for example, *emc-dfs-sdk-6.5.zip* for Documentum (CMS) 6.5.

1. Go to menu **Preferences > Data Sources**.  
The **Preferences** dialog is opened at the **Data Sources** panel.
2. In the **Data Sources** panel click the **New** button.
3. Enter a unique name for the data source.
4. Select **Documentum (CMS)** from the driver type combo box.
5. Press the **Choose DFS SDK Folder** button.
6. Select the folder where you have unpacked the *DFS SDK* archive file.

If you have indicated the correct folder the following Java libraries (jar files) will be added to the list (some variation of the library names is possible in future versions of the *DFS SDK*):

- lib/java/emc-bpm-services-remote.jar
- lib/java/emc-ci-services-remote.jar
- lib/java/emc-collaboration-services-remote.jar
- lib/java/emc-dfs-rt-remote.jar
- lib/java/emc-dfs-services-remote.jar
- lib/java/emc-dfs-tools.jar
- lib/java/emc-search-services-remote.jar
- lib/java/ucf/client/ucf-installer.jar
- lib/java/commons/\*.jar (multiple jar files)
- lib/java/jaxws/\*.jar (multiple jar files)
- lib/java/utills/\*.jar (multiple jar files)



**Note:** If for some reason the jar files are not found, you can add them manually by using the **Add Files** and **Add Recursively** buttons and navigating to the lib/java folder from the *DFS SDK*.

7. Click the **OK** button to finish the data source configuration.

## How to Configure a Documentum (CMS) Connection

Available in the Enterprise edition only.

The steps for configuring a connection to a Documentum (CMS) server are the following:

1. Go to menu **Preferences > Data Sources**.
2. In the **Connections** panel click the **New** button.
3. Enter a unique name for the connection.
4. Select one of the previously configured Documentum (CMS) data sources in the **Data Source** combo box.
5. Fill-in the connection details:
  - **URL** - The URL to the Documentum (CMS) server: `http://<hostname>:<port>`
  - **User** - The user name to access the Documentum (CMS) repository.
  - **Password** - The password to access the Documentum (CMS) repository.
  - **Repository** - The name of the repository to log into.
6. Click the **OK** button to finish the configuration of the connection.

### Known Issues

The following are known issues with the Documentum (CMS):

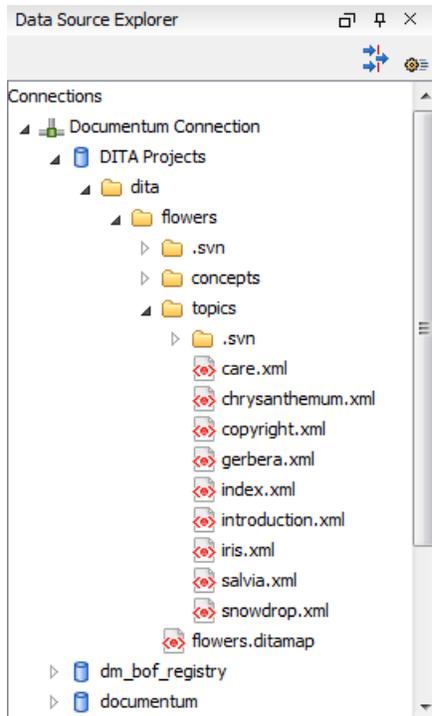
1. Please note that at the time of this implementation there is a problem in the UCF Client implementation for MAC OS X which prevents you from viewing or editing XML documents from the repository. The UCF Client is the component responsible for file transfer between the repository and the local machine. This component is deployed automatically from the server.
2. In order for the Documentum driver to work faster, you need to specify to the JVM to use a weaker random generator, instead of the very slow native implementation. This can be done by modifying in the Oxygen XML Editor startup scripts (or in the \*.vmoptions file) the system property:

```
-Djava.security.egd=file:/dev/./urandom
```

## Documentum (CMS) Actions in the Data Source Explorer View

Oxygen XML Editor allows you to browse the structure of a Documentum repository in the **Data Source Explorer** view and perform various operations on the repository resources.

You can drag and drop folders and resources to other folders to perform move or copy operations with ease. If the drag and drop is between resources (drag the child item to the parent item) you can create a relationship between the respective resources.



**Figure 319: Browsing a Documentum repository**

### Actions Available on Connection

The actions available on a Documentum (CMS) connection in the **Data Source Explorer** view are the following:

-  **Configure Database Sources** - Opens the *Data Sources preferences page* where you can configure both data sources and connections.
- **New Cabinet** - Creates a new cabinet in the repository. The cabinet properties are:
  - **Type** - The type of the new cabinet (default is **dm\_cabinet**).
  - **Name** - The name of the new cabinet.
  - **Title** - The title property of the cabinet.
  - **Subject** - The subject property of the cabinet.
-  **Refresh** - Refreshes the connection.

### Actions Available on Cabinets / Folders

The actions available on a Documentum (CMS) cabinet in the **Data Source Explorer** view are the following:

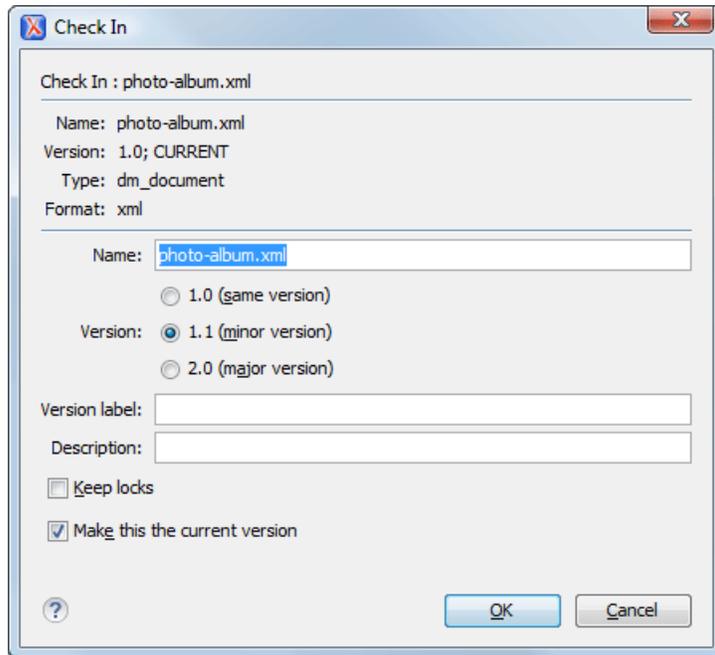
-  **New Folder** - Creates a new folder in the current cabinet / folder. The folder properties are the following:
  - **Path** - Shows the path where the new folder will be created.
  - **Type** - The type of the new folder (default is **dm\_folder**).
  - **Name** - The name of the new folder.
  - **Title** - The title property of the folder.
  - **Subject** - The subject property of the folder.
-  **New Document** - Creates a new document in the current cabinet / folder. The document properties are the following:
  - **Path** - Shows the path where the new document will be created.
  - **Name** - The name of the new document.
  - **Type** - The type of the new document (default is **dm\_document**).

- **Format** - The document content type format.
- **Import** - Imports local files / folders in the selected cabinet / folder of the repository. Actions available in the import dialog:
  - **Add Files** - Shows a file browse dialog and allows you to select files to add to the list.
  - **Add Folders** - Shows a folder browse dialog that allows you to select folders to add to the list. The subfolders will be added recursively.
  - **Edit** - Shows a dialog where you can change the properties of the selected file / folder from the list.
  - **Remove** - Removes the selected files / folders from the list.
- **Rename** - Changes the name of the selected cabinet / folder.
- **Copy** - Copies the selected folder to a different location in the tree (available only upon folders). This action can also be performed with drag and drop while holding the **(Ctrl)** key pressed.
- **Move** - Moves the selected folder to a different location in the tree (available only upon folders). This action can also be performed with drag and drop.
- **✕ Delete** - Deletes the selected cabinet / folder from the repository. The following options are available:
  - **Folder(s)** - Allows you to delete only the selected folder or to delete recursively the folder and all subfolders and objects.
  - **Version(s)** - Allows you to specify what versions of the resources will be deleted.
  - **Virtual document(s)** - Here you can specify what happens when virtual documents are encountered. They can be either deleted either by themselves or together with their descendants.
- **🔄 Refresh** - Performs a refresh of the selected node's subtree.
- **📄 Properties** - Displays the list of properties of the selected cabinet / folder.

### Actions Available on Resources

The actions available on a Documentum (CMS) resource in the **Data Source Explorer** view are the following:

- **📄 Edit** - Checks out (if not already checked out) and opens the selected resource in the editor.
- **Edit with** - Checks out (if not already checked out) and opens the selected resource in the specified editor / tool.
- **Open (Read-only)** - Opens the selected resource in the editor. The resources are marked as read-only in the editor using a lock icon on the file tab. If you want to edit those resources, enable the *Can edit read only files* option.
- **Open with** - Opens the selected resource in the specified editor / tool.
- **Check Out** - Checks out the selected resource from the repository. The action is not available if the resource is already checked out.
- **Check In** - Checks in the selected resource (commits changes) into the repository. The action is only available if the resource is checked out.



**Figure 320: Check In Dialog**

The following resource properties are available:

- **Name** - The resource name in the repository.
- **Version** - Allows you to choose what version the resource will have after being checked in.
- **Version label** - The label of the updated version.
- **Description** - An optional description of the resource.
- **Keep Locks** - When this option is enabled, the updated resource is checked into the repository but it also keeps it locked.
- **Make this the current version** - Makes the updated resource the current version (will have the *CURRENT* version label).
- **Cancel Checkout** - Cancels the checkout process and loses all modifications since the checkout. Action is only available if the resource is checked out.
- **Export** - Allows you to export the resource and save it locally.
- **Rename** - Changes the name of the selected resource.
- **Copy** - Copies the selected resource in a different location in the tree. Action is not available on virtual document descendants. This action can also be performed with drag and drop while holding the **(Ctrl)** key pressed.
- **Move** - Moves the selected resource in a different location in the tree. Action is not available on virtual document descendants and on checked out resources. This action can also be performed with drag and drop.
- **✕ Delete** - Deletes the selected resource from the repository. Action is not available on virtual document descendants and on checked out resources.
- **Add Relationship** - Adds a new relationship for the selected resource. This action can also be performed with drag and drop between resources.
- **Convert to Virtual Document** - Allows you to convert a simple document to a virtual document. Action is available only if the resource is a simple document.
- **Convert to Simple Document** - Allows you to convert a virtual document to a simple document. Action is available only if the resource is a virtual document with no descendants.
- **Copy location** - Allows you to copy to clipboard an application-specific URL for the resource which can then be used for various actions like opening or transforming the resources.
- **🔄 Refresh** - Performs a refresh of the selected resource.
- **📄 Properties** - Displays the list of properties of the selected resource.

## Transformations on DITA Content from Documentum (CMS)

Oxygen XML Editor comes with the DITA Open Toolkit which is able to transform a DITA map to various output formats. However DITA Open Toolkit requires local DITA files so first you need to check out a local version of your DITA content. Once you have a local version of a DITA map just load it in *the DITA Maps Manager view* and run one of the DITA transformations that are predefined in Oxygen XML Editor or a customization of such a predefined DITA transformation.



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# Chapter 20

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## Composing Web Service Calls

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### Topics:

- [Overview](#)
- [Composing a SOAP Request](#)
- [Testing Remote WSDL Files](#)
- [The UDDI Registry Browser](#)
- [Generate WSDL Documentation](#)

This chapter covers the following topics:

- compose a SOAP request based on a WSDL file;
- send the request to a server;
- generate HTML documentation for WSDL files.

## Overview

Web Services Description Language (WSDL) is an XML format for describing network services as a set of endpoints operating on messages containing either document-oriented or procedure-oriented information.

The WSDL files contain information about the published services, like the name, the message types, and the bindings. Oxygen XML Editor is offering a way to edit the WSDL files that is similar to editing XML, with content completion assistant and validation driven by a mix of WSDL and SOAP schemas. Oxygen XML Editor supports WSDL version 1.1 and 2.0 and SOAP versions 1.1 and 1.2. That means that in the location where a SOAP extension can be inserted the content completion assistant offers elements from both SOAP 1.1 and SOAP 1.2. Validation of SOAP requests is executed first against a SOAP 1.1 schema and then against a SOAP 1.2 schema. In addition to validation against the XSD schemas, Oxygen XML Editor also checks if the WSDL file conforms with the WSDL specification (available only for WSDL 1.1 and SOAP 1.1).

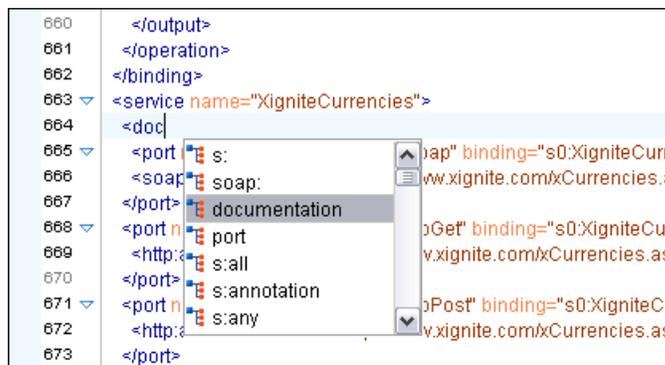
After you edit and validate your Web service descriptor against a mix of the XML Schemas for WSDL and SOAP, it is easy to check if the defined SOAP messages are accepted by the remote Web Services server using Oxygen XML Editor's **WSDL SOAP Analyser** integrated tool.

## Composing a SOAP Request

To design, compose, and test Web service calls in Oxygen XML Editor follow these steps:

1. *Create a new document* or *open an existing document* of type WSDL.
2. Design the Web Service descriptor in the WSDL editor.

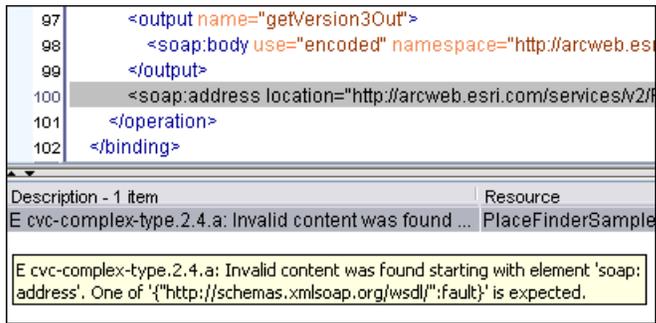
The *content completion* is driven by a mix of the WSDL and SOAP schemas. You do not need to specify the schema location for the WSDL standard namespaces because Oxygen XML Editor comes with these schemas and uses them by default to assist the user in editing Web Service descriptors.



**Figure 321: Content completion for WSDL documents**

3. While editing the Web-Services descriptors *check their conformance* to the WSDL and SOAP schemas.

In the following example you can see how the errors are reported.

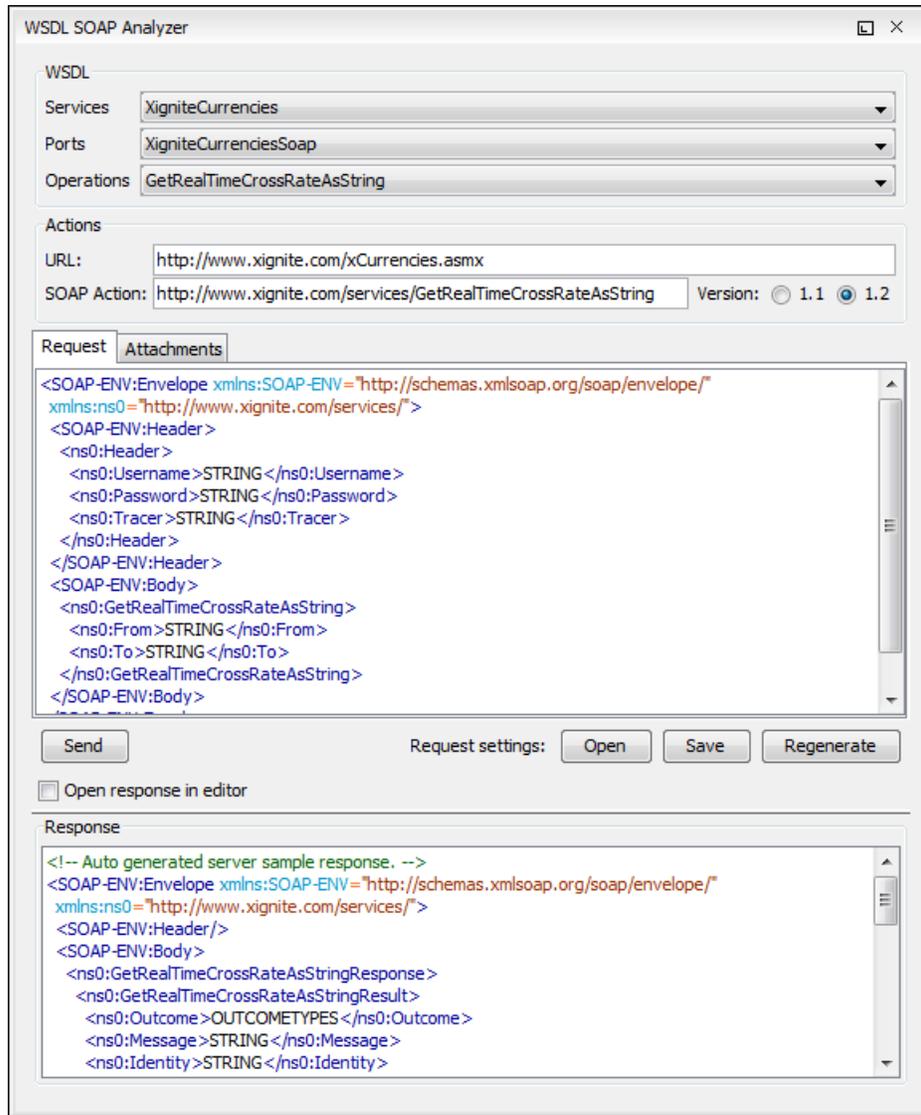


**Figure 322: Validating a WSDL file**

4. Check if the defined messages are accepted by the Web Services server.

Oxygen XML Editor is providing two ways of testing, one for the currently edited WSDL file and other for the remote WSDL files that are published on a web server. For the currently edited WSDL file the WSDL SOAP Analyser tool can be opened by:

- pressing the toolbar button  **WSDL SOAP Analyser**
- going to the menu item **Document > Tools > WSDL SOAP Analyser**
- going to submenu **Open with > WSDL SOAP Analyser** of the **Project** view contextual menu



**Figure 323: WSDL SOAP Analyzer**

This dialog contains a SOAP analyser and sender for Web Services Description Language file types. The analyser fields are:

- **Services** - The list of services defined by the WSDL file.
- **Ports** - The ports for the selected service.
- **Operations** - The list of available operations for the selected service.
- **Action URL** - Shows the script that serves the operation.
- **SOAP Action** - Identifies the action performed by the script.
- **Version** - Choose between 1.1 and 1.2. The SOAP version is selected automatically depending on the selected port.
- **Request Editor** - It allows you to compose the web service request. When an action is selected, Oxygen XML Editor tries to generate as much content as possible for the SOAP request. The envelope of the SOAP request has the correct namespace for the selected SOAP version, that is *http://schemas.xmlsoap.org/soap/envelope/* for SOAP 1.1 or *http://www.w3.org/2003/05/soap-envelope* for SOAP 1.2. Usually you just have to change few values in order for the request to be valid. The content completion assistant is available for this editor and is driven by the schema that defines the type of the current message. While selecting different operations, Oxygen XML Editor remembers the modified request for each one. You can press the **Regenerate** button in order to overwrite your modifications for the current request with the initial generated content.

- **Attachments List** - You can define a list of file URLs to be attached to the request.
- **Response Area** - Initially it displays an auto generated server sample response so you can have an idea about how the response looks like. After pressing the **Send** button, it presents the message received from the server in response to the Web Service request. It may show also error messages. In case the response message contains attachments, Oxygen XML Editor prompts you to save them, then tries to open them with the associated system application.
- **Errors List** - There may be situations in which the WSDL file is respecting the WSDL XML Schema, but it fails to be valid for example in the case of a message that is defined by means of an element that is not found in the types section of the WSDL. In such a case, the errors are listed here. This list is presented only when there are errors.
- **Send Button** - Executes the request. A status dialog is shown when Oxygen XML Editor is connecting to the server.

The testing of a WSDL file is straight-forward: click the WSDL analysis button, then select the service, the port, and the operation. The editor generates the skeleton for the SOAP request. You can edit the request, eventually attach files to it and send it to the server. Watch the server response in the response area. You can find more details in the [Testing Remote WSDL Files](#) section.

 **Note:** SOAP requests and responses are automatically validated in the **WSDL SOAP Analyser** using the XML Schemas specified in the WSDL file.

5. Save the request derived from the Web Service descriptor.  
Once defined, a request derived from a Web Service descriptor can be saved with the **Save** button to a Web Service SOAP Call (WSSC) file for later reuse. In this way, you save time in configuring the URLs and parameters.
6. Open the result of a Web Service call in an editor panel.  
In this way, you can save the SOAP request or process it further.

## Testing Remote WSDL Files

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To open and test a remote WSDL file the steps are the following:

1. Go to menu **Tools > WSDL SOAP Analyser ...**.
2. On the **WSDL File** tab enter the URL of the remote WSDL file.

You enter the URL:

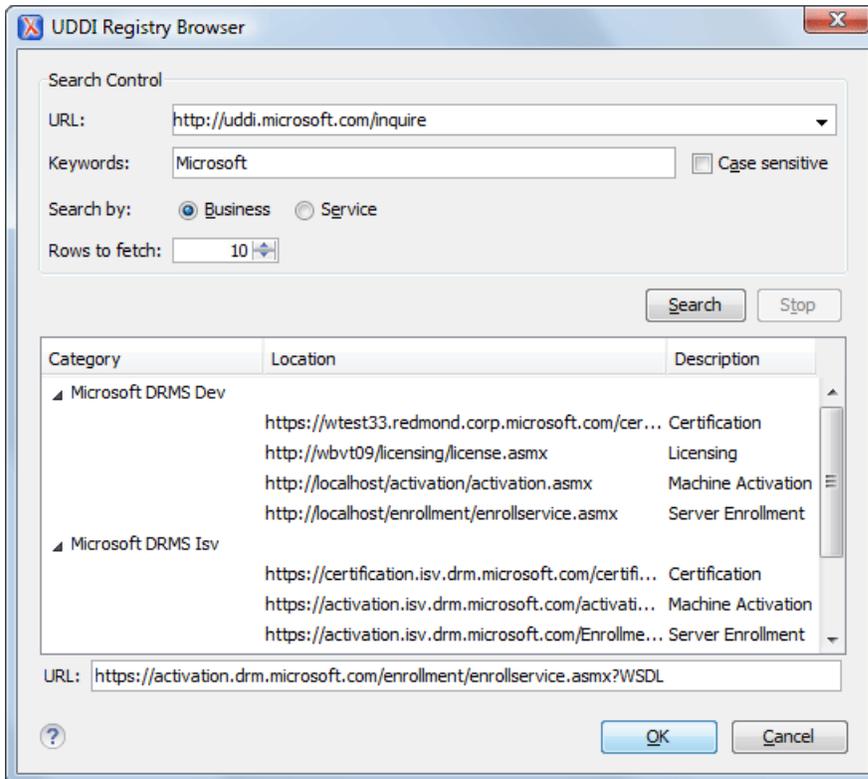
- by typing
- by browsing the local file system
- by browsing a remote file system
- by browsing [a UDDI Registry](#)

3. Press the **OK** button.  
This will open the **WSDL SOAP Analyser** tool. In the **Saved SOAP Request** tab you can open directly a previously saved Web Service SOAP Call (WSSC) file thus skipping the analysis phase.

## The UDDI Registry Browser

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Pressing the  button in the **WSDL File Opener** dialog (menu **Tools > WSDL SOAP Analyser**) opens the **UDDI Registry Browser** dialog.



**Figure 324: UDDI Registry Browser dialog**

The fields of the dialog are the following:

- **URL** - Type the URL of an UDDI registry or choose one from the default list.
- **Keywords** - Enter the string you want to be used when searching the selected UDDI registry for available Web services.
- **Rows to fetch** - The maximum number of rows to be displayed in the result list.
- **Search by** - You can choose to search either by company or by provided service.
- **Case sensitive** - When checked, the search takes into account the keyword case.
- **Search** - The WSDL files that matched the search criteria are added in the result list.

When you select a WSDL from the list and click the **OK** button, the **UDDI Registry Browser** dialog is closed and you are returned to the WSDL File Opener dialog.

## Generate WSDL Documentation

To generate documentation for a WSDL document use the action from menu **Tools > Generate Documentation > WSDL Documentation**.

The WSDL documentation dialog can be also opened from the **Project** tree contextual menu: **Generate Documentation > WSDL Documentation...**

The fields of the dialog are the following:

- **Input URL** - Type the URL of the file or click on the browse button and select it from the file system.
- **Output file (HTML)** - In this field you will have to enter the path and the filename where the documentation will be generated.
- **Open in Browser/System Application** - Select this option if you want the result to be opened in the system application associated with that file type.



**Note:** If you already set the **Default Internet browser** option in the **Global** preferences page, it takes precedence over the default system application settings.

- **Generate** - Press this button for generating the documentation of the WSDL file.



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# Chapter 21

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## Digital Signatures

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**Topics:**

- [Overview](#)
- [Canonicalizing Files](#)
- [Certificates](#)
- [Signing Files](#)
- [Verifying the Signature](#)

This chapter explains how to apply and verify digital signatures on XML documents.

## Overview

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Digital signatures are widely used as security tokens, not just in XML. A digital signature provides a mechanism for assuring integrity of data, the authentication of its signer, and the non-repudiation of the entire signature to an external party:

- A digital signature must provide a way to verify that the data has not been modified or replaced to ensure integrity.
- The signature must provide a way to establish the identity of the data's signer for authentication.
- The signature must provide the ability for the data's integrity and authentication to be provable to a third party for non-repudiation.

A public key system is used to create the digital signature and it's also used for verification. The signature binds the signer to the document because digitally signing a document requires the originator to create a hash of the message and then encrypt that hash value with his own private key. Only the originator has that private key and he is the only one that can encrypt the hash so that it can be unencrypted using his public key. The recipient, upon receiving both the message and the encrypted hash value, can decrypt the hash value, knowing the originator's public key. The recipient must also try to generate the hash value of the message and compare the newly generated hash value with the unencrypted hash value received from the originator. If the hash values are identical, it proves that the originator created the message, because only the actual originator could encrypt the hash value correctly.

XML Signatures can be applied to any digital content (data object), including XML (see W3C Recommendation, [XML-Signature Syntax and Processing](#)). An XML Signature may be applied to the content of one or more resources:

- enveloped or enveloping signatures are applied over data within the same XML document as the signature
- detached signatures are applied over data external to the signature element; the signature is "detached" from the content it signs. This definition typically applies to separate data objects, but it also includes the instance where the signature and data object reside within the same XML document but are sibling elements.

The XML Signature is a method of associating a key with referenced data. It does not normatively specify how keys are associated with persons or institutions, nor the meaning of the data being referenced and signed.

The original data is not actually signed. Instead, the signature is applied to the output of a chain of canonicalization and transformation algorithms, which are applied to the data in a designated sequence. This system provides the flexibility to accommodate whatever "normalization" or desired preprocessing of the data that might be required or desired before subjecting it to being signed.

To canonicalize something means to put it in a standard format that everyone generally uses. Because the signature is dependent on the content it is signing, a signature produced from a not canonicalized document could possibly be different from one produced from a canonicalized document. The canonical form of an XML document is physical representation of the document produced by the method described in this specification. The term canonical XML refers to XML that is in canonical form. The XML canonicalization method is the algorithm defined by this specification that generates the canonical form of a given XML document or document subset. The term XML canonicalization refers to the process of applying the XML canonicalization method to an XML document or document subset. XML canonicalization is designed to be useful to applications that require the ability to test whether the information content of a document or document subset has been changed. This is done by comparing the canonical form of the original document before application processing with the canonical form of the document result of the application processing.

A digital signature over the canonical form of an XML document or document subset would allow the signature digest calculations to be oblivious to changes in the original document's physical representation. During signature generation, the digest is computed over the canonical form of the document. The document is then transferred to the relying party, which validates the signature by reading the document and computing a digest of the canonical form of the received document. The equivalence of the digests computed by the signing and relying parties (and hence the equivalence of the canonical forms over which they were computed) ensures that the information content of the document has not been altered since it was signed.

The following canonicalization algorithms are used in Oxygen XML Editor: Canonical XML (or Inclusive XML Canonicalization)([XMLC14N](#)) and Exclusive XML Canonicalization([EXCC14N](#)). The first is used for XML where the context doesn't change while the second was designed for canonicalization where the context might change.

Inclusive Canonicalization copies all the declarations, even if they are defined outside of the scope of the signature. In this way all the declarations you might use will be unambiguously specified. A problem appears when the signed XML is moved into another XML document which has other declarations because the Inclusive Canonicalization will copy them and the signature will be invalid.

Exclusive Canonicalization finds out what namespaces you are actually using (the ones that are a part of the XML syntax) and just copies those. It does not look into attribute values or element content, so the namespace declarations required to process these are not copied.

This type of canonicalization is useful when you have a signed XML document that you wish to insert into other XML documents and it will insure the signature verifies correctly every time, so it is required when you need self-signed structures that support placement within different XML contexts.

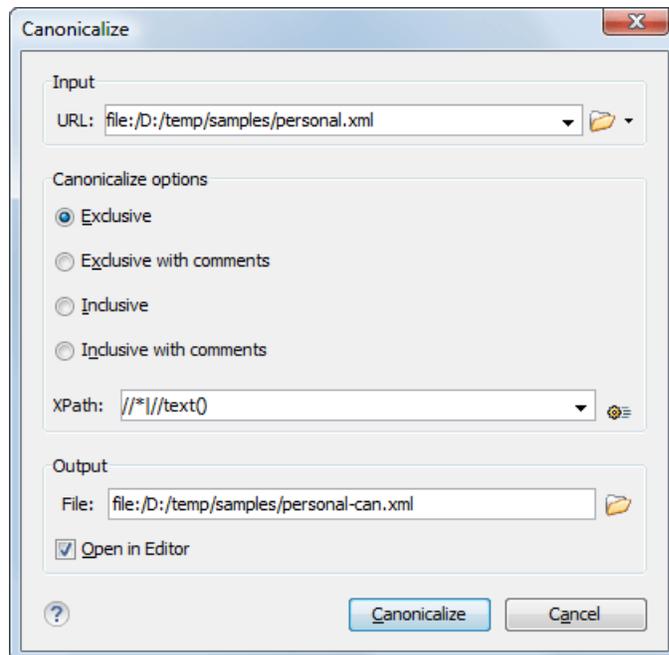
Inclusive Canonicalization is useful when it is less likely that the signed data will be inserted in other XML document and it's the safer method from the security perspective because it requires no knowledge of the data that are to be secured in order to safely sign them.

The canonicalization method can specify whether or not comments should be included in the canonical form output by the XML canonicalization method. If a canonical form contains comments corresponding to the comment nodes in the input node-set, the result is called canonical XML with comments. In an uncommented canonical form comments are removed, including delimiter for comments outside document element.

These three operations: Digital Signing, Canonicalization and Verification of the signature are available from the **Tools** menu or from the Editor's **contextual menu > Source**.

## Canonicalizing Files

The user can select the canonicalization algorithm to be used for his document from the following dialog displayed by the action **Canonicalize** available from the editor panel's **contextual menu > Source** and also from menu **Tools**.



**Figure 325: Canonicalization settings dialog**

The fields of the dialog are the following:

- **URL** - Specifies the location of the input URL.
- **Exclusive** - If selected, the exclusive (uncommented) canonicalization method is used.
- **Exclusive with comments** - If selected, the exclusive with comments canonicalization method is used.

- **Inclusive** - If selected, the inclusive (uncommented) canonicalization method is used.
- **Inclusive with comments** - If selected, the inclusive with comments canonicalization method is used.
- **XPath** - The XPath expression provides the fragments of the XML document to be signed.
- **Output** - Specifies the output file path where the signed XML document will be saved.
- **Open in editor** - If checked, the output file will be opened in the editor.

## Certificates

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A certificate is a digitally signed statement from the issuer (an individual, an organization, a website or a firm), saying that the public key (and some other information) of some other entity has a particular value. When data is digitally signed, the signature can be verified to check the data integrity and authenticity. Integrity means that the data has not been modified. Authenticity means the data comes indeed from the entity that claims to have created and signed it. Certificates are kept in special repositories called keystores.

A *keystore* is an encrypted file that contains private keys and certificates. All keystore entries (key and trusted certificate entries) are accessed via unique aliases. An alias must be assigned for every new entry of either a key or certificate as a reference for that entity. No keystore can store an entity if its alias already exists in that keystore and no keystore can store trusted certificates generated with keys in its keystore.

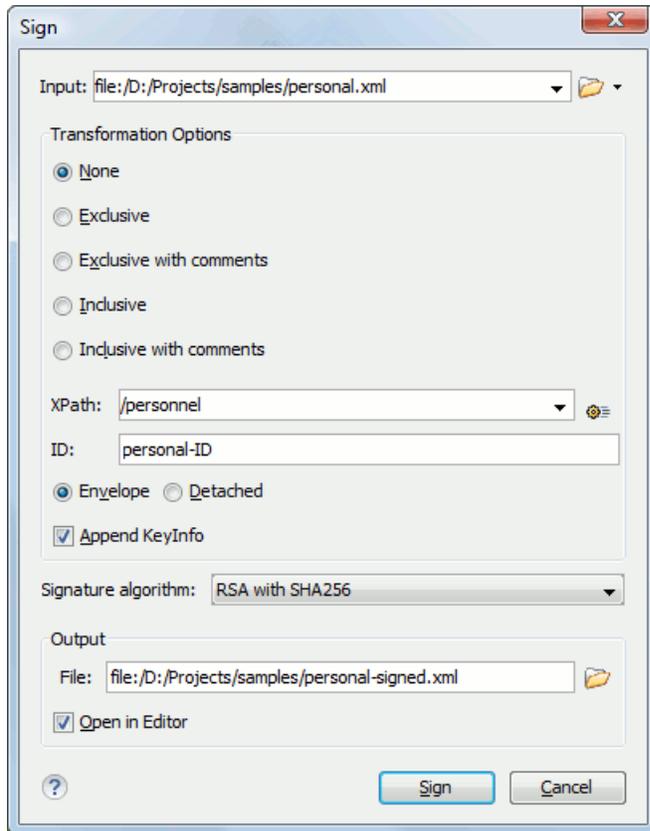
In Oxygen XML Editor there are provided two types of keystores: Java Key Store (JKS) and Public-Key Cryptography Standards version 12 (PKCS-12). A keystore file is protected by a password. In a PKCS 12 keystore you should not store a certificate without alias together with other certificates, with or without alias, as in such a case the certificate without alias cannot be extracted from the keystore.

To set the options for a certificate or to validate it, go to menu [Options > Preferences > Certificates](#) .

## Signing Files

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The user can select the type of signature to be used for his document from the following dialog displayed by the action **Sign** available from the editor panel's **contextual menu > Source** and also from menu **Tools** .



**Figure 326: Signature settings dialog**

The following options are available:

- **Input** - Specifies the location of the input URL.
- **None** - If selected, no canonicalization algorithm is used.
- **Exclusive** - If selected, the exclusive (uncommented) canonicalization method is used.
- **Exclusive with comments** - If selected, the exclusive with comments canonicalization method is used.
- **Inclusive** - If selected, the inclusive (uncommented) canonicalization method is used.
- **Inclusive with comments** - If selected, the inclusive with comments canonicalization method is used.
- **XPath** - The XPath expression provides the fragments of the XML document to be signed.
- **ID** - Provides ID of the XML element to be signed.
- **Envelope** - If selected, the enveloping signature is used.
- **Detached** - If selected, the detached signature is used.
- **Append KeyInfo** - The element `ds:KeyInfo` will be added in the signed document only if this option is checked.
- **Signature algorithm** - Algorithm used for signing the document. The following options are available: **RSA with SHA1**, **RSA with SHA256**, **RSA with SHA384**, and **RSA with SHA512**.
- **Output** - Specifies the output file path where the signed XML document will be saved.
- **Open in editor** - If checked, the output file will be opened in the editor.

## Verifying the Signature

The user can select a file to verify its signature in the dialog opened by the action **Verify Signature** available from the editor panel's **contextual menu > Source** and also from menu **Tools**. The dialog has a field **URL** that specifies the location of the document for which to verify the signature.

If the signature is valid, a dialog displaying the name of the signer will be opened. If not, an error message will show details about the problem.



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# Chapter 22

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## Syncro SVN Client

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### Topics:

- [Main Window](#)
- [Getting Started](#)
- [Syncro SVN Client Views](#)
- [The Revision Graph of a SVN Resource](#)
- [Syncro SVN Client Preferences](#)
- [Command Line Reference](#)
- [Technical Issues](#)

Syncro SVN is a client for the Apache Subversion™ version control system compatible with Subversion 1.6 servers. It manages files and directories that change over time and are stored in a central repository. The version control repository is much like an ordinary file server, except that it remembers every change ever made to your files and directories. This allows you to access older versions of your files and examine the history of how and when your data changed.

## Main Window

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This section explains the main window of Syncro SVN Client.

### Views

The main window consists of the following views:

- **Repositories view** - Allows you to define and manage Apache Subversion™ repository locations.
- **Working Copy view** - Allows you to manage with ease the content of the working copy.
- **History view** - Displays information (author name, revision number, commit message) about the changes made to a resource during a specified period of time.
- **Editor view** - Allows you to edit different types of text files, with full syntax-highlight.
- **Annotations view** - Displays a list with information regarding the structure of a document (author and revision for each line of text).
- **Compare view** - Displays the differences between two revisions of a text file from the working copy.
- **Image Preview** - Allows you to preview standard image files supported by Syncro SVN Client: JPG, GIF and PNG.
- **Compare Images view** - Displays two images side by side.
- **Properties view** - Displays the SVN properties of a resource under version control.
- **Console view** - Displays information about the currently running operation, similar with the output of the Subversion command line client.
- **Help view** - Shows information about the currently selected view.

The main window's status bar presents in the left side the operation in progress or the final result of the last performed action. In the right side there is a progress bar for the running operation and a stop button to cancel the operation.

### Main Menu

The main menu of the Syncro SVN Client is composed of the following menus:

- **File** menu:
  - **New** submenu:
    - **New File** - This operation creates a file in the working copy and adds it to version control. If the selected path is not under version control, the newly created file is added to the repository only by an explicit action. Creating a file in the working copy does not add it automatically to the repository. This action works only for selected paths in the **Working Copy** tree.
    - **New Folder (Ctrl + Shift + F)** - This operation creates a new folder as child of the selected folder from the **Repositories view** tree or from the **Working Copy view** tree, depending on which view was focused last when performing this action. For the **Working Copy view**, the folder is added to version control only if the selected path is under version control, otherwise the newly created directory is not added to version control.
    - **New External Folder (Ctrl + Shift + W)** - This operation sets a folder name in the property `svn:externals` of the selected folder. The repository URL to the folder to which the new external folder points and the revision number of that repository URL can be selected easily with the **Browse** and **History** buttons of the dialog. This action works only for selected paths in the **Working Copy** tree.

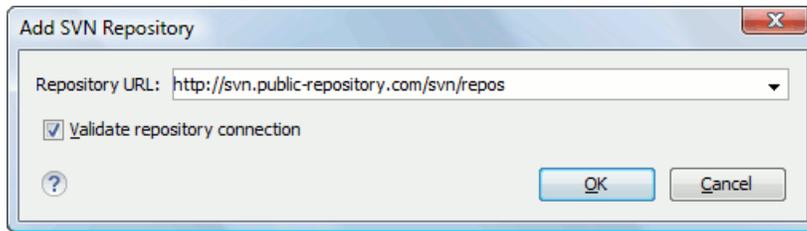
Subversion 1.5 clients and higher support relative external URLs. You can specify the repository URLs to which the external folders point using the following relative formats:

- `../` - Relative to the URL of the directory on which the `svn:externals` property is set.
  - `^/` - Relative to the root of the repository in which the `svn:externals` property is versioned.
  - `//` - Relative to the scheme of the URL of the directory on which the `svn:externals` property is set.
  - `/` - Relative to the root URL of the server on which the `svn:externals` property is versioned.
-  **Open (Ctrl + O)** - This action opens the selected file in an editor where you can modify it. The action is active only when a single item is selected. The action opens a file with the internal editor or the external application

associated with that file type. In case of a folder the action opens the selected folder with the system application for folders (for example Windows Explorer on Windows, Finder on Mac OS X, etc). Folder opening is available only for folders selected in the *Working Copy view*. This action works on any file selection from the *Repositories view*, *Working Copy view*, *History view* or *Directory Change Set view*, depending on which view was last focused when invoking it.

- **Open with ... (Ctrl + Shift + O)** - Displays the *Open with* dialog for specifying the editor in which the selected file is opened. In case multiple files are selected only external applications can be used to open the files. This action works on any file selection from *Repositories view*, *Working Copy view*, *History view* or *Directory Change Set view*, depending on which view was last focused when invoking it.
-  **Save (Ctrl + S)** - Saves the local file currently opened in the editor or the **Compare** view.
- **Copy URL Location (Ctrl + Alt + U)** - Copies to clipboard the URL location of the resource currently selected in the **Repositories** view.
-  **Copy/Move to (Ctrl + M)** - Copies or moves to a specified location the resource currently selected either in **Repositories** or **Working copy** view.
- **Rename (F2)** - Renames the resource currently selected either in **Repositories** or **Working copy** view.
-  **Delete (Delete)** - Deletes the resource currently selected either in **Repositories** or **Working copy** view.
- **Locking:**
  - **Scan for locks (Ctrl + L)** - Contacts the repository and recursively obtains the list of locks for the selected resources. A dialog containing the locked files and the lock description will be displayed. Only active for resources under version control. For more details see *Scanning for locks*.
  -  **Lock (Ctrl + K)** - Allows you to lock certain files for which you need exclusive access. You can write a comment describing the reason for the lock and you can also force (*steal*) the lock. The action is active only on files under version control. For more details on the use of this action see *Locking a file*.
  -  **Unlock (Ctrl + Alt + K)** - Releases the exclusive access to a file from the repository. You can also choose to unlock it by force (*break the lock*).
-  **Show SVN Properties (Ctrl + Shift + P)** - Brings up the *Properties view* and displays the SVN properties for a selected resource from *Repositories view* or *Working Copy view*, depending on which view was last focused when invoking it.
-  **File Information (Ctrl + I)** - Provides additional information for a selected resource from the *Working Copy view*. For more details please see the section *Obtain information for a resource*.
- **Exit (Ctrl + Q)** - Closes the application.
- **Edit menu:**
  -  **Undo (Ctrl + Z)** - Undo edit changes in the local file currently opened in the editor or the **Compare** view.
  -  **Redo (Ctrl + Y)** - Redo edit changes in the local file currently opened in the editor or the **Compare** view.
  -  **Cut (Ctrl + X)** - Cut selection to clipboard from the local file currently opened in the editor view or the **Compare** view.
  -  **Copy (Ctrl + C)** - Copy selection to clipboard from the local file currently opened in the editor or the **Compare** view.
  -  **Paste (Ctrl + V)** - Paste selection from clipboard in the local file currently opened in editor or the **Compare** view.
  -  **Find/Replace (Ctrl + F)** - Perform find / replace operations in the local file currently opened in the editor or the **Compare** view.
  -  **Find Next (F3)** - Go to the next find match using the same find options of the last find operation. The action runs in the editor panel and in any non-editable text area, for example the **Console** view.
  -  **Find Previous (Shift + F3)** - Go to the previous find match using the same find options of the last find operation. The action runs in the editor panel and in any non-editable text area, for example the **Console** view.
- **Repository menu:**

-  **New Repository Location (Ctrl + Alt + N)** - Displays the **Add SVN Repository** dialog. This dialog allows you to define a new repository location.



**Figure 327: Add SVN Repository Dialog Box**

If the **Validate repository connection** option is selected, the URL connection is validated before being added to the **Repositories** view.

-  **Edit Repository Location (Ctrl + Alt + E)** - Context-dependent action that allows you to edit the selected repository location using the **Edit SVN Repository** dialog. It is active only when a repository location root is selected.
- **Change the Revision to Browse (Ctrl + Alt + Shift + B)** - Context-dependent action that allows you to change the selected repository revision using the **Change the Revision to Browse** dialog. It is active only when a repository location root is selected.
-  **Remove Repository Location (Ctrl + Alt + Shift + R)** - Allows you to remove the selected repository location from the view. It shows you a confirmation dialog before removal. It is active only when a repository location root is selected.
-  **Refresh** - Refreshes the resource selected in the **Repositories** view.
-  **Check Out (Ctrl + Alt + Shift + C)** - Allows you to copy resources from a repository into your local file system. To use this operation, select a repository root location or a folder from a repository, but never a file. If you do not select anything, you can specify an URL to a folder resource from a repository in the **Check Out** dialog that appears when performing this operation. To read more about this operation, see the section [Check out a working copy](#).
- **Export** - Exports a folder from the repository to the local file system.
- **Import** sub-menu:
  - **Import Folder Content (Ctrl + Alt + Shift + M)** - Depending on the selected folder from a repository, allows you to import the contents of a specified folder from the file system into it. To read more about this operation, see the section [Importing resources into a repository](#).
    -  **Note:** The difference between **Import Folder Content** and **Share project** actions is that the latter one also converts the selected directory into a working copy.
  - **Import File(s) (Ctrl + Alt + I)** - Imports the files selected from the files system into the selected folder from the repository.
- **Working Copy** menu:
  -  (on Mac OS X) **Working Copies Manager** - Opens dialog with a list of working copies that the Apache Subversion™ client is aware of. In this dialog you can add existing working copies or remove no longer needed ones.
  - **Switch to** - Selects one of the following view modes:  **All Files**,  **Modified**,  **Incoming**,  **Outgoing**, or  **Conflicts**.
  -  **Refresh (F5)** - Refreshes the state of the selected resources or of the entire working copy if there is no selection.
  -  **Synchronize (Ctrl + Shift + S)** - Connects to the repository and determines the working copy and repository changes made to the selected resources. The application switches to **Modified** view mode if the [Always switch to 'Modified' mode](#) option is selected.

- **Update (Ctrl+U)** - Updates all the selected resources that have incoming changes to the HEAD revision. If one of the selected resources is a directory then the update for that resource will be recursive.
- **Update to revision/depth** - Allows you to update the selected resources from the working copy to an earlier revision from the repository. You can also select the update *depth* for the current folder. You can find out more about the *depth* term in the [sparse checkouts](#) section.
- **Commit** - Collects the outgoing changes from the selected resources in the working copy and allows you to choose exactly what to commit by selecting or not resources. A directory will always be committed recursively. The unversioned resources will be deselected by default. In the commit dialog you can also enter a commit comment before sending your changes to the repository.
-  **Update all (Ctrl + Shift + U)** - Updates all resources from the working copy that have incoming changes. It performs a recursive update on the synchronized resources.
-  **Commit all** - Commits all the resources with outgoing changes. It is disabled when **Incoming** mode is selected or the synchronization result does not contain resources with outgoing changes. It performs a recursive commit on the synchronized resources.
-  **Revert (Ctrl + Shift + V)** - Undoes all local changes for the selected resources. It does not contact the repository, the files are obtained from Apache Subversion™ pristine copy. It is enabled only for modified resources. See [Revert your changes](#) for more information.
- **Edit conflict (Ctrl + E)** - Opens the **Compare** editor, allowing you to modify the content of the currently conflicting resources. For more information on editing conflicts, see [Edit conflicts](#).
-  **Mark Resolved (Ctrl+Shift+R)** - Instructs the Subversion system that you resolved a conflicting resource. For more information, see [Merge conflicts](#).
-  **Mark as Merged (Ctrl+Shift+M)** - Instructs the Subversion system that you resolved the pseudo-conflict by merging the changes and you want to commit the resource. Read the [Merge conflicts](#) section for more information about how you can solve the pseudo-conflicts.
- **Override and Update** - Drops any outgoing change and replaces the local resource with the HEAD revision. Action available on resources with outgoing changes, including the conflicting ones. See the [Revert your changes](#) section.
- **Override and Commit** - Drops any incoming changes and sends your local version of the resource to the repository. Action available on conflicting resources. See also the section [Drop incoming modifications](#).
-  **Add to version control (Ctrl + Alt + V)** - Allows you to schedule for addition resources that are not under version control. For further details, see [Add Resources to Version Control](#) section.
- **Add to "svn:ignore" (Ctrl + Alt + I)** - Allows you to keep inside your working copy files that should not participate to the version control operations. This action can only be performed on resources not under version control. It actually modifies the value of the *svn:ignore* property of the resource's parent directory. Read more about this in the [Ignore Resources Not Under Version Control](#) section.
-  **Cleanup (Ctrl + Shift + C)** - Performs a maintenance cleanup operation to the selected resources from the working copy. This operation removes the Subversion maintenance locks that were left behind. Useful when you already know where the problem originated and want to fix it as quickly as possible. Only active for resources under version control.
-  **Expand all (Ctrl + Alt + X)** - Displays all descendants of the selected folder. You can obtain a similar behavior by double-clicking on a collapsed folder.
-  **Collapse all (Ctrl + Alt + Z)** - Collapses all descendants of the selected folder. The same behavior is obtained by double-clicking on an expanded folder.
- **Compare** menu:
  -  **Perform Files Differencing** - Performs a comparison between the source and target files.

-  **Next Block of Changes** - Jumps to the next block of changes. This action is disabled when the cursor is positioned on the last change block or when there are no changes in the document.
-  **Previous Block of Changes** - Jumps to the previous block of changes. This action is disabled when the cursor is positioned on the first change block or when there are no changes in the document.
-  **Next Change** - Jumps to the next change from the current block of changes. When the last change from the current block of changes is reached, it highlights the next block of changes. This action is disabled when the cursor is positioned on the last change.
-  **Previous Change** - Jumps to the previous change from the current block of changes. When the first change from the current block of changes is reached, it highlights the previous block of changes. This action is disabled when the cursor is positioned on the first change.
-  **Last Change** - Jumps to the last change from the current file.
-  **First Change** - Jumps to the first change from the current file.
-  **Copy All Non-Conflicting Changes from Right to Left** - This action copies all non-conflicting changes from the right editor to the left editor. A non-conflicting change from the right editor is a change that does not overlap with a left editor change.
-  **Copy Change from Right to Left (Ctrl + Shift + Comma)** - This action copies the selected change from the right editor to the left editor.
-  **Show Word Level Details** - Provides a word-level comparison of the selected change.
-  **Show Character Level Details** - Provides a character-level comparison of the selected change.
-  **Ignore Whitespaces** - Enables or disables the whitespace ignoring feature. Ignoring whitespace means that before the strings are compared they are first normalized and then the whitespace at the beginning and the end of the strings is trimmed.
- **History menu:**
  -  **Show History (Ctrl + H)** - Displays the history for a SVN resource at a given revision. The resource can be one selected from the **Repositories** view, **Working Copy** view, or from the **Affected Paths** table from the **History** view, depending on which view was last focused when this action was invoked.
  -  **Show Annotation (Ctrl + Shift + A)** - Complex action that does the following operations:
    - opens the selected resource in the **Annotations** editor;
    - displays corresponding annotations list in the **Annotations** view;
    - displays the history of the selected resource.
  - This operation is available for any resource selected from **Repositories** view, **Working Copy** view, **History** view or **Directory Change Sets** view, depending on which view was last focused when this action was invoked.
  -  **Revision Graph (Ctrl + Shift + G)** - This action allows you to see the graphical representation of a resource's history. For more details about a resource's revision graph see the section [Revision Graph](#). This operation is enabled for any resource selected into the **Repositories** view or **Working Copy** view.
- **Tools menu:**
  - **Share project** - Allows you to *share a new project* using an SVN repository. The local project is automatically converted into an SVN working copy.
  - **Branch / Tag** - Allows you to copy the selected resource from the **Repositories** view or **Working Copy** view to a branch or tag into the repository. To read more about this operation, see the section [Creating a Branch / Tag](#).
  - **Merge (Ctrl + J)** - Allows you to merge the changes made on one branch back into the trunk, or vice versa, using the selected resource from the working copy. To read more about this operation, see the section [Merging](#).

- **Switch (Ctrl+Alt+W)** - Allows you to change the repository location of a working copy or only of a versioned item of the working copy within the same repository. It is available when the selected item of the working copy is a versioned resource, except an external folder. To read more about this action, see the section [Switching the Repository Location](#).
- **Relocate** - Allows you to change the base URL of the root folder of the working copy to a new URL, when the base URL of the repository changed, for example the repository itself was relocated to a different server. This operation is available for a selected item of the working copy tree that is a versioned folder. To read more about this operation, see the section [Relocate a Working Copy](#).
-  **Create patch (Ctrl+Alt+P)** - Allows you to create a file containing all the differences between two resources, based on the `svn diff` command. To read more about creating patches, see [the section about patches](#).
- **Working copy format** - this submenu contains the following two operations:
  -  **Upgrade** - Allows you to upgrade the format of the current working copy to the newest one known by Syncro SVN Client, to allow you to benefit of all the new features of the client.
  -  **Downgrade** - Allows you to downgrade the format of the current working copy to an older format. The formats allowed to downgrade to are SVN 1.5 and SVN 1.4. This is useful in case you wish to use older SVN clients with the current working copy, or, by mistake, you have upgraded the format of an older working copy by using a newer SVN client.

 **Note:** SVN 1.7 working copies cannot be downgraded to older formats.

See the section [Working Copy Format](#) to read more about this subject.

- **Options** menu:
  - **Preferences** - Opens the **Preferences** dialog.
  - **Menu Shortcut Keys** - Opens the **Preferences** dialog directly on the **Menu Shortcut Keys** option page, where users can configure in one place the keyboard shortcuts available for menu items available in Syncro SVN Client.
  - **Global Run-Time Configuration** - Allows you to configure SVN general options, that should be used by all the SVN clients you may use:
    - **Edit 'config' file** - In this file you can configure various SVN client-side behaviors.
    - **Edit 'servers' file** - In this file you can configure various server-specific protocol parameters, including HTTP proxy information and HTTP timeout settings.
  - **Export Options** - Allows you to export the current options to a file.
  - **Import Options** - Allows you to import options you have previously exported.
  - **Reset Options** - Resets all your options to the default ones.
  - **Reset Authentication** - Resets the Subversion authentication information.
- **Window** menu:
  - **Show View** - Allows you to select the view you want to bring to front.
  - **Show Toolbar** - Allows you to select the toolbar you want to be visible.
  - **Enable flexible layout** - Toggles between a fixed and a flexible layout. When the flexible layout is enabled, you can move and dock the internal views to adapt the application to different viewing conditions and personal requirements.
  - **Reset Layout** - Resets all the views to their default position.
- **Help** menu:
  - **Help (F1)** - Opens the **Help** dialog.
  - **Dynamic Help** - Shows the **Dynamic Help** view.
  - **Check for New Versions** - Checks the availability of new Syncro SVN Client versions.
  - **Register** - Opens the registration dialog.
  - **Improvement Program Options** - Allows you to activate or deactivate the Syncro Soft Product Improvement Program.

- **Report Problem** - Opens a dialog that allows the user to write the description of a problem that was encountered while using the application.
- **Support Center** - Opens the Support Center web page in a browser.

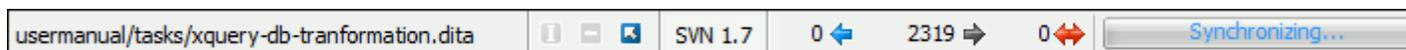
## Main Toolbar

The toolbar of the SVN Client SVN Repositories window contains the following actions:

-  **Check Out** - Checks out a working copy from a repository. The repository URL and the working copy format must be specified.
-  **Synchronize** - Synchronizes the current working copy with the repository.
-  **Update All** - Updates all resources of the working copy that have an older revision than repository.
-  **Commit All** - Commits all resources of working copy that have a newer version compared to that of the repository.
-  **Refresh** - Refreshes the whole content of the current working copy from disk starting from the root folder. At the end of the operation, the modified files and folders that were not committed to repository yet, are displayed in the **Working Copy** view.
-  **Compare** - The selected resource is compared with:
  - the *BASE* revision, when the selected resource is:
    - locally modified and the **All Files** view mode is currently selected (no matter if there are incoming changes);
    - locally modified and there are no incoming changes when any other view mode is selected.
  - the remote version of the same resource, when remote information is available after a **Synchronize** operation (only when one of **Modified**, **Incoming**, **Outgoing** and **Conflicts** view modes is selected).
  - the working copy revision, when the selected resource is from the **History** view;
-  **Show History** - Displays the history of the selected resource (from the **Working Copy** or **Repository** views) in the **History** view.
-  **Show Annotation** - Displays the annotations of the selected resource. The selected resource can be in the **Working Copy** or the **History** views.
-  **Revision Graph** - Displays the revision graph of the selected resource. The selected resource can be in the **Working Copy** or the **Repositories** views.
-  **Enable/Disable flexible layout** - Toggles between a fixed and a flexible layout. When the flexible layout is enabled, you can move and dock the internal views to adapt the application to different viewing conditions and personal requirements.

## Status Bar

The status bar of the Syncro SVN Client window displays important details of the current status of the application. This information is available only in the **Working Copy** view.



**Figure 328: Status bar**

The status bar is composed of the following areas:

- the path of the currently processed file from the current working copy (during an operation like **Checkout** or **Synchronize**) or the result of the last operation;
- the current status of the following working copy options:
  - Show ignored files (  );
  - Show deleted files (  );
  - Process `svn:externals` definitions (  ).

The options for ignored and deleted files are switched on and off from *the Settings menu* of the **Working Copy** panel;

- the format of the currently loaded working copy;
- the current numbers of incoming changes (  ), outgoing changes (  ) and conflicting changes (  );
- a progress bar for the currently running SVN operation and a button (  ) that allows you to stop it.

## Getting Started

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This section explains the basic operations that can be done in Syncro SVN Client.

### SVN Repository Location

This section explains how to add and edit the repository locations in Syncro SVN Client.

#### Add / Edit / Remove Repository Locations

Usually, team members do all of their work separately, in their own working copy, and must share their work. This is done using an Apache Subversion™ repository. Syncro SVN Client supports versions 1.4, 1.5, 1.6 and 1.7 of the SVN repository format.

Before you can begin working with a Subversion repository, define a repository location in the *Repositories view*.

To create a repository location, click the  **New Repository Location** toolbar button or right click inside the view and select **New Repository Location...** from the popup menu. On Windows, the context menu can be displayed on a right click with the mouse or with the keyboard by pressing the special context menu key available on Windows keyboards. This action opens the **Add SVN Repository** dialog which prompts you for the URL of the repository you want to connect to. No authentication information is requested at the time the location is defined. It is left to the Subversion client to request the user and password information when it is needed. The main benefit of allowing Subversion to manage your password in this way is that it prompts you for a new password only when your password changes.

Once you enter the repository URL Syncro SVN Client tries to contact the server and get the content of the repository for displaying it in the *Repositories view*. If the server does not respond in the timeout interval set in preferences, an error is reported. If you do not want to wait until the timeout expires, you can end the waiting process with the  **Stop** button from the toolbar of the view.

To edit a repository location, click the  **Edit Repository Location** toolbar button or right click inside the view on a repository root entry and select **Edit Repository Location...** from the popup menu.

The **Edit SVN Repository** dialog works in the same way as the **Add SVN Repository** dialog. It shows the previously defined repositories URLs and it allows you to change them.

To remove a repository location, click the  **Remove Repository Location** toolbar button or right click inside the view on a repository entry and select **Remove Repository Location...** from the popup menu. A confirmation dialog is displayed to make sure that you do not accidentally remove locations.

The order of the repositories can be changed in the **Repositories** view at any time with the two buttons on the toolbar of the view, the up arrow  and the down arrow . For example, pressing the up arrow once moves up the selected repository in the list with one position.

To set the reference revision number of an SVN repository right-click on the repository in the list displayed in the *Repositories view* and select the **Change the Revision to Browse...** action. The revision number of the repository is

used for displaying the contents of the repository when it is viewed in the [Repositories view](#). Only the files and folders that were present in the repository at the moment when this revision number was generated on the repository are displayed as contents of the repository tree. Also this revision number is used for all the file open operations executed directly from the [Repositories view](#).

## Authentication

Five protocols are supported: *HTTP*, *HTTPS*, *SVN*, *SVN + SSH* and *FILE*. If the repository that you are trying to access is password protected, the **Enter authentication data** dialog requests a user name and a password. If the **Store authentication data** checkbox is checked, the credentials are stored in Apache Subversion™ default directory:

- on Windows - %HOME%\Application Data\Subversion\auth. Example: C:\Documents and Settings\John\Application Data\Subversion\auth
- on Linux and Mac OS X - \$HOME/.subversion/auth. Example: /home/John/.subversion/auth

There is one file for each server that you access. If you want to make Subversion forget your credentials, you can use the **Reset authentication** command from the **Options** menu. This causes Subversion to forget all your credentials.

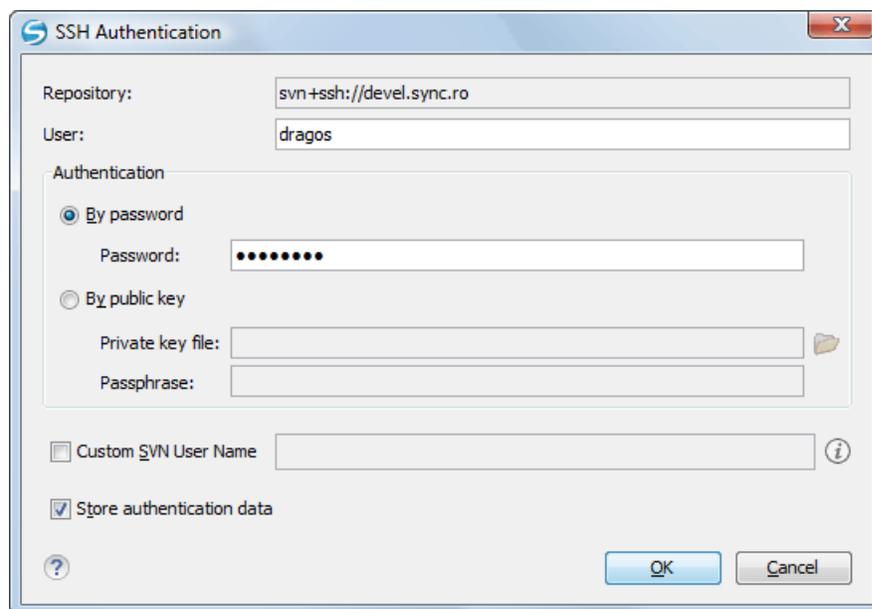
 **Note:** When you reset the authentication data, restart the application in order for the change to take effect.

 **Tip:** The *FILE* protocol is recommended if the SVN repository and Syncro SVN Client are located on the same computer as it ensures faster access to the SVN repository compared with other protocols.

For HTTPS connections where client authentication is required by your SSL server, you must choose the certificate file and enter the corresponding certificate password which is used to protect your certificate.

When using a secure HTTP (HTTPS) protocol for accessing a repository, a **Certificate Information** dialog pops up and asks you whether you accept the certificate permanently, temporarily or simply deny it.

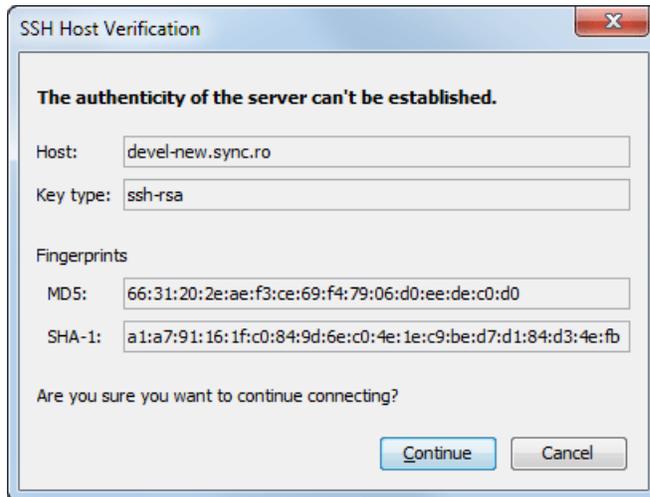
If the repository has SVN+SSH protocol, the SSH authentication can also be made with a private key and a pass phrase.



**Figure 329: User & Private key authentication dialog**

After the SSH authentication dialog, another dialog pops up for entering the SVN user name that accesses the SVN repository. The SVN user name is recorded as the *committer* in SVN operations.

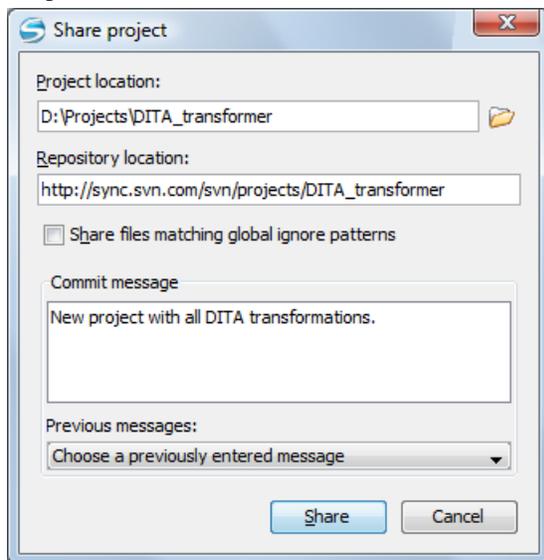
When connecting for the first time to a Subversion repository through SVN+SSH protocol, you will be asked to confirm if you trust the SSH host. The same dialog box is also displayed when the server changed the SSH key or when the key was deleted from the local Subversion cache folder.



**Figure 330: SSH server name and key fingerprint**

## Share a Project

Even if you start developing a new project or you want to migrate an existing one to Subversion, Syncro SVN Client allows you to share it easily with the rest of your team. The **Share project** action helps you do this by providing a simplified interface:



**Figure 331: Share Project Dialog Box**

To share a project, set the following:

- **Project location** box - enter the location of the project on the local disk.
  - 👉 **Note:** The root directory of the project is not imported in the repository, only its content is imported.
- **Repository location** box - type the repository address of the new project. If the address does not exist, it is created automatically. If it does exist, make sure that it is an empty location to avoid mixing your project content with other files.
- **Share files matching global ignore patterns** check box - file names that match the patterns defined under the `global-ignores` property, in the Subversion clients configuration file, are also imported in the repository.

The shared project directory is automatically converted to a working copy and added under Syncro SVN Client management.

## Defining a Working Copy

An Apache Subversion™ working copy is an ordinary directory tree on your local system, containing a collection of files. You can edit these files however you wish, your working copy being your private work area. In order to make your own changes available to others or incorporate other people's changes, you must explicitly tell Subversion to do so. You can even have multiple working copies of the same project.

Name	Date	Revision	Author	Size	Type
E:\svnkit	May 15, 2011	7636	alex		File Folder
gradle	May 4, 2011	7623	alex		File Folder
wrapper	May 4, 2011	7623	alex		File Folder
gradle-wrapper.jar	May 4, 2011	7618	alex	12 KB	Executable ...
gradle-wrapper.properties	May 4, 2011	7623	alex	1 KB	PROPERTIE...
svnkit	May 15, 2011	7636	alex		File Folder
svnkit-cli	May 10, 2011	7630	alex		File Folder
.settings	May 4, 2011	7618	alex		File Folder
src	May 10, 2011	7630	alex		File Folder
main	May 10, 2011	7630	alex		File Folder
conf	May 4, 2011	7618	alex		File Folder
java	May 4, 2011	7622	alex		File Folder
resources	May 4, 2011	7618	alex		File Folder
scripts	May 10, 2011	7630	alex		File Folder
jsvn	May 4, 2011	7618	alex	2 KB	File
jsvn.bat	May 10, 2011	7630	alex	2 KB	Windows B...
jsvnsetup.openvms	May 4, 2011	7618	alex	1 KB	OPENVMS File
build.gradle	May 4, 2011	7618	alex	2 KB	GRADLE File
svnkit-dav	May 4, 2011	7620	alex		File Folder
svnkit-distribution	May 4, 2011	7623	alex		File Folder
svnkit-javahl16	May 4, 2011	7618	alex		File Folder
svnkit-osgi	May 4, 2011	7623	alex		File Folder
svnkit-test	May 12, 2011	7635	alex		File Folder
.settings	May 4, 2011	7618	alex		File Folder
configurations	May 4, 2011	7618	alex		File Folder

**Figure 332: Working Copy View**

A Subversion working copy also contains some extra files, created and maintained by Subversion, to help it keep track of your files. In particular, each directory in your working copy contains a subdirectory named `.svn`, also known as the working copy *administrative directory*. This administrative directory contains an unaltered copy of the last updated files from the repository. This copy is usually referred to as the *pristine copy* or the *BASE revision* of the working copy. These files help Subversion recognize which files contain unpublished changes, and which files are out-of-date with respect to others' work.

A typical Subversion repository often holds the files (or source code) for several projects. Usually each project is a subdirectory in the repository's file system tree. In this arrangement, a user's working copy usually corresponds to a particular subtree of the repository.

### Check Out a Working Copy

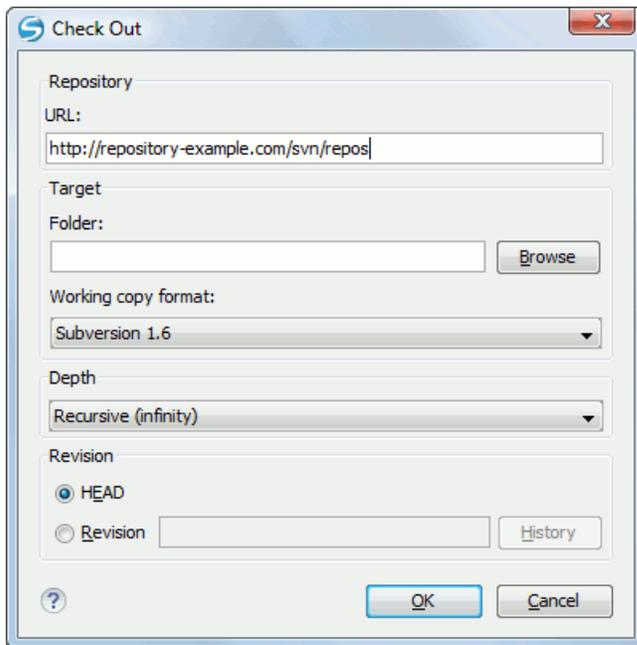
**Check Out** is the term used to describe the process of making a copy of a project from a repository into your local file system. This checked-out copy is called a working copy. An Apache Subversion™ working copy is a specially formatted folder structure which contains additional `.svn` folders that store Subversion information, as well as a pristine copy of each item that is checked out.

You check out a working copy from the [Repositories view](#). If you have not yet defined a connection to your repository, you need to [add a new repository location](#).

1. Navigate to the desired repository folder in the **Repositories view**.

- Right click on the folder and select **Check Out...** from the popup menu.

The **Check Out** dialog is displayed:



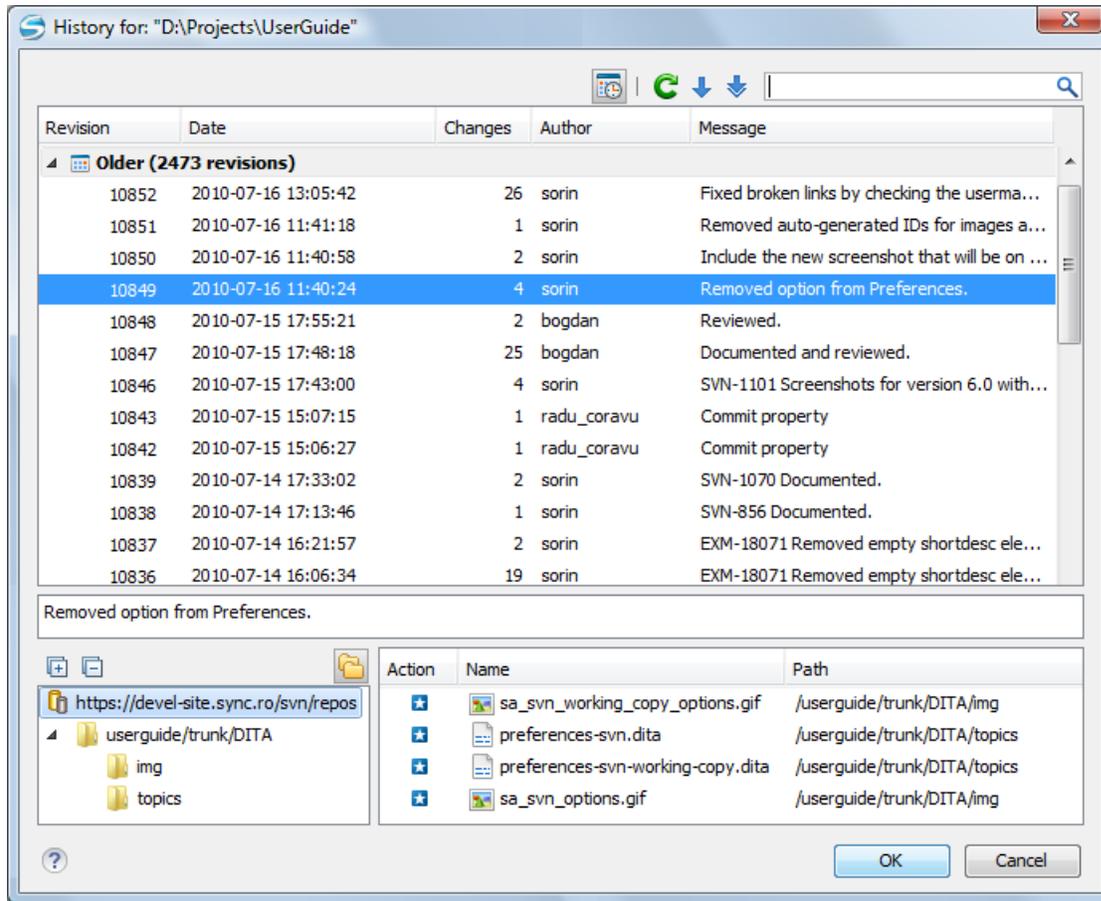
**Figure 333: Check Out Dialog**

- Click on the **Browse** button.
- Select the location where the working copy is created.  
Only the content of the **repository location** folder is checked out. In case you want to checkout the content inside a folder with the same name as the source one, you have to create it.
- Select the version of the working copy format: SVN 1.4, SVN 1.5, SVN 1.6 or SVN 1.7.
- Select the depth for the checkout folder in the **Depth** combo box.  
This allows you to specify the recursion level into child resources. It is used if you want to check out only a portion of a working copy and then bring in a future update operation previously ignored files and subdirectories. You can find out more about checkout depth in the [sparse checkouts](#) section.
- Select the revision number that is checked out.  
By default the last (HEAD) revision is checked out. If you need another revision, you have to select the **Revision** radio button. To specify the revision number you can simply type the revision number in the corresponding text field or click on the **History** button which opens [the History dialog](#).

After a check out operation, the new working copy will be added to the list in the [Working Copy view](#). The working copy content is displayed in that view.

### The History Dialog

The **History** dialog presents a list of revisions for a resource. It is opened from the dialogs that require setting an SVN revision number like [the Check Out dialog](#) or [the Branch / Tag dialog](#) to name just a few. It presents information about revision, commit date, author, and commit comment.



**Figure 334: History Dialog**

The initial number of entries in the list is 50. Additional revisions can be added to the list using the **Get next 50** and **Get all** buttons. The list of revisions can be refreshed at any time with the **Refresh** button. You can group revisions in predefined time frames (today, yesterday, this week, this month), by pressing the **Group by date** button from the toolbar.

The **Affected Paths** area displays all paths affected by the commit of the revision selected in history. You can see the changes between the selected revision and the file's previous state using the **Compare with previous version** action, available in the contextual menu.

### Use an Existing Working Copy

Using an existing working copy is the process of taking a working copy that exists on your file system and connecting it to Apache Subversion™ repository. If you have a brand new project that you want to import into your repository, then see the section *Import resources into the repository*. The following procedure assumes that you have an existing valid working copy on your file system.

1. Click the **Working Copies Manager** toolbar button (on Mac OS X) in the *Working Copy view*. This action opens the **Working copies list** dialog.
2. Press the **Add** button.
3. Select the working folder copy from the file system.

#### **Note:**

With SVN 1.6 and earlier, you can use any directory located in a working copy as a standalone working copy. This helps you avoid loading a whole working copy when needing to work only on a small part of it.

Starting with SVN 1.7, all the internal information of a working copy is kept only in the root directory. To track outside changes properly, Syncro SVN Client needs to load the whole working copy.

4. Optionally you can press the **Edit** button to change the name of the working copy that is displayed in the **Working Copy** view.

The name is useful to differentiate between working copies located in folders with the same name. The default name is the name of the root folder of the working copy.

To change the working copies order, use the two arrow buttons which move the selected working copy one position up or down.

5. Press the **OK** button.

The selected working copy is loaded and presented in the *Working Copy view*.

## Manage Working Copy Resources

This section explains how to work with the resources that are displayed in the **Working Copy** view.

### Edit Files

You can edit files from the *Working Copy view* by double clicking them or by right clicking them and choosing **Open** from the contextual menu.

Please note that only one file can be edited at a time. If you try to open another file, it is opened in the same editor window. The editor has syntax highlighting for known file types, meaning that a different color is used for each type of recognized token in the file. If the selected file is an image, then it is previewed in the editor, with no access to modifying it.

After modifying and saving a file from a working copy, a modified marker - an asterisk (\*) - will be added to the file's icon in the *Working Copy view*. The asterisk marks the files that have local modifications that were not committed to the repository.

### Add Resources to Version Control

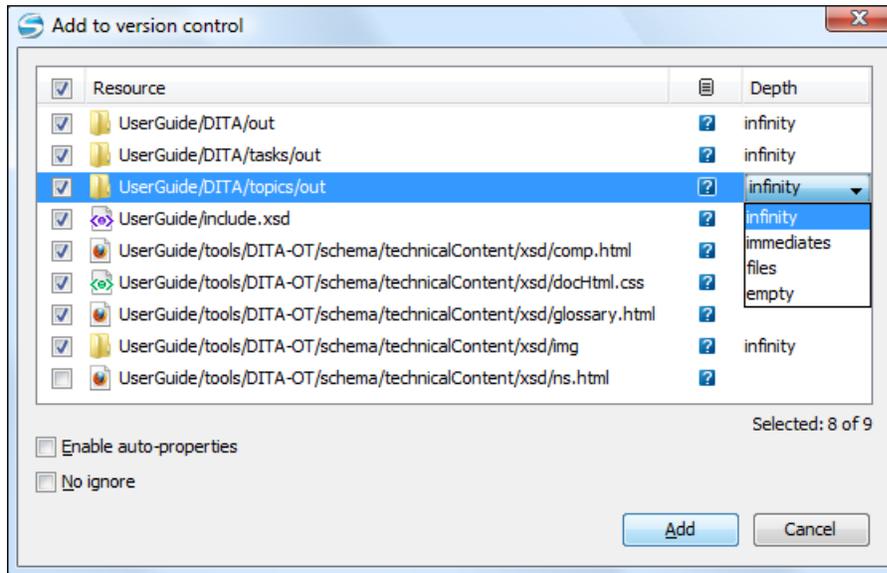
To share new files and folders (created in your working copy), add them to version control using the **Add to version control** option from the *Working Copy view*.

You can easily spot resources not under version control by the  icon displayed in the  **Local file status** column. Resources scheduled for addition (*added*) are displayed with this icon  and are added in the repository after you commit them.

 **Note:** Do not make a confusion between  and  icons. The former icon stands for resources that are actually copies of resources already committed in the repository, meaning they are *scheduled for addition with history*.

When you use the **Add to version control** option on a directory, its entire structure is scanned and all the resources that can be added under version control are presented.

Though it is not mandatory to add resources under version control explicitly, it is recommended. If you forgot to add a resource, when you *commit your changes*, the resource is presented in the commit dialog, but not selected. When you commit and *unversioned* resource, it is automatically added under version control before starting the commit operation.



**Figure 335: "Add to version control" dialog box**

The **Add to version control** dialog box presents resources that can be added under version control.

The **Depth** column is displayed only when directories are also presented in the dialog. For any directory, you can use one of the available values to instruct Subversion to limit the scope of the operation to a particular tree depth.

**Note:** The initial value of the **Depth** field can have the following values, depending on the *listing mode of the items in the working copy view*:

- *infinity* - when the working copy items are presented as a tree;
- *files* - when the working copy items are presented compressed;
- *empty* - when the working copy items are presented flat.

When you add unversioned or ignored directories, the initial value of the **Depth** field also depends on the state of the **Show unversioned directories content** and **Show ignored directories content** options. In case these options are enabled, the value is based on the listing mode of the items in the working copy view. When they are disabled, the value is *empty*.

The following option are available in the dialog:

- **Enable auto-properties** or **Disable auto-properties** - enables or disables automatic property assignment (per runtime configuration rules), overriding the `enable-auto-props` runtime configuration directive, defined in the `config` file of the Subversion configuration directory.

**Note:**

This option is available only when there are defined properties to be applied automatically for resources newly added under version control. You can define these properties in the `config` file of the Subversion configuration directory, in the `auto-props` section.

Based on the value of the `enable-auto-props` runtime configuration directive, the name of the option is either **Enable auto-properties** or **Disable auto-properties**.

- **No ignore** - when you enable this option, file-name patterns defined to ignore *unversioned* resources do not apply. Resources that are located inside an *unversioned* directory scheduled for addition, and match these patterns are also scheduled for addition in the repository.

**Note:**

This option is available only when directories are also presented in the dialog.

You can define file-name patterns to ignore *unversioned* resources in one of the following locations:

- in the `config` file of the Subversion configuration directory (the `global-ignores` option from the `miscellany` section);
- in the Syncro SVN Client options: **Options > Preferences > SVN > Working copy > Application global ignores.**

## Ignore Resources Not Under Version Control

Some resources inside your working copy do not need to be subject to version control. These resources can be files created by the compiler, `*.obj`, `*.class`, `*.lst`, or output folders used to store temporary files. Whenever you *commit changes*, Apache Subversion™ shows your modified files but also the unversioned files, which fill up the file list in the commit dialog. Though the unversioned files are committed unless otherwise specified, it is difficult to see exactly what you are committing.

The best way to avoid these problems is to add the derived files to the Subversion's ignore list. That way they are never displayed in the commit dialog and only genuine unversioned files which must be committed are shown.

You can choose to ignore a resource by using the **Add to svn:ignore** action in the contextual menu of the *Working Copy view*.

In the **Add to svn:ignore** dialog you can specify the resource to be ignored by name or by a custom pattern. The custom pattern can contain the following wildcard characters:

- `*` - Matches any string of characters of any size, including the empty string.
- `?` - Matches any single character.

For example, you can choose to ignore all text documents by using the pattern: `*.txt`.

The action **Add to svn:ignore** adds a predefined Subversion property called `svn:ignore` to the parent directory of the specified resource. In this property, there are specified all the child resources of that directory that must be ignored. The result is visible in the **Working Copy** view. The ignored resources are represented with grayed icons.

## Delete Resources

The delete command can be found in the **Edit** submenu of the context menu from the *Working Copy view*. When you delete a resource from the Apache Subversion™ working copy, it is removed from the file system and it is also marked as deleted. If unversioned, added or modified resources are encountered, a dialog prompts you to confirm their deletion.

The delete command does not delete from the file system the directories under version control, it only marks them as deleted. This is because the directories also contain the pristine copy of that directory content. In the *Working Copy view* this action is transparent as all resources have the deleted mark (the minus (-) sign). The directories are removed from the file system when you *commit* them to the repository. You can also change your mind completely and *revert* the deleted files to their initial, pristine state.

If you delete a resource from the file system without Subversion's knowledge, you render the working copy in an inconsistent state.

If a resource is deleted from the file system without Subversion's knowledge, your working copy is in an inconsistent state. The resource will be considered and marked as missing (the sign '!'). If a file was deleted, it will be treated in the same way as if it was deleted by Subversion. However if a directory is missing you will be unable to commit. If you *update your working copy*, Subversion will replace the missing directory with the latest version from the repository and you can then delete it the correct way using the **Delete** command.

 **Note:** The **Delete** action is not enabled when the selection contains *missing* resources.

## Copy Resources

You can copy several resources from different locations of the working copy. You select them in the *Working Copy view* and then you initiate the copy command from the contextual menu. This is not a simple file system copy but a Apache Subversion™ command. It will copy the resource and the copy will also have the original resource's history. This is one of Subversion's very important features, as you can keep track of where the copied resources originated.

Please note that you can only copy resources that are under version control and are committed to the repository or unversioned resources. You cannot copy resources that are added but not yet committed.

In the **Copy File(s)** dialog you can navigate through the working copy directories in order to choose a target directory. If you try to copy a single resource you are also able to change that resource's name in the corresponding text field.

If an entire directory is copied the **Override and Update** action will be enabled only for it and not for its descendants. In the **Commit** dialog will appear only the directory in question without its children.

### Move Resources

As in the case of the copy command you can perform the move operation on several resources at once. Just select the resources in the *Working Copy view* and choose the **Move** command from the contextual menu. The move command actually behaves as if a copy followed by a delete command were issued. You will find the moved resources at the desired destination and also at their original location but marked as deleted.

### Rename Resources

The rename action can be found in the contextual menu of the *Working Copy view*. This action can only be performed on a single resource. The rename command acts as a move command with the destination being the same as the original location of the resource. A copy of the original resource will be made with the new name and the original will be marked as deleted.

### Lock / Unlock Resources

The idea of version control is based on the *copy-modify-merge* model of file sharing. This model states that each user contacts the repository and creates a local working copy (check out). Users can then work independently and modify their working copies as they please. When their goal has been accomplished, it is time for the users to share their work with the others, to send them to the repository (commit). When a user has modified a file that has been also modified on the repository, the two files will have to be merged. The version control system assists the user with the merging as much as it can, but in the end the user is the one that must make sure it is done correctly.

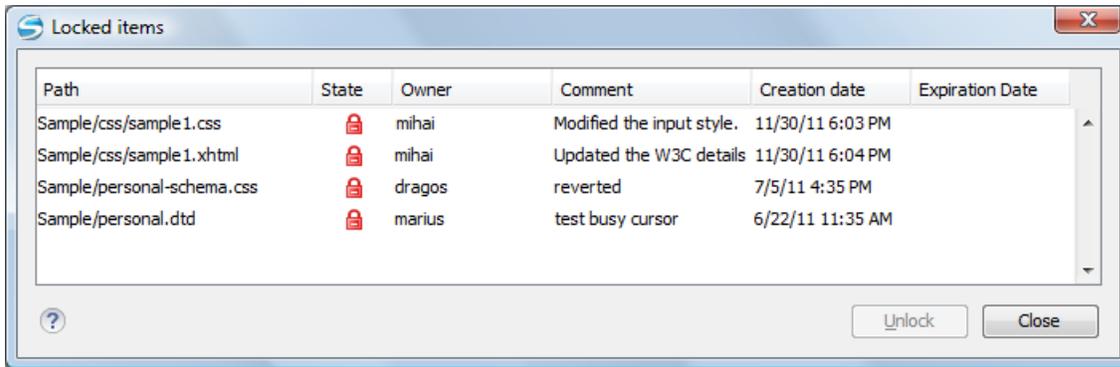
The copy-modify-merge model only works when files are contextually mergeable: this is usually the case of line-based text files (such as source code). However this is not always possible with binary formats, such as images or sounds. In these situations, the users must each have exclusive access to the file, ending up with a *lock-modify-unlock* model. Without this, one or more users could end up wasting time on changes that cannot be merged.

An SVN lock is a piece of metadata which grants exclusive access to a user. This user is called the lock owner. A lock is uniquely identified by a lock token (a string of characters). If someone else attempts to commit the file (or delete a parent of the file), the repository demands two pieces of information:

- User authentication - the user performing the commit must be the lock owner;
- Software authorization - the user's working copy must have the same lock token as the one from the repository, proving that it is the same working copy where the lock originated from.

### Scanning for Locks

When starting to work on a file that is not contextually mergeable (usually a binary file), it is better to verify if someone else is not already working on that file. You can do this in the *Working Copy view* by selecting one or more resources, then right clicking on them and choosing the **Scan for Locks** action from the context menu.



**Figure 336: The locked items dialog**

The **Locked items** dialog contains a table with all the resources that were found locked on the repository. For each resource there are specified: resource path, state of the lock, owner of the lock, lock comment, creation and expiration date for the lock (if any).

The state of the lock can be one of:

- 🔒 - shown when:
  - another user has locked the file in the repository;
  - the file was locked by the same user from another working copy;
  - the file was locked from the **Repositories** view.
- 🔒 - displayed after you have locked a file from the current working copy.
- 🔄 - a file already locked from your working copy is no longer locked in the repository (it was unlocked by another user).
- 🔄 - a file already locked from your working copy is being locked by another user. Now the owner of the file lock is the user who stole the lock from you.

You can unlock a resource by selecting it and pressing the **Unlock** button.

### Locking a File

By locking a file you have exclusive write access over it in the repository.

You can lock a file from your working copy or directly from the **Repositories** view. Note that you can lock only files, but no directories. This is a restriction imposed by Apache Subversion™.

The **Lock** dialog allows you to write a comment when you set a lock or when you steal an existing one. Note that you should steal a lock only after you made sure that the previous owner no longer needs it, otherwise you may cause an unsolvable conflict which is exactly why the lock was put there in the first place. The Subversion server can have a policy concerning lock stealing, as it may not allow you to do this if certain conditions are not met.

The lock stays in place until you unlock the file or until someone breaks it. There is also the possibility that the lock expires after a period of time specified in the Subversion server policy.

### Unlocking a File

A file can be unlocked from the contextual menu of the **Working Copy view**. A dialog will prompt you to confirm the unlocking and it will also allow you to break the lock (unlock it by force).

## Synchronize with Repository

In the work cycle you will need to incorporate other people's changes (update) and to make your own work available to others (commit). This is what the **Incoming** and **Outgoing** modes of *the Working Copy view* was designed for, to help you send and receive modifications from the repository.

The **Incoming** and **Outgoing** modes of this view focus on incoming and outgoing changes. The incoming changes are the changes that other users have committed since you last updated your working copy. The outgoing changes are the modifications you made to your working copy as a result of editing, removing or adding resources.

The view presents the status of the working copy resources against the BASE revision after a **Refresh** operation. You can view the state of the resources versus a repository HEAD revision by using the **Synchronize** action from *the Working Copy view*.

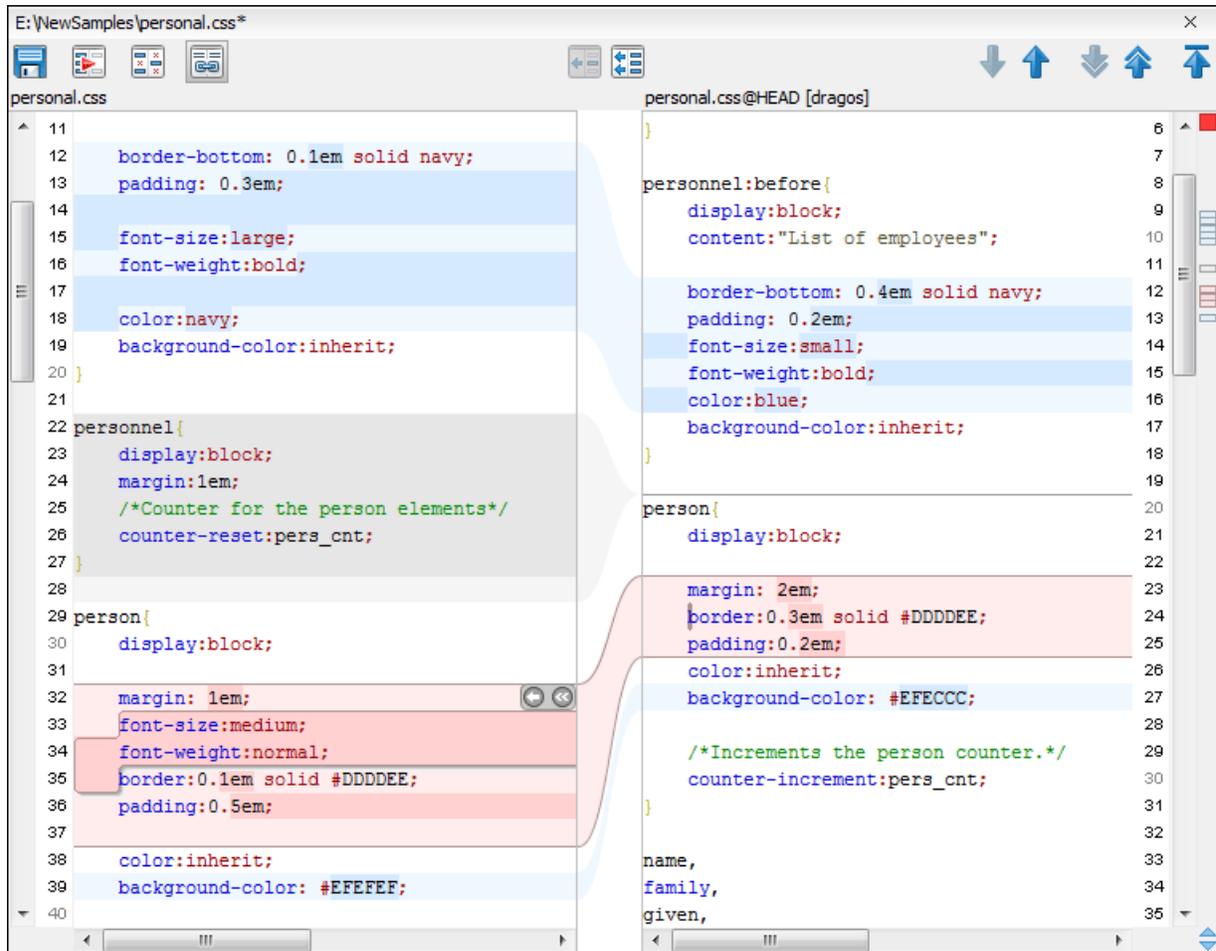
### View Differences

One of the most common requirements in project development is to see what changes have been made to the files from your Working Copy or to the files from the repository. You can examine these changes after a synchronize operation with the repository, by using the **Open in compare editor** action from the contextual menu.

The text files are compared using a built-in *Compare view* which uses a line differencing algorithm or a specified external diff application if such an application is *set in the SVN preferences*. When a file with outgoing status is involved, the compare is performed between the file from the working copy and the BASE revision of the file. When a file with incoming or conflict status is involved, the differences are computed using a three-way algorithm which means that the local file and the repository file are each compared with the BASE revision of the file. The results are displayed in the same view. The differences obtained from the local file comparison are considered outgoing changes and the ones obtained from the repository file comparison are considered incoming changes. If any of the incoming changes overlap outgoing changes then they are in conflict.

A special case of difference is a *diff pseudo-conflict*. This is the case when the left and the right sections are identical but the BASE revision does not contain the changes in that section. By default this type of changes are ignored. If you want to change this you can go to *SVN Preferences* and change the corresponding option.

The right editor of the internal compare view presents either the BASE revision or a revision from the repository of the file so its content cannot be modified. By default when opening a synchronized file in the **Compare** view, a compare is automatically performed. After modifying and saving the content of the local file presented in the left editor, another compare is performed. You will also see the new refreshed status in the *Working Copy view*.



**Figure 337: Compare View**

At the top of each of the two editors, there are presented the name of the opened file, the corresponding SVN revision number (for remote resources) and the author who committed the associated revision.

There are three types of differences:

- incoming changes - Changes committed by other users and not present yet in your working copy file. They are marked with a blue highlight and on the middle divider the arrows point from right to left.
- outgoing changes - Changes you have done in the content of the working copy file. They are marked with a gray highlight and the arrows on the divider are pointing from left to right.
- conflicting changes - This is the case when the same section of text which you already modified in the local file has been modified and committed by some other person. They are marked with a red highlight and red diamonds on the divider.

There are numerous actions and options available in the *Compare View toolbar* or in the **Compare** menu from the main menu. You can decide that some changes need adjusting or that new ones must be made. After you perform the adjustments, you may want to perform a new compare between the files. For this case there is an action called **Perform files differencing**. After each files differencing operation the first found change will be selected. You can navigate from one change to another by using the actions **Go to first**, **Go to previous**, **Go to next** and **Go to last modification**. If you decide that some incoming change needs to be present in your working file you can use the action **Copy change from right to left**. This is useful also when you want to override the outgoing modifications contained in a conflicting section. The action **Copy all non-conflicting changes from right to left** copies all incoming changes which are not contained inside a conflicting section in your local file.

Let us assume that only a few words or letters are changed. Considering that the differences are performed taking into account whole lines of text, the change will contain all the lines involved. For finding exactly what words or letters have

changed there are available two dialogs which present a more detailed compare result when you double click on the middle divider of a difference: **Word Details** and **Character Details**.

When you want to examine only the changes in the real text content of the files disregarding the changes in the number of white spaces between words or lines there is available an option in the *SVN Preferences* which allows you to enable or disable the white space ignoring feature of the compare algorithm.

## Conflicts

A file conflict occurs when two or more developers have changed the same few lines of a file or the properties of the same file. As Subversion knows nothing of your project, it leaves resolving the conflicts to the developers. Whenever a conflict is reported, you should open the file in question, and try to analyse and resolve the conflicting situation.

### Real Conflicts vs Mergeable Conflicts

There are two types of conflicts:

- *real conflict* ( decorator in *Name* column) - Syncro SVN Client considers the following resource states to be real conflicts:
  - *conflicted* state - a file reported by SVN as being in this state is obtained after it was updated/merged while having incoming and outgoing content or property changes at the same time, changes which could not be merged. A content conflict ( symbol in *Local file status* column) is reported when the modified file has binary content or it is a text file and both local and remote changes were found on the same line. A properties conflict ( symbol in *Local properties status* column) is reported when a property's value was modified both locally and remotely;
  - *tree conflicted* state ( symbol in *Local file status* column) - obtained after an update or merge operation, while having changes at the directory structure level (for example, file is locally modified and remotely deleted or locally scheduled for deletion and remotely modified);
  - *obstructed* state ( symbol in *Local file status* column) - obtained after a resource was versioned as one kind of object (file, directory, symbolic link), but has been replaced outside Syncro SVN Client by a different kind of object.
- *pseudo-conflict* ( decorator in *Name* column) - a file is considered to be in *pseudo-conflict* when it contains both incoming and outgoing changes. When incoming and outgoing changes do not intersect, an update operation may automatically merge the incoming file content into the existing locally one. In this case, the *pseudo-conflict* marker is removed. This marker is used only as a warning which should prevent you to run into a real conflict.

#### Note:

- A conflicting resource cannot be committed to repository. You have to resolve it first, by using **Mark Resolved** action (after manually editing/merging file contents) or by using **Mark as Merged** action (for pseudo-conflicts).
-  and  decorators are presented only when one of the following view modes is selected: **Modified, Incoming, Outgoing, Conflicts**.
- The  marker is used also for folders to signal that they contain a file in real conflict or pseudo-conflict state.

### Content Conflicts vs Property Conflicts

A *Content conflict* appears in the content of a file. A merge occurs for every inbound change to a file which is also modified in the working copy. In some cases, if the local change and the incoming change intersect each other, Apache Subversion™ cannot merge these changes without intervention. So if the conflict is real when updating the file in question the conflicting area is marked like this:

```
<<<<<< filename
your changes
=====
code merged from repository
>>>>>> revision
```

Also, for every conflicted file Subversion places three additional temporary files in your directory:

- `filename.ext.mine` - This is your file as it existed in your working copy before you updated your working copy, that is without conflict markers. This file has your latest changes in it and nothing else.
- `filename.ext.rOLDREV` - This is the file that was the BASE revision before you updated your working copy, that is the file revision that you updated before you made your latest edits.
- `filename.ext.rNEWREV` - This is the file that Subversion client just received from the server when you updated your working copy. This file corresponds to the HEAD revision of the repository.

OLDREV and NEWREV are revision numbers. If you have conflicts with binary files, Subversion does not attempt to merge the files by itself. The local file remains unchanged (exactly as you last changed it) and you will get `filename.ext.r*` files also.

A *Property conflict* is obtained when two people modify the same property of the same file or folder. When updating such a resource a file named `filename.ext.prej` is created in your working copy containing the nature of the conflict. Your local file property that is in conflict will not be changed. After resolving the conflict you should use the **Mark resolved** action in order to be able to commit the file. Note that the **Mark resolved** action does not really resolve the conflict. It just removes the conflicted flag of the file and deletes the temporary files.

### Edit Real Content Conflicts

The conflicts of a file in the conflicted state (a file with the red double arrow icon) can be edited visually with the **Compare** view (the built-in file diff tool) or with an *external diff application*. Resolving the conflict means deciding for each conflict if the local version of the change will remain or the remote one instead of the special conflict markers inserted in the file by the SVN server.

The **Compare** view (or the external diff application *set in Preferences*) is opened with the action **Edit Conflict** which is available on the contextual menus of *the Working Copy view* and is enabled only for files in the conflicted state (an update operation was executed but the differences could not be merged without conflicts). The external diff application is called with 3 parameters because it is a 3-way diff operation between the local version of the file from the working copy and the HEAD version from the SVN repository with the BASE version from the working copy as common ancestor.

If *the option Show warning dialog when edit conflicts is enabled* you will be warned at the beginning of the operation that the operation will overwrite the conflict version of the file received from the SVN server (the version which contains the conflict markers <<<<<<<<, =====, >>>>>>>) with the original local version of the file that preceded the update operation. If you press the OK button the visual conflict editing will proceed and a backup file of the conflict version received from the SVN server is created in the same working copy folder as the file with the edited conflicts. The name of the backup file is obtained by appending the extension `.sync.bak` to the file as stored on the SVN server. If you press the **Cancel** button the visual editing will be aborted.

The usual operations on the differences between two versions of a file are available on the toolbar of this view:

- **Save** - Saves the modifications of the local version of the file displayed in the left side of the view.
- **Perform Files Differencing** - Applies the diff operation on the two versions of the file displayed in the view. It is useful after modifying the local version displayed in the left side of the view.
- **Go to First Modification** - Scrolls the view to the topmost difference.
- **Go to Previous Modification** - Scrolls the view to the previous difference. The current difference is painted with a darker color than the other ones.
- **Go to Next Modification** - Scrolls the view to the next difference. The current difference is painted with a darker color than the other ones.
- **Go to Last Modification** - Scrolls the view to the last difference.
- **Copy All Non Conflicting Changes from Left to Right** - Not applicable for editing conflicts so it is disabled.
- **Copy Change from Left to Right** - Not applicable for editing conflicts so it is disabled.
- **Copy Change from Right to Left** - Copies the current difference from the left side to the right side by replacing the highlighted text of the current difference from the left side with the one from the right side.
- **Copy All Non Conflicting Changes from Right to Left** - Applies the previous operation for all the differences.
- **Show Modification Details at Word Level** - Displays a more detailed version of the current difference computed at word level.

- **Show Modification Details at Char Level** - Displays a more detailed version of the current difference computed at character level.
- **Ignore Whitespaces** - The text nodes are normalized before computing the difference so that if two text nodes differ only in whitespace characters they are reported as equal.

The operation begins by overwriting the conflict version of the file received from the SVN server (the version which contains the conflict markers <<<<<<<, =====, >>>>>>>) with the original local version of the file before running the update action which created the conflict. After that the differences between this original local version and the repository version are displayed in the **Compare** view.

If you want to edit the conflict version of the file directly in a text editor instead of the visual editing offered by the **Compare** view you should work on the local working copy file after the update operation without running the action **Edit Conflict**. If you decide that you want to edit the conflict version directly after running the action **Edit Conflict** you have to work on the `.sync.bak` file.

If you did not finish editing the conflicts in a file at the first run of the action **Edit Conflict** you can run the action again and you will be prompted to choose between resuming the editing where the previous run left it and starting again from the conflict file received from the SVN server.

After the conflicts are edited and saved in the local version of the file you should run:

- either the action **Mark Resolved** on the file so that the result of the conflict editing process can be committed to the SVN repository,
- or the action **Revert** so that the repository version overwrites all the local modifications.

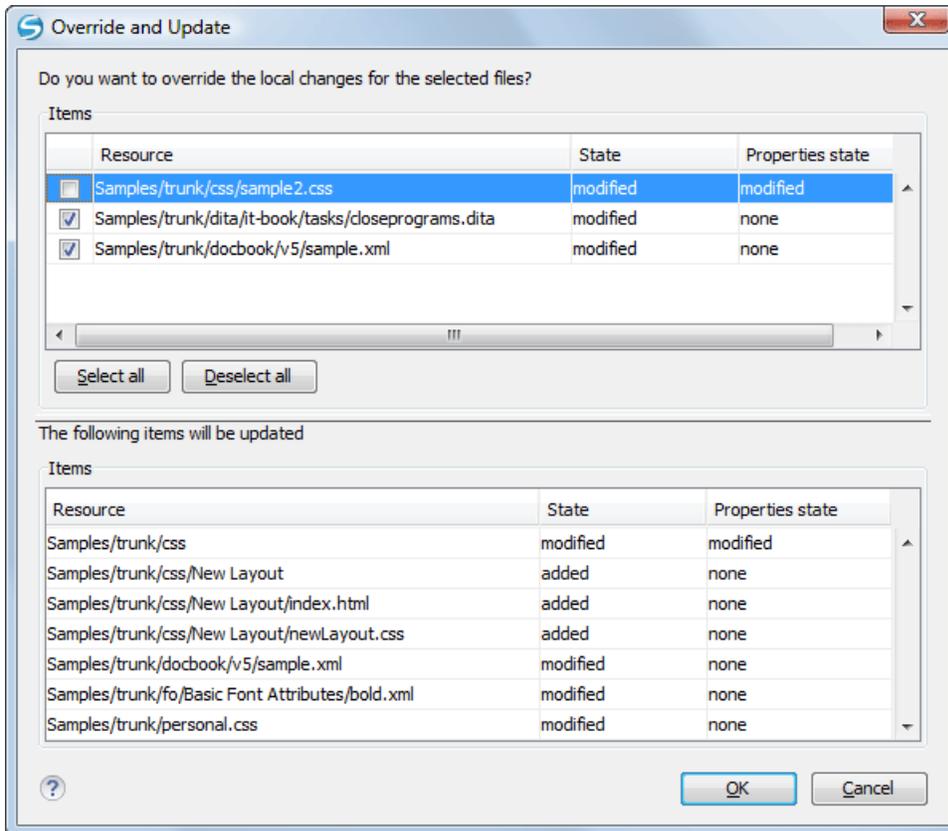
Both actions remove the backup file and other temporary files created with the conflict version of the local file.

### Revert Your Changes

If you want to undo all changes you made in a file since the last update you need to select the file, right click to pop up the contextual menu and then select **Revert**. A dialog will pop up showing you the files that you have changed and can be reverted. Select those you want to revert and click the **OK** button. Revert will only undo your local changes. It does not undo any changes which have already been committed. If you choose to revert the file to the pristine copy which resides in the administration folders then the eventual conflict is solved by losing your outgoing modifications. If you try to revert a resource not under version control, the resource will be deleted from the file system.

If you want some of your outgoing changes to be overridden you must first open the file in *Compare view* and choose the sections to be replaced with ones from the repository file. This can be achieved either by editing directly the file or by using the action **Copy change from right to left** from the *Compare view toolbar*. After editing the conflicting file you have to run the action **Mark as merged** before committing it.

If you want to drop all local changes and in the same time bring all incoming changes into your working copy resource you can use the **Override and update** action which discards the changes in the local file and updates it from the repository. A dialog will show you the files that will be affected.



**Figure 338: Override and update dialog**

In the first table in the dialog you will be able to see the resources that will be overridden. You can also select or deselect them as you wish. In the second table you will find the list of resources that will be updated. Only resources that have an incoming status are updated.

### Merge Conflicted Resources

Before you can safely commit your changes to the repository you must first resolve all conflicts. In the case of pseudo-conflicts they can be resolved in most cases with an update operation which will merge the incoming modifications into your working copy resource. In the case of real conflicts, conflicts that persist after an update operation, it is necessary to resolve the conflict using the built-in compare view and editor or, in the case of properties conflict, the [Properties view](#). Before you can commit you must *mark as resolved* the affected files.

Both pseudo and real conflicts can be resolved without an update. You should open the file in the compare editor and decide which incoming changes need to be copied locally and which outgoing changes must be overridden or modified. After saving your local file you have to use the *Mark as merged* action from the contextual menu before committing.

### Drop Incoming Modifications

In the situation when your file is in conflict but you decide that your working copy file and its content is the correct one, you can decide to drop some or all of the incoming changes and commit afterwards. The action **Mark as merged** proves to be useful in this case too. After opening the conflicting files with [Compare view](#), [Editor](#) or editing their properties in the **Properties** view and deciding that your file can be committed in the repository replacing the existing one, you should use the **Mark as merged** action. When you want to override completely the remote file with the local file you should run the action **Override and commit** which drops any remote changes and commits your file.

In general it is much safer to analyze all incoming and outgoing changes using the **Compare** view and only after to update and commit.

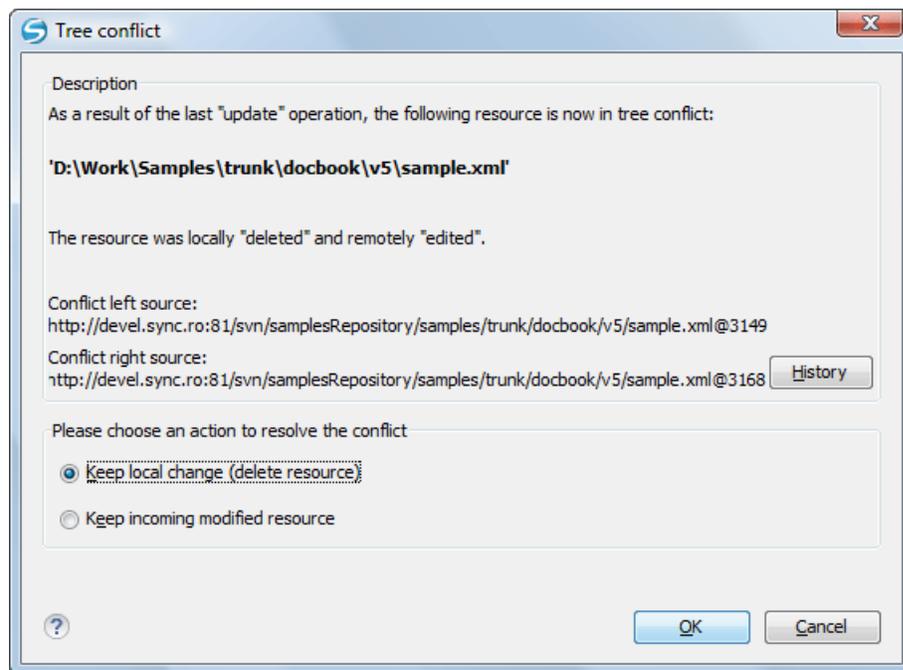
## Tree Conflicts

A *tree conflict* is a conflict at the directory tree structure level and occurs when the user runs an update action on a resource that:

- it is locally modified and the same resource was deleted from the repository (or deleted as a result of being renamed or moved);
- it was locally deleted (or deleted as a result of being renamed or moved) and the same resource is incoming as modified from the repository.

The same conflict situation can occur after a merge or a switch action. The action ends with an error and the folder containing the file that is now in the tree conflict state is also marked with a conflict icon.

Such a conflict can be resolved in one of the following ways which are available when the user double clicks on the conflicting resource or when running the **Edit conflict** action:



**Figure 339: Resolve a tree conflict**

- Keep the local modified file - If there is a renamed version of the file committed by other user that will be added to the working copy too.
- Delete the local modified file - Keeps the incoming change that comes from the repository.

## Update the Working Copy

While you are working on a project, other members of your team may be committing changes to the project repository. To get these changes, you have to *update* your working copy. Updating may be done on single files, a set of selected files, or recursively on entire directory hierarchies. The update operation can be performed from *Working Copy view*. It updates the selected resources to the last synchronized revision (if remote information is available) or to the *HEAD* revision of the repository.

There are three different kinds of incoming changes:

- *Non-conflicting* - A non-conflicting change occurs when a file has been changed remotely but has not been modified locally.
- *Conflicting, but auto-mergeable* - An auto-mergeable conflicting change occurs when a text file has been changed both remotely and locally (i.e. has non-committed local changes) but the changes are on different lines of text. Not applicable to binary resources (for example multimedia files, PDFs, executable program files)

- *Conflicting* - A conflicting change occurs when one or more of the same lines of a text file have been changed both remotely and locally.

If the resource contains only incoming changes or the outgoing changes do not intersect with incoming ones then the update will end normally and the Subversion system will merge incoming changes into the local file. In the case of a conflicting situation the update will have as result a file with conflict status.

The Syncro SVN Client allows you to update your working copy files to a specific revision, not only the most recent one. This can be done by using the **Update to revision/depth** action from the **Working Copy** view (**All Files** view mode) or the **Update to revision** action from the *History view* contextual menu.

If you select multiple files and folders and then you perform an **Update** operation, all of those files and folders are updated one by one. The Subversion client makes sure that all files and folders belonging to the same repository are updated to the exact same revision, even if between those updates another commit occurred.

When the update fails with a message saying that there is already a local file with the same name Subversion tried to checkout a newly versioned file, and found that an unversioned file with the same name already exists in your working folder. Subversion will never overwrite an unversioned file unless you specifically do this with an **Override and update** action. If you get this error message, the solution is simply to rename the local unversioned file. After completing the update, you can check whether the renamed file is still needed.

### Send Your Changes to the Repository

Sending the changes you made to your working copy is known as *committing* the changes. If your working copy is up to date and there are no conflicts, you are ready to commit your changes.

The **Commit** action sends the changes in your local working copy to the repository. After selecting the action from the contextual menu you will see a dialog displaying the resources that can be committed.

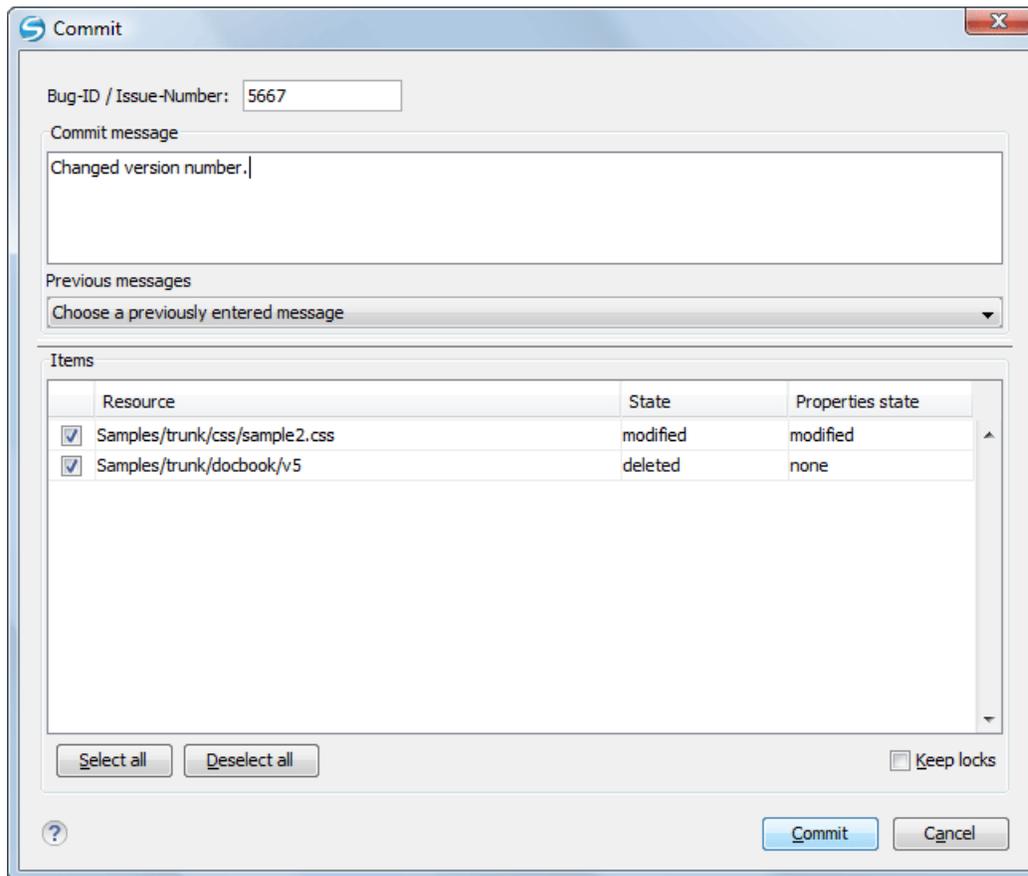


Figure 340: Commit dialog

Enter a comment to associate with the commit or choose a previously entered comment from the list (the last 10 commit messages will be remembered even after restarting the SVN client application). The dialog will list modified, added, deleted and unversioned resources. All modified, added and deleted resources will be selected by default. If you don't want a changed file to be committed, just uncheck that file. The unversioned items are not selected by default unless you have selected them specifically before issuing the commit command.

To select all resources, click **Select All**. To deselect all resources, click **Deselect All**. Checking the **Keep locks** option will preserve any locks you have on repository resources. Your working copy must be up-to-date with respect to the resources you are committing. This is ensured by using the **Update** action prior to committing, resolving conflicts and re-testing as needed. If your working copy resources you are trying to commit are *out of date* you will get an appropriate error message.

The table presented in the dialog is sortable. For example if you want to see all the resources that are in the *modified* state click on the **State** column header to sort the table by that column.

The modifications that will be committed for each file can be reviewed in the compare editor window by double clicking on the file in the **Commit** dialog or by right clicking and selecting the action **Show Modifications** from the contextual menu.

If you have modified files which have been included from a different repository using `svn:externals`, those changes cannot be included in the same commit operation.

## Integration with Bug Tracking Tools

Users of bug tracking systems can associate the changes they make in the repository resources with a specific ID in their bug tracking system. The only requirement is that the user includes the bug ID in the commit message that he enters in the **Commit** dialog. The format and the location of the ID in the commit message are configured with SVN properties.

To make the integration possible Syncro SVN Client needs some data about the bug tracking tool used in the project. You can configure this using the following *SVN properties* which must be set on the folder containing resources associated with the bug tracking system. Usually they are set recursively on the root folder of the working copy.

- **bugtraq:message** - A string property. If it is set *the Commit dialog* will display a text field for entering the bug ID. It must contain the string `%BUGID%`, which is replaced with the bug number on commit.
- **bugtraq:label** - A string property that sets the label for the text field configured with the **bugtraq:message** property.
- **bugtraq:url** - A string property that is the URL pointing to the bug tracking tool. The URL string should contain the substring `%BUGID%` which Syncro SVN Client replaces with the issue number. That way the resulting URL will point directly to the correct issue.
- **bugtraq:warnifnoissue** - A boolean property with the values *true/yes* or *false/no*. If set to *true*, the Syncro SVN Client will warn you if the bug ID text field is left empty. The warning will not block the commit, only give you a chance to enter an issue number.
- **bugtraq:number** - A boolean property with the value *true* or *false*. If this property is set to *false*, then any character can be entered in the bug ID text field. If the property is set to *true* or is missing then only numbers are allowed as the bug ID.
- **bugtraq:append** - A boolean property. If set to *false*, then the bug ID is inserted at the beginning of the commit message. If *yes* or not set, then it's appended to the commit message.
- **bugtraq:logregex** - This property contains one or two regular expressions, separated by a newline. If only one expression is set, then the bug ID's must be matched in the groups of the regular expression string, for example `[Ii]ssue #?(\\d+)`. If two expressions are set, then the first expression is used to find a string which relates to a bug ID but may contain more than just the bug ID (e.g. `Issue #123` or `resolves issue 123`). The second expression is then used to extract the bug ID from the string extracted with the first expression. An example: if you want to catch every pattern `issue #XXX` and `issue #890`, `#789` inside a log message you could use the following strings:
  - `[Ii]ssue #?(\\d+)(, ? ?#?(\\d+))+`
  - `(\\d+)`

The data configured with these SVN properties is stored on the repository when a revision is committed. A bug tracking system or a statistics tools can retrieve from the SVN server the revisions that affected a bug and present the commits related to that bug to the user of the bug tracking system.

If the **bugtraq:url** property was filled in with the URL of the bug tracking system and this URL includes the *%BUGID%* substring as specified above in the description of the **bugtraq:url** property then *the History view* presents the bug ID as a hyperlink in the commit message. A click on such a hyperlink in the commit message of a revision opens a Web browser at the page corresponding to the bug affected by that commit.

## Obtain Information for a Resource

This section explains how to obtain information for a SVN resource:

### Request Status Information for a Resource

While you are working you often need to know which files you have changed, added, removed or renamed, or even which files got changed and committed by others. That's where the **Synchronize** action from *Working Copy view* comes in handy. The **Working Copy** view will show you every file that has changed in any way in your working copy, as well as any unversioned files you may have.

If you want more detailed information about a given resource you can use the **Information** action from the **Working Copy** view *contextual menu*. A dialog called **SVN Information** will pop up showing remote and local information regarding the resource, such as:

- local path and repository location
- revision number
- last change author, revision and date
- commit comment
- information about locks
- local file status
- local properties status
- remote file status
- remote properties status
- file size, etc.

The value of a property of the resource displayed in the dialog can be copied by right clicking on the property and selecting the **Copy** action.

A less detailed list of information is also presented when you hover with the mouse pointer over a resource and the tooltip window is displayed.

### Request History for a Resource

In Apache Subversion™, both files and directories are versioned and have a history. If you want to examine the history for a selected resource and find out what happened at a certain revision you can use the **History view** that can be accessed from *Repositories view*, *Working Copy view*, *Revision Graph*, or *Directory Change Set view*. From the **Working copy view** you can display the history of local versioned resources.

## Management of SVN Properties

In the *Properties view* you can read and set the Apache Subversion™ properties of a file or folder. There is a set of predefined properties with special meaning to Subversion. For more information about properties in Subversion see the SVN Subversion specification. Subversion properties are revision dependent. After you change, add or delete a property for a resource, you have to commit your changes to the repository.

If you want to change the properties of a given resource you need to select that resource from the *Working Copy view* and run the **Show properties** action from the contextual menu. The **Properties** view will show the local properties for the resource in the working copy. Once the *Properties* view is visible, it will always present the properties of the currently selected resource. In the **Properties** view *toolbar* there are available actions which allow you to add, change and delete the properties.

If you choose the **Add a new property** action, a new dialog will pop-up containing:

- **Name** - Combo box which allows you to enter the name of the property. The drop down list of the combo box presents the predefined Subversion properties such as **svn:ignore**, **svn:externals**, **svn:needs-lock**, etc.
- **Current value** - Text area which allows you to enter the value of the new property.

If the selected item is a directory, you can also set the property recursively on its children by checking the **Set property recursively** checkbox.

If you want to change the value for a previously set property you can use the **Edit property** action which will display a dialog where you can set:

- **Name** - Property name (cannot be changed).
- **Current value** - Presents the current value and allows you to change it.
- **Base value** - The value of the property, if any, from the resource in the pristine copy. It cannot be modified.

If you want to completely remove a property previously set you can choose the **Remove property** action. It will display a confirmation dialog in which you can choose also if the property will be removed recursively.

In the *Properties view* there is a **Refresh** action which can be used when the properties have been changed from outside the view. This can happen, for example, when the view was already presenting the properties of a resource and they have been changed after an **Update** operation.

## Branches and Tags

One of the fundamental features of version control systems is the ability to create a new line of development from the main one. This new line of development will always share a common history with the main line if you look far enough back in time. This line is known as a branch. Branches are mostly used to try out features or fixes. When the feature or fix is finished, the branch can be merged back into the main branch (trunk).

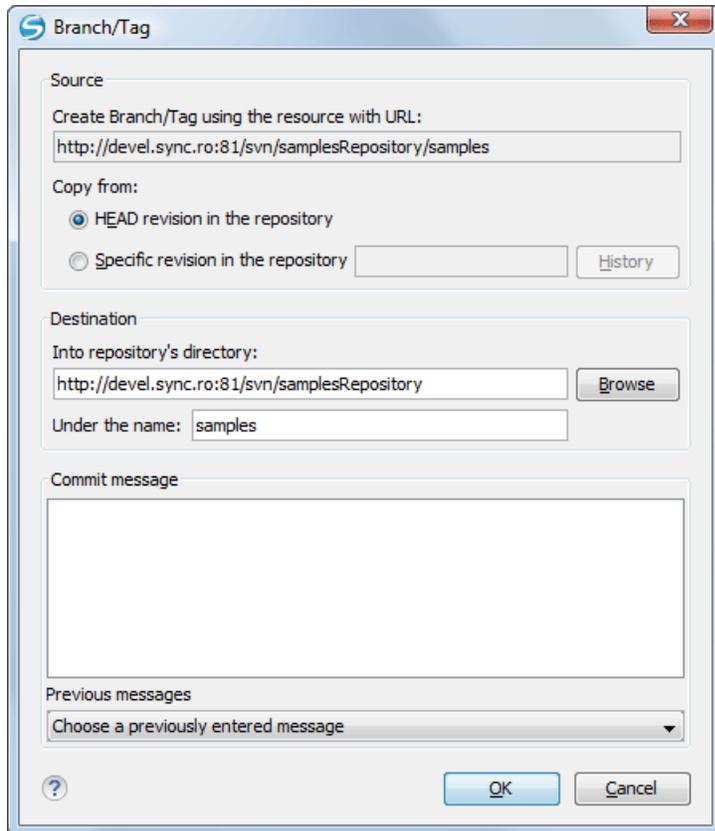
Another feature of version control systems is the ability to take a snapshot of a particular revision, so you can at any time recreate a certain build or environment. This is known as tagging. Tagging is especially useful when making release versions.

In Apache Subversion<sup>TM</sup> there is no difference between a tag and a branch. On the repository both are ordinary directories that are created by copying. The trick is that they are cheap copies instead of physical copies. Cheap copies are similar to hard links in Unix, which means that they merely link to a specific tree and revision without making a physical copy. As a result branches and tags occupy little space on the repository and are created very quickly.

As long as nobody ever commits to the directory in question, it remains a tag. If people start committing to it, it becomes a branch.

### Create a Branch / Tag

In the *Working Copy view* or in the *Repositories view*, select the resource which you want to copy to a branch or tag, then select the command *Branch / Tag...* from the **Tools** menu.



**Figure 341: The Branch / Tag dialog**

The default target URL for the new branch / tag will be the repository URL of the selected resource from your working copy, divided in two: the URL of the parent and the selected resource's name. You may specify other resource name if you want to make a branch / tag using a different name than the one of the selected resource, by modifying the field labeled **Under the name:**. The new branch / tag will be created as child of the specified repository directory URL and having the new provided name. To change the parent directory URL to the new path for your branch / tag, click on the **Browse** button and choose a repository target directory for your resource.

You can also specify the source of the copy. There are three options:

- **HEAD revision in the repository** - The new branch / tag will be copied in the repository from the HEAD revision. The branch will be created very quickly as the repository will make a cheap copy.
- **Specific revision in the repository** - The new branch will be copied in the repository but you can specify exactly the desired revision. This is useful for example if you forgot to make a branch / tag when you released your application. If you click on the **History** button on the right you can select the revision number from *the History dialog*. This type of branch will also be created very quickly.
- **Working copy** - The new branch will be a copy of your local working copy. If you have updated some files to an older revision in your working copy, or if you have made local changes, that is exactly what goes into the copy. This involves transferring some data from your working copy back to the repository, more exactly the locally modified files.

When you are ready to create the new branch / tag, write a commit comment in the corresponding field and press the **OK** button.

## Merging

At some stage during the development you will want to merge the changes made on one branch back into the trunk, or vice versa. Merge is closely related to Diff. The merge is accomplished by comparing two points (branches or revisions) in the repository and applying the obtained differences to your working copy.

It is a good idea to perform a merge into an unmodified working copy. If you have made changes to your working copy, commit them first. If the merge does not go as you expect, you may want to revert the changes and revert cannot recover your uncommitted modifications.

The **Merge** action can be found in the **Tools** menu of Syncro SVN Client. The directory selected when you issued the command will be the result directory of the merge operation.

There are three common types of merging which are handled in different ways:

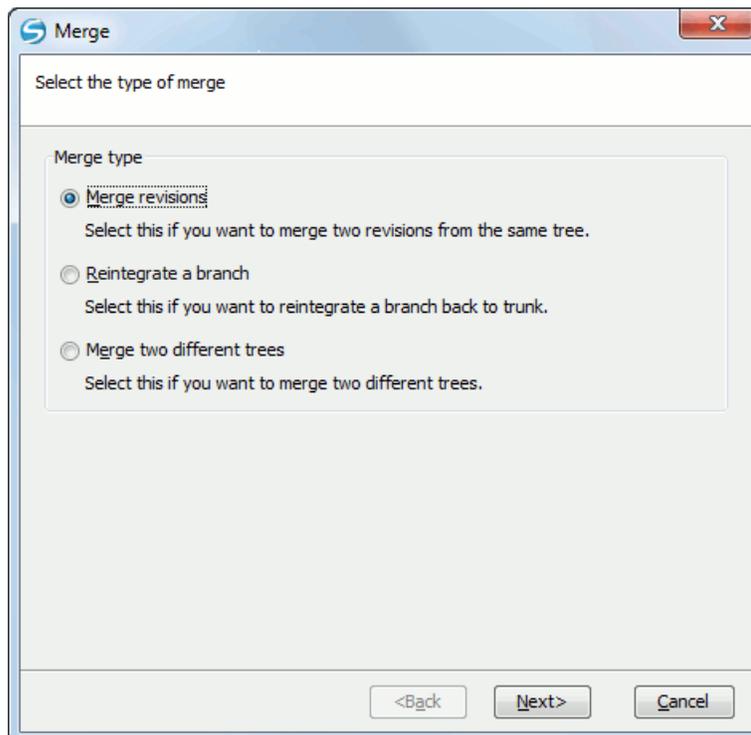
- merge revisions - integrate the modifications from a branch into the trunk or a different branch, when the branches are created from the same trunk;
- reintegrate a branch - integrate the modifications from a branch into the trunk;
- merge two different trees - the general case of integrating some changes between two different branches.

## Merge Revisions

This is the case when you have made one or more revisions to a branch (or to the trunk) and you want to port those changes across to a different branch or trunk. An example of such operation can be the following: calculate the changes necessary to get (from) revision 17 of branch B1 (to) revision 25 of branch B1, and apply those changes to my working copy, of the trunk or another branch.

1. Go to menu **Tools > Merge ...**

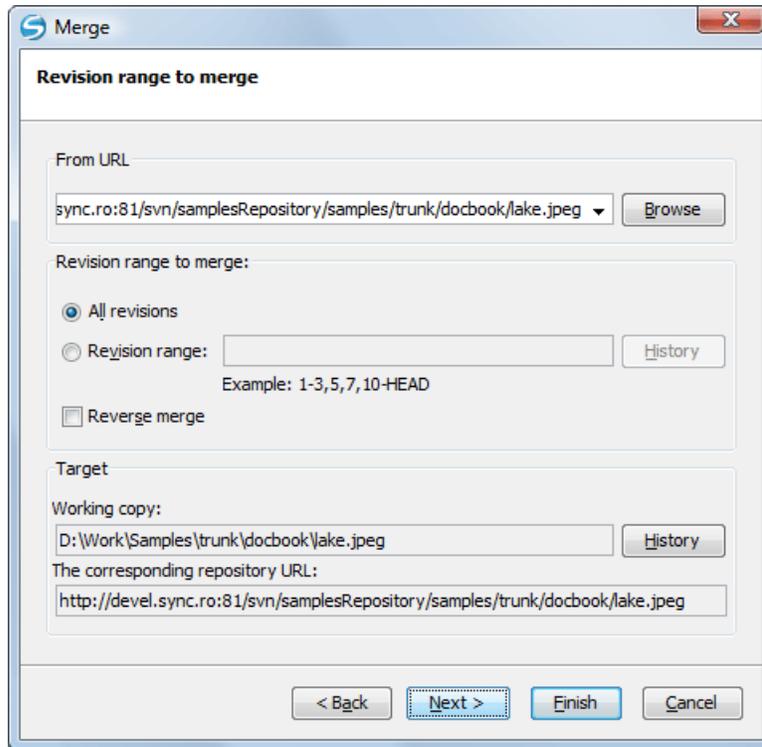
The **Merge** wizard is opened:



**Figure 342: The Merge Wizard - The Merge Type**

2. Select the option **Merge revisions**.
3. Press the **Next** button.

The second step of the **Merge** wizard is displayed:



**Figure 343: The Merge Wizard - Revisions Range**

4. In the **From URL** field enter the folder URL of the branch or tag containing the changes that you want to port into your working copy.

You may also click the **Browse** button to browse the repository and find the desired branch. If you have merged from this branch before, then just use the drop down list which shows a history of previously used URLs.

5. Select the revision range.

- a) Choose between all revisions and a revision range.

In the **Revision range to merge** section you can choose to merge all revisions or enter the list of revisions you want to merge in the **Revision range** field. This can be a single revision, a list of comma separated specific revisions, or a range of revisions separated by a dash, or any combination of these.

The **History** button opens the *the History dialog* which allows selecting the list of revisions to be merged in the easiest way. One or several revisions can be selected in that dialog.

Be careful about using the HEAD revision. It may not refer to the revision you think it does if someone else made a commit after your last update.

- b) Check the **Reverse merge** box (optional).

If you want to merge changes back out of your working copy, to revert a change which has already been committed, select the revisions to revert and check the **Reverse merge** box.

6. Specify the target where the changes of the branch will be integrated.

- a) Enter the working copy folder in the **Working copy** field.

By default the root folder of the current working copy from the **Working Copy** view is set in this field.

If you have already merged some changes from this branch and you remember the last merged revision, you can select that revision for the working copy using the **History** button. For example, if you have merged revisions 27 to 33 last time, then the start point for this merge operation should be revision 33.

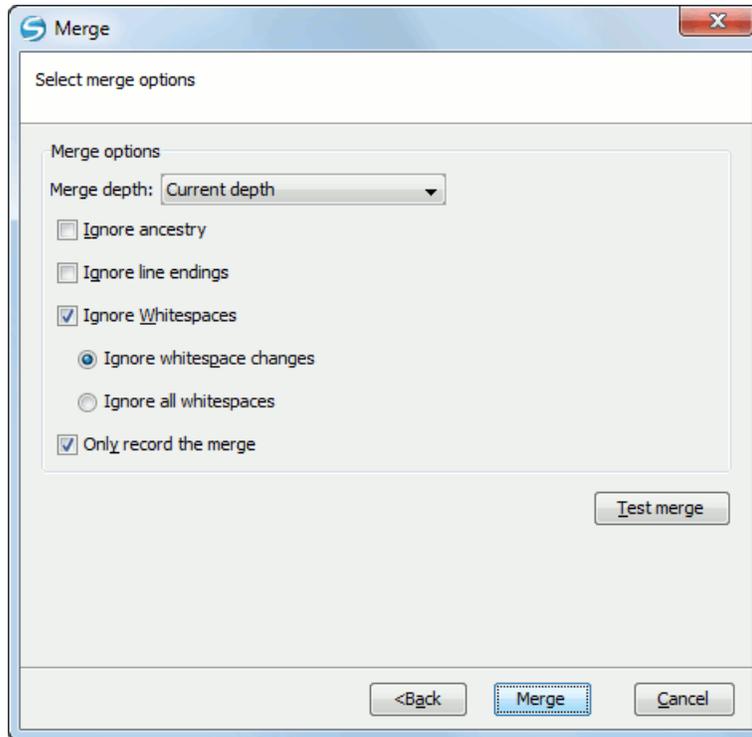
- b) Specify the URL of the target branch that will receive the changes.

By default the URL of the repository of the current working copy from the **Working Copy** view is set in this field.

Apache Subversion™ has merge tracking features and automatically records the last merged revision so you do not need to remember when you performed the last merge.

7. Press the **Next** button.

The **Merge Options** step of the wizard is opened:



**Figure 344: The Merge Wizard - Advanced Options**

8. Set advanced options if necessary before starting the merge process.
  - a) Set the depth of the merge operation in the **Merge depth** combo box.

You can specify how far down into your working copy the merge should go by selecting one of the following values:

- Current depth
- Recursive (infinity)
- Immediate children (immediates)
- File children only (files)
- This folder only (empty)

The *depth* term is described in the [Sparse checkouts](#) section. The default depth is the depth of the current working copy.

- b) Check the **Ignore ancestry** checkbox (optional).

The **Ignore ancestry** checkbox allows a merge to be applied between a branch and the trunk or between two branches even if they do not share a common ancestry. Normally the branch and the trunk or the two branches that are merged must have a common ancestor revision in the same repository. In case the two merged trees were imported in the repository they are not related in the sense of a common ancestor tree and the merge operation is possible by ignoring the missing common ancestry of the two merged trees.

- c) Check the **Ignore line endings** checkbox (optional).
  - d) Check the **Ignore Whitespaces** checkbox (optional).

The **Ignore line endings** and **Ignore whitespaces** checkboxes allow you to specify how the line endings and whitespace changes should be handled. If they are checked the changes due only to the line endings and whitespaces are ignored. The default behavior is to treat all whitespace and line-end differences as real changes to be merged. **Ignore whitespace changes** excludes changes which are caused by a change in the amount or type of whitespace, for example changing the indentation or changing tabs to spaces. Adding whitespace where there was none before, or removing a whitespace completely is still shown as a change. If **Ignore all whitespaces** is checked all whitespace-only changes are excluded.

- e) Check the **Only record the merge** checkbox (optional).

If you are using merge tracking support and you want to mark a revision as having been merged, without actually doing the merge here, check the **Only record the merge** checkbox. You might want to do this for two possible reasons. You make the changes by hand, then mark the change as merged so that the merge tracking algorithm is aware of it. Or you might want to prevent a particular revision from being merged by marking it as already merged. This will prevent future merging.

- f) Press the **Test merge** button (optional).

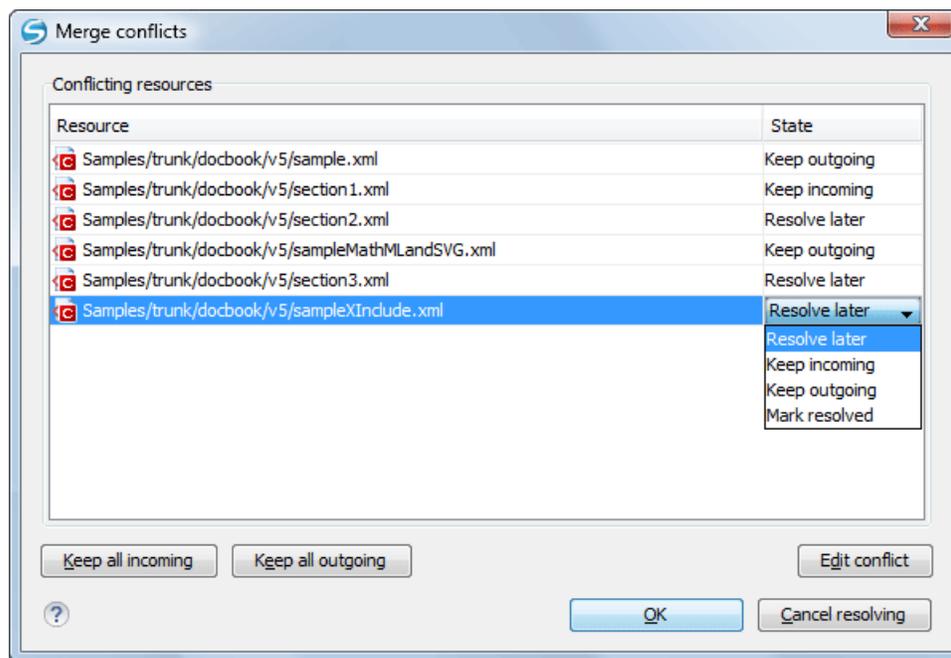
By pressing the **Test merge** button you do a dry run of the merge operation in order to see what files are affected and how without modifying the working copy at all. This is very helpful in detecting where conflicts may occur.

9. Press the **Merge** button.

The merge operation is executed.

10. Optionally resolve the conflicts that were created by the merge operation.

After the merge operation is finished it is possible to have some resources in conflict. This means that some incoming modifications for a resource could not be merged with the current modifications from the working copy. If there are such conflicts, the following dialog will appear presenting you the resources that are in conflict. In this dialog you can choose a way in which every conflict should be resolved.



**Figure 345: Merge Conflicts Dialog**

The options to resolve a conflict are:

- **Resolve later** - Used to leave the conflict as it is for manual resolving it later.
- **Keep incoming** - This option keeps all the incoming modifications, discarding all current ones from your working copy.
- **Keep outgoing** - This option keeps all current modifications from your working copy, discarding all incoming ones.

- **Mark resolved** - You should choose this option after you have manually edited the conflict. To do that, use the **Edit conflict** button, which will bring to you a dialog presenting the conflicting resource's content for current working copy version and the one with the incoming modifications. After manually resolving the conflict, the resource will be marked as resolved.

When the merge is completed it's a good idea to look at the result of the merge in the specified working copy and see if it meets your expectations. Because merging is sometimes complicated, when there are major changes, *conflicts may appear*.

### Reintegrate a Branch

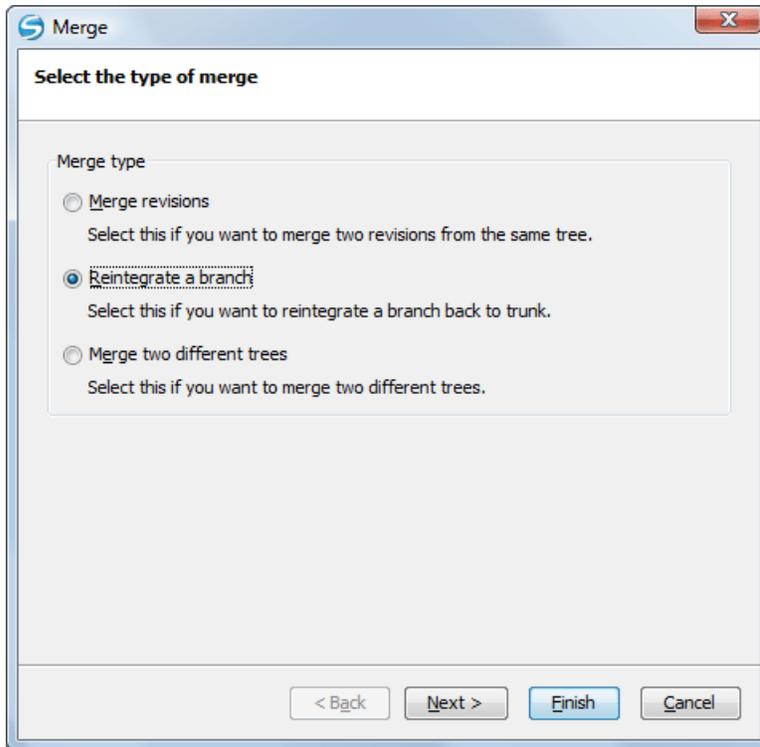
There are some conditions which apply to a reintegrate merge: Firstly, the server must support merge tracking. The working copy must be of depth infinite (no sparse checkouts), and it must not have any local modifications, switched items or items that have been updated to revisions other than HEAD. All changes to trunk made during branch development must have been merged across to the branch (or marked as having been merged).

- The server must support merge tracking.
- The working copy must be of depth infinite (no sparse checkouts), and it must not have any local modifications, switched items or items that have been updated to revisions other than HEAD.
- All changes to trunk made during branch development must have been merged across to the branch (or marked as having been merged).

This method covers the case when you have made a feature branch. All trunk changes have been ported to the feature branch, and now you want to merge it back into the trunk. Because you have kept the feature branch synchronized with the trunk, the latest versions of branch and trunk will be absolutely identical except for your branch changes. These changes can be reintegrated into the trunk by this method.

It uses the merge-tracking features of Apache Subversion™ to calculate the correct revision ranges and to perform additional checks which ensure that the branch has been fully updated with trunk changes. The range of revisions to merge will be calculated automatically. This ensures that you don't accidentally undo work that others have committed to trunk since you last synchronized changes. After the merge, all branch development has been completely merged back into the main development line. The branch is now redundant and can be deleted.

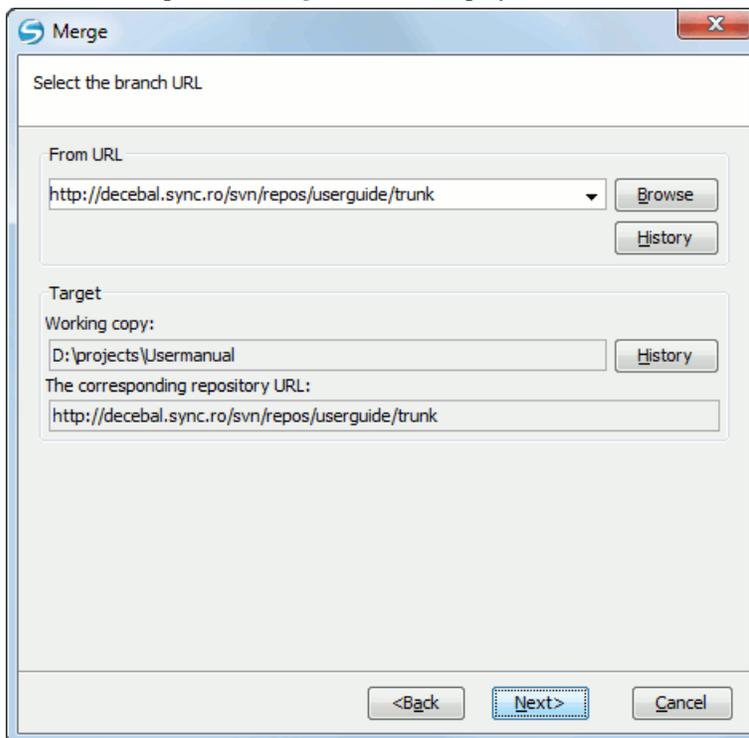
1. Go to menu **Tools > Merge ...**  
The **Merge** wizard is opened:



**Figure 346: The Merge Wizard - The Merge Type**

2. Select the option **Reintegrate a branch**.
3. Press the **Next** button.

The second step of the **Merge** wizard is displayed:



**Figure 347: The Merge Wizard - Reintegrate Branch**

4. In the **From URL** field enter the folder URL of the branch or tag containing the changes that you want to integrate.

You may also click the **Browse** button to browse the repository and find the desired branch. If you have merged from this branch before, then just use the drop down list which shows a history of previously used URLs.

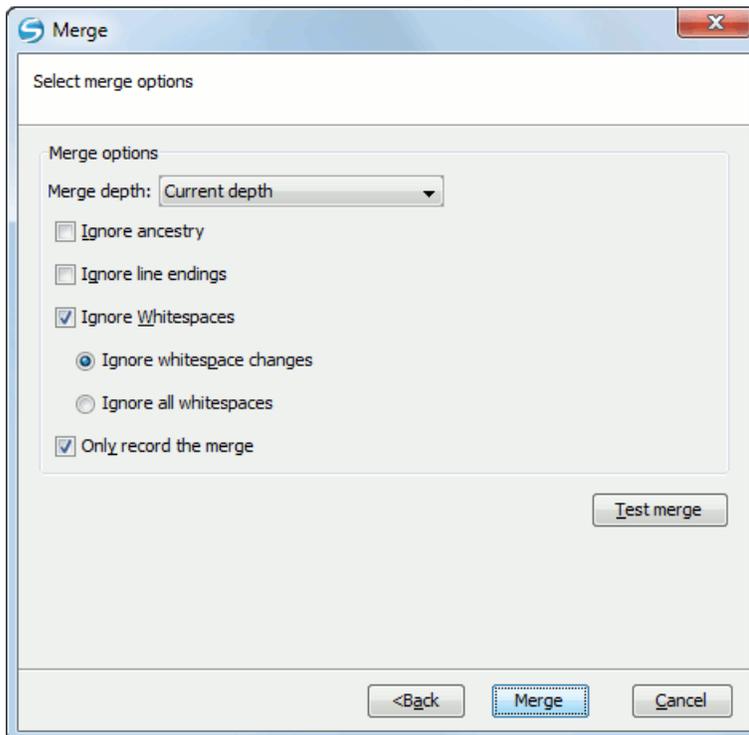
The History button opens *the History dialog* which allows you to select a revision number of the repository with the changes.

5. Select the target of the operation.
  - a) Select the path of the working copy.
  - b) Select the URL of the repository corresponding to the working copy.

The target panel of the dialog reminds you the location of the target resource from the working copy where the merge result will be saved and its corresponding repository URL.

6. Press the **Next** button.

The **Merge Options** step of the wizard is opened:



**Figure 348: The Merge Wizard - Advanced Options**

7. Set advanced options if necessary before starting the merge process.
  - a) Set the depth of the merge operation in the **Merge depth** combo box.

You can specify how far down into your working copy the merge should go by selecting one of the following values:

- Current depth
- Recursive (infinity)
- Immediate children (immediates)
- File children only (files)
- This folder only (empty)

The *depth* term is described in the *Sparse checkouts* section. The default depth is the depth of the current working copy.

- b) Check the **Ignore ancestry** checkbox (optional).

The **Ignore ancestry** checkbox allows a merge to be applied between a branch and the trunk or between two branches even if they do not share a common ancestry. Normally the branch and the trunk or the two branches that are merged must have a common ancestor revision in the same repository. In case the two merged trees were imported in the repository they are not related in the sense of a common ancestor tree and the merge operation is possible by ignoring the missing common ancestry of the two merged trees.

- c) Check the **Ignore line endings** checkbox (optional).
- d) Check the **Ignore Whitespaces** checkbox (optional).

The **Ignore line endings** and **Ignore whitespaces** checkboxes allow you to specify how the line endings and whitespace changes should be handled. If they are checked the changes due only to the line endings and whitespaces are ignored. The default behavior is to treat all whitespace and line-end differences as real changes to be merged. **Ignore whitespace changes** excludes changes which are caused by a change in the amount or type of whitespace, for example changing the indentation or changing tabs to spaces. Adding whitespace where there was none before, or removing a whitespace completely is still shown as a change. If **Ignore all whitespaces** is checked all whitespace-only changes are excluded.

- e) Check the **Only record the merge** checkbox (optional).

If you are using merge tracking support and you want to mark a revision as having been merged, without actually doing the merge here, check the **Only record the merge** checkbox. You might want to do this for two possible reasons. You make the changes by hand, then mark the change as merged so that the merge tracking algorithm is aware of it. Or you might want to prevent a particular revision from being merged by marking it as already merged. This will prevent future merging.

- f) Press the **Test merge** button (optional).

By pressing the **Test merge** button you do a dry run of the merge operation in order to see what files are affected and how without modifying the working copy at all. This is very helpful in detecting where conflicts may occur.

8. Press the **Merge** button.

The merge operation is executed.

9. Optionally resolve the conflicts that were created by the merge operation.

After the merge operation is finished it is possible to have some resources in conflict. This means that some incoming modifications for a resource could not be merged with the current modifications from the working copy. If there are such conflicts, the following dialog will appear presenting you the resources that are in conflict. In this dialog you can choose a way in which every conflict should be resolved.

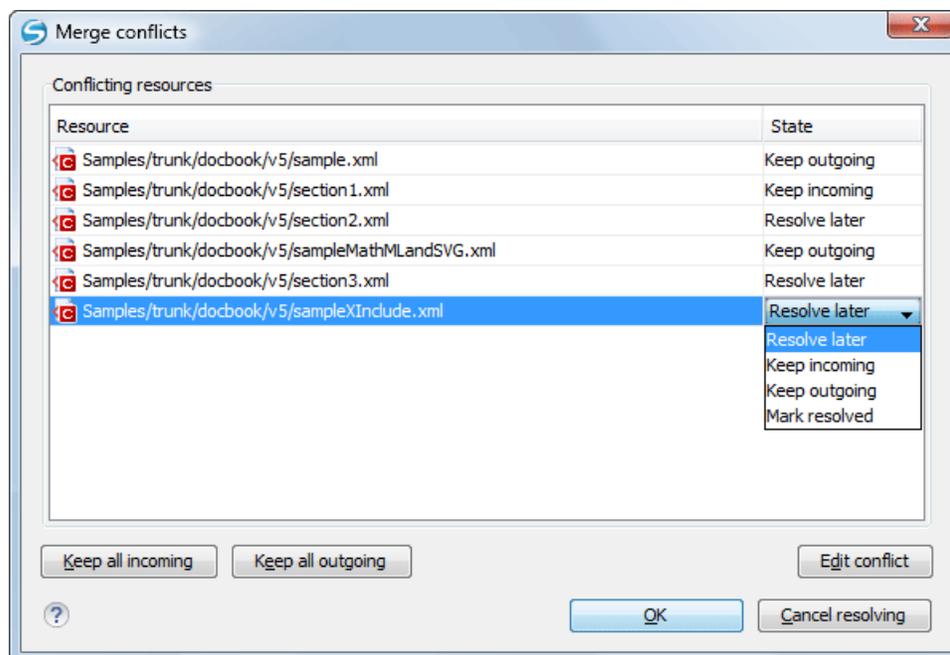


Figure 349: Merge Conflicts Dialog

The options to resolve a conflict are:

- **Resolve later** - Used to leave the conflict as it is for manual resolving it later.
- **Keep incoming** - This option keeps all the incoming modifications, discarding all current ones from your working copy.
- **Keep outgoing** - This option keeps all current modifications from your working copy, discarding all incoming ones.
- **Mark resolved** - You should chose this option after you have manually edited the conflict. To do that, use the **Edit conflict** button, which will bring to you a dialog presenting the conflicting resource's content for current working copy version and the one with the incoming modifications. After manually resolving the conflict, the resource will be marked as resolved.

When the merge is completed it's a good idea to look at the result of the merge in the specified working copy and see if it meets your expectations. Because merging is sometimes complicated, when there are major changes, *conflicts may appear*.

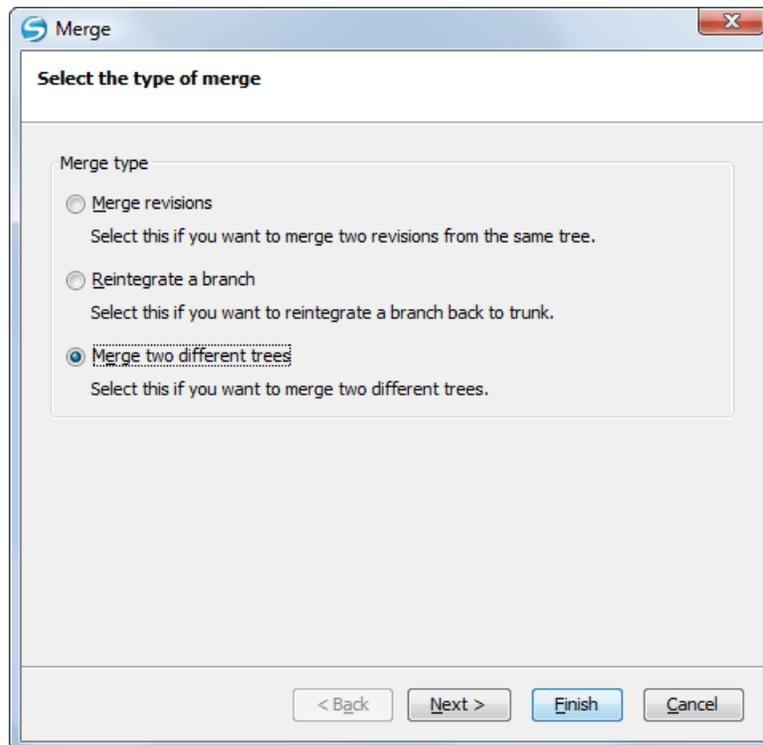
### Merge Two Different Trees

This is a general case of the reintegrate method. You can consider the following example: calculate the changes necessary to get (from) the HEAD revision of the trunk (to) the HEAD revision of the branch, and apply those changes to my working copy (of the trunk). The result is that trunk will be identical with the branch.

 **Note:** If the server does not support merge-tracking then this is the only way to merge a branch back to trunk.

1. Go to menu **Tools > Merge ...**

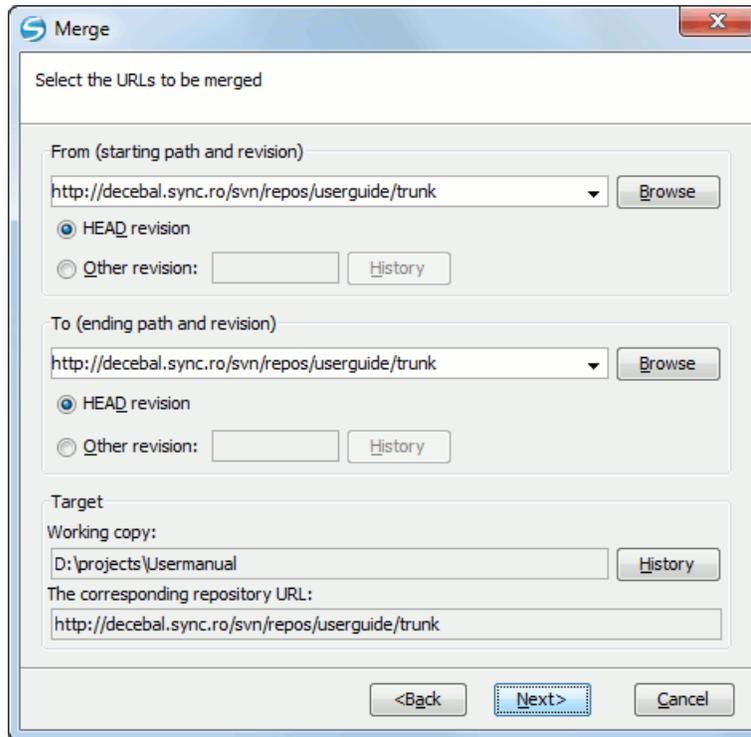
The **Merge** wizard is opened:



**Figure 350: The Merge Wizard - The Merge Type**

2. Select the option **Merge two different trees**.
3. Press the **Next** button.

The second step of the **Merge** wizard is displayed:



**Figure 351: The Merge Wizard - Merge Two Different Trees**

4. Specify the URL of the first tree in the **From** field.

If you are using this method to merge a feature branch back to trunk, you need to start the merge wizard from within a working copy of trunk. In the **From** field enter the full folder URL of the trunk. This may sound wrong, but remember that the trunk is the start point to which you want to add the branch changes. In the **To** field enter the full folder URL of the feature branch.

By default the start URL will be the URL of the selected file in the working copy. If you want to specify a different URL you should browse the repository and select a start URL and a revision.

- a) Select a URL in the **From** field.
- b) Select a revision of the repository from the **From** field.

In the **Revision** field enter the last revision number at which the two trees were synchronized. If you are sure no-one else is making commits you can use the HEAD revision in both cases. If there is a chance that someone else may have made a commit since that synchronization, use the specific revision number to avoid losing more recent commits.

By default the HEAD revision is selected. If you want a previous revision you have to select the **Other revision** option and press *the History button* to see a list of all revisions.

5. Specify the URL of the second tree in the **To** field.

- a) Select a URL in the **To** field.
- b) Select a revision of the repository from the **To** field.

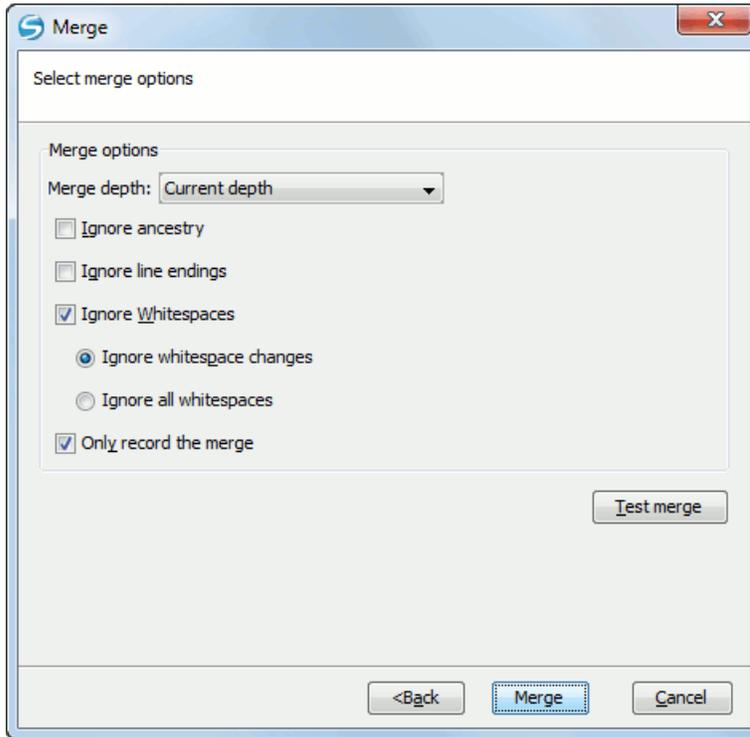
By default the HEAD revision is selected. If you want a previous revision you have to select the **Other revision** option and press *the History button* to see a list of all revisions.

6. Specify the target of the merge operation in the **Target** panel.

The **Target** panel of the dialog reminds you the location of the target resource from the working copy where the merge result will be saved and its corresponding repository URL.

- a) Specify the working copy path in the **Working copy** field.

- b) Specify the repository URL corresponding to the working copy.
7. Press the **Next** button.  
The **Merge Options** step of the wizard is opened:



**Figure 352: The Merge Wizard - Advanced Options**

8. Set advanced options if necessary before starting the merge process.
- a) Set the depth of the merge operation in the **Merge depth** combo box.

You can specify how far down into your working copy the merge should go by selecting one of the following values:

- Current depth
- Recursive (infinity)
- Immediate children (immediates)
- File children only (files)
- This folder only (empty)

The *depth* term is described in the *Sparse checkouts* section. The default depth is the depth of the current working copy.

- b) Check the **Ignore ancestry** checkbox (optional).

The **Ignore ancestry** checkbox allows a merge to be applied between a branch and the trunk or between two branches even if they do not share a common ancestry. Normally the branch and the trunk or the two branches that are merged must have a common ancestor revision in the same repository. In case the two merged trees were imported in the repository they are not related in the sense of a common ancestor tree and the merge operation is possible by ignoring the missing common ancestry of the two merged trees.

- c) Check the **Ignore line endings** checkbox (optional).
- d) Check the **Ignore Whitespaces** checkbox (optional).

The **Ignore line endings** and **Ignore whitespaces** checkboxes allow you to specify how the line endings and whitespace changes should be handled. If they are checked the changes due only to the line endings and whitespaces are ignored. The default behavior is to treat all whitespace and line-end differences as real changes to be merged. **Ignore whitespace changes** excludes changes which are caused by a change in the amount or type of whitespace,

for example changing the indentation or changing tabs to spaces. Adding whitespace where there was none before, or removing a whitespace completely is still shown as a change. If **Ignore all whitespaces** is checked all whitespace-only changes are excluded.

- e) Check the **Only record the merge** checkbox (optional).

If you are using merge tracking support and you want to mark a revision as having been merged, without actually doing the merge here, check the **Only record the merge** checkbox. You might want to do this for two possible reasons. You make the changes by hand, then mark the change as merged so that the merge tracking algorithm is aware of it. Or you might want to prevent a particular revision from being merged by marking it as already merged. This will prevent future merging.

- f) Press the **Test merge** button (optional).

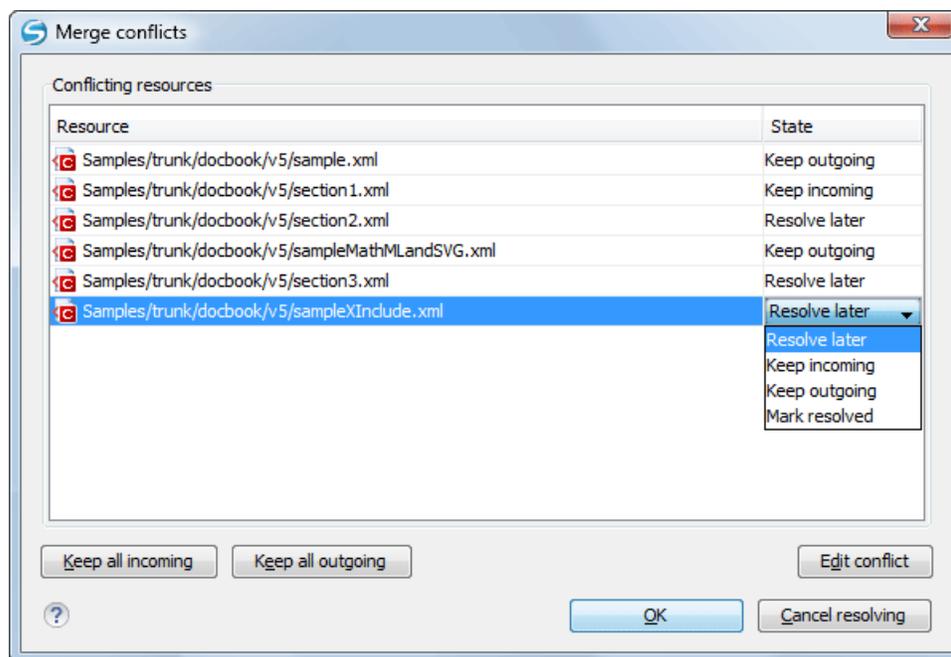
By pressing the **Test merge** button you do a dry run of the merge operation in order to see what files are affected and how without modifying the working copy at all. This is very helpful in detecting where conflicts may occur.

9. Press the **Merge** button.

The merge operation is executed.

10. Optionally resolve the conflicts that were created by the merge operation.

After the merge operation is finished it is possible to have some resources in conflict. This means that some incoming modifications for a resource could not be merged with the current modifications from the working copy. If there are such conflicts, the following dialog will appear presenting you the resources that are in conflict. In this dialog you can choose a way in which every conflict should be resolved.



**Figure 353: Merge Conflicts Dialog**

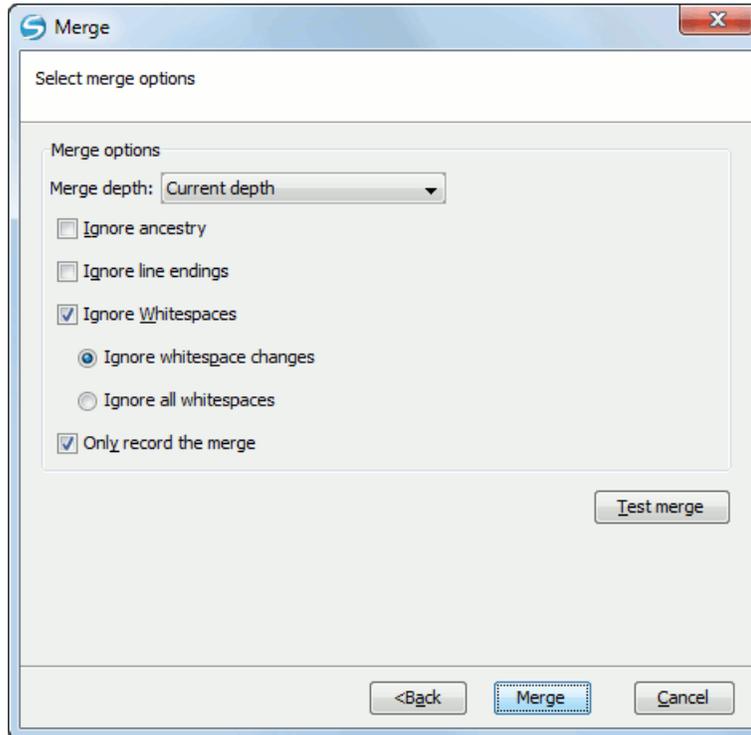
The options to resolve a conflict are:

- **Resolve later** - Used to leave the conflict as it is for manual resolving it later.
- **Keep incoming** - This option keeps all the incoming modifications, discarding all current ones from your working copy.
- **Keep outgoing** - This option keeps all current modifications from your working copy, discarding all incoming ones.
- **Mark resolved** - You should chose this option after you have manually edited the conflict. To do that, use the **Edit conflict** button, which will bring to you a dialog presenting the conflicting resource's content for current working copy version and the one with the incoming modifications. After manually resolving the conflict, the resource will be marked as resolved.

## Merge Options

1. Press the **Next** button.

The **Merge Options** step of the wizard is opened:



**Figure 354: The Merge Wizard - Advanced Options**

2. Set advanced options if necessary before starting the merge process.
  - a) Set the depth of the merge operation in the **Merge depth** combo box.

You can specify how far down into your working copy the merge should go by selecting one of the following values:

- Current depth
- Recursive (infinity)
- Immediate children (immediates)
- File children only (files)
- This folder only (empty)

The *depth* term is described in the [Sparse checkouts](#) section. The default depth is the depth of the current working copy.

- b) Check the **Ignore ancestry** checkbox (optional).

The **Ignore ancestry** checkbox allows a merge to be applied between a branch and the trunk or between two branches even if they do not share a common ancestry. Normally the branch and the trunk or the two branches that are merged must have a common ancestor revision in the same repository. In case the two merged trees were imported in the repository they are not related in the sense of a common ancestor tree and the merge operation is possible by ignoring the missing common ancestry of the two merged trees.

- c) Check the **Ignore line endings** checkbox (optional).
- d) Check the **Ignore Whitespaces** checkbox (optional).

The **Ignore line endings** and **Ignore whitespaces** checkboxes allow you to specify how the line endings and whitespace changes should be handled. If they are checked the changes due only to the line endings and whitespaces are ignored. The default behavior is to treat all whitespace and line-end differences as real changes to be merged. **Ignore whitespace changes** excludes changes which are caused by a change in the amount or type of whitespace,

for example changing the indentation or changing tabs to spaces. Adding whitespace where there was none before, or removing a whitespace completely is still shown as a change. If **Ignore all whitespaces** is checked all whitespace-only changes are excluded.

- e) Check the **Only record the merge** checkbox (optional).

If you are using merge tracking support and you want to mark a revision as having been merged, without actually doing the merge here, check the **Only record the merge** checkbox. You might want to do this for two possible reasons. You make the changes by hand, then mark the change as merged so that the merge tracking algorithm is aware of it. Or you might want to prevent a particular revision from being merged by marking it as already merged. This will prevent future merging.

- f) Press the **Test merge** button (optional).

By pressing the **Test merge** button you do a dry run of the merge operation in order to see what files are affected and how without modifying the working copy at all. This is very helpful in detecting where conflicts may occur.

3. Press the **Merge** button.

The merge operation is executed.

When the merge is completed it's a good idea to look at the result of the merge in the specified working copy and see if it meets your expectations. Because merging is sometimes complicated, when there are major changes, *conflicts may appear*.

### Merge Branches Task - First Step

Go to menu **Tools > Merge ...**

The **Merge** wizard is opened:

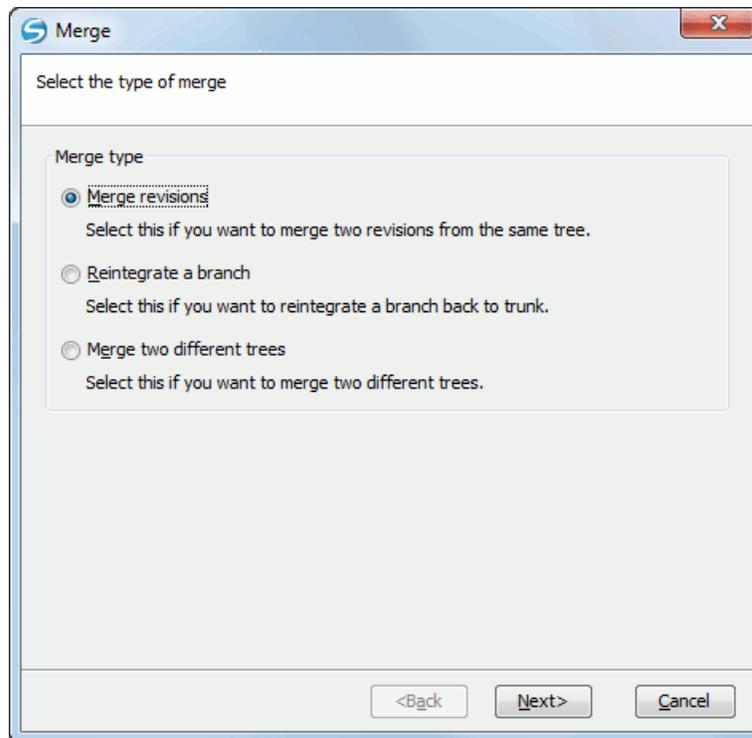
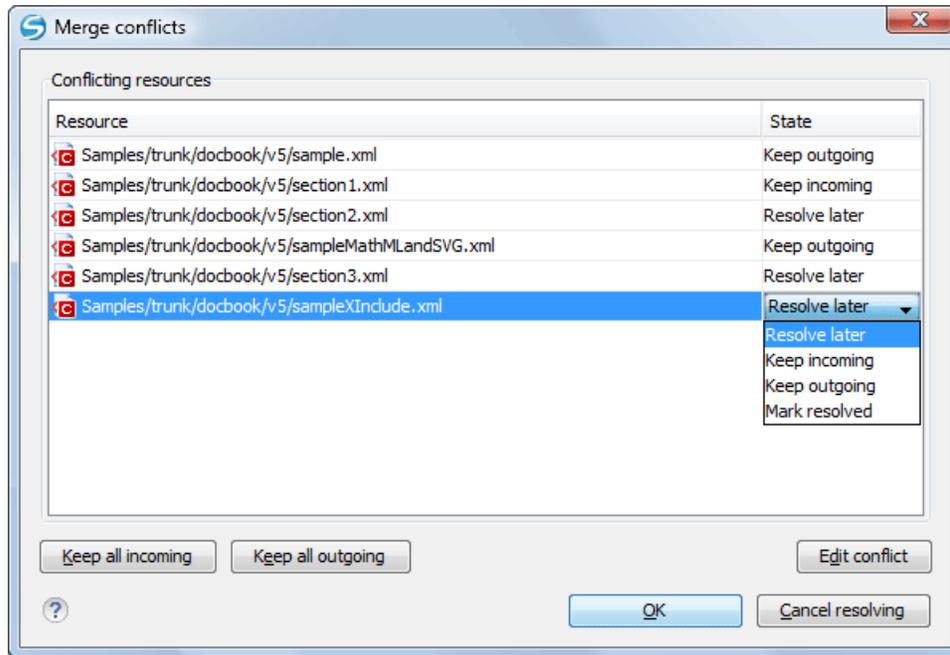


Figure 355: The Merge Wizard - The Merge Type

### Resolve Merge Conflicts

Optionally resolve the conflicts that were created by the merge operation.

After the merge operation is finished it is possible to have some resources in conflict. This means that some incoming modifications for a resource could not be merged with the current modifications from the working copy. If there are such conflicts, the following dialog will appear presenting you the resources that are in conflict. In this dialog you can choose a way in which every conflict should be resolved.



**Figure 356: Merge Conflicts Dialog**

The options to resolve a conflict are:

- **Resolve later** - Used to leave the conflict as it is for manual resolving it later.
- **Keep incoming** - This option keeps all the incoming modifications, discarding all current ones from your working copy.
- **Keep outgoing** - This option keeps all current modifications from your working copy, discarding all incoming ones.
- **Mark resolved** - You should chose this option after you have manually edited the conflict. To do that, use the **Edit conflict** button, which will bring to you a dialog presenting the conflicting resource's content for current working copy version and the one with the incoming modifications. After manually resolving the conflict, the resource will be marked as resolved.

### Switch the Repository Location

The **Switch** action is useful when the repository location of a working copy or only of a versioned item of the working copy must be changed within the same repository. The action is available on the **Tools** menu when a versioned resource is selected in the current working copy that is displayed in *the Working Copy view*.

### Relocate a Working Copy

Sometimes the base URL of the repository is changed after a working copy is checked out from that URL, for example the repository itself is relocated to a different server. In such cases you do not have to check out again a working copy from the new repository location. It is easier to change the base URL of the root folder of the working copy to the new URL of the repository. This action is called **Relocate** and is available on the **Tools** menu when the selected item in *the Working Copy view* is a versioned folder.

If the selected item is not the root folder of the working copy then the effect is the same as for *the Switch action* applied on the same selected item.

### Patches

This section explains how to work with patches in Syncro SVN Client.

## What Is a Patch

Let's suppose you are working to a set of XML files, that you distribute to other people. From time to time you are tagging the project and distribute the releases. If you continue working for a period correcting problems, you may find yourself in the situations to notify your users that you have corrected a problem. In this case you may prefer to distribute them a patch, a collection of differences that applied over the last distribution would correct the problem. The SVN client creates the patch in *the Unified Diff format*.

Creating a patch in Apache Subversion™ implies the access to two states (revisions) of a project:

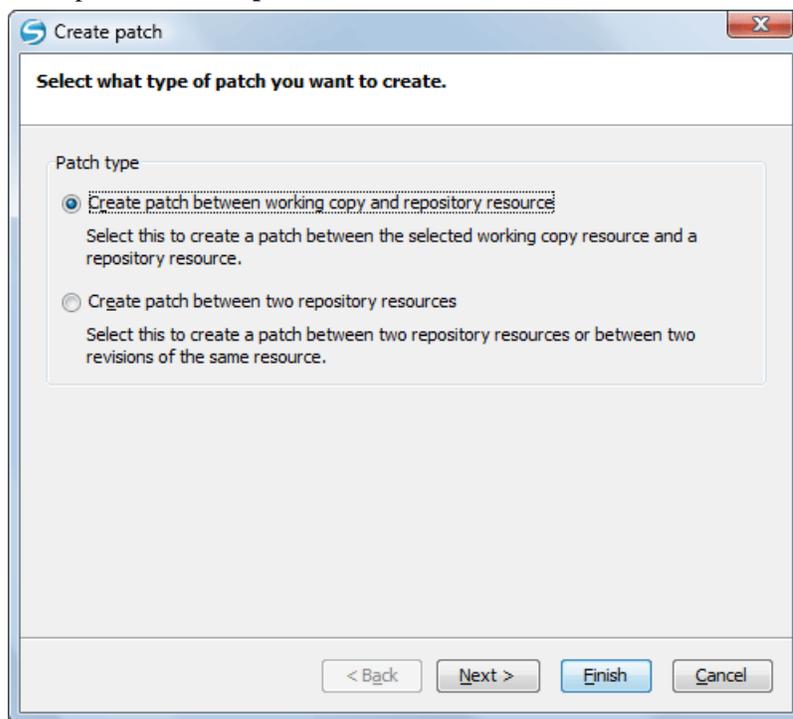
- the current working copy and a revision from the repository - if you have not committed yet your current working copy and prefer not to do it, you create a patch between the current working copy and a revision from the repository;
- two repository revisions - if both states are two revisions already committed to the repository.

## Create a Patch Between Working Copy and Repository Revision

When the changes that must be included in a patch were not committed to the repository the patch should be created with the differences between the selected item(s) of the working copy and a repository revision. The steps are the following:

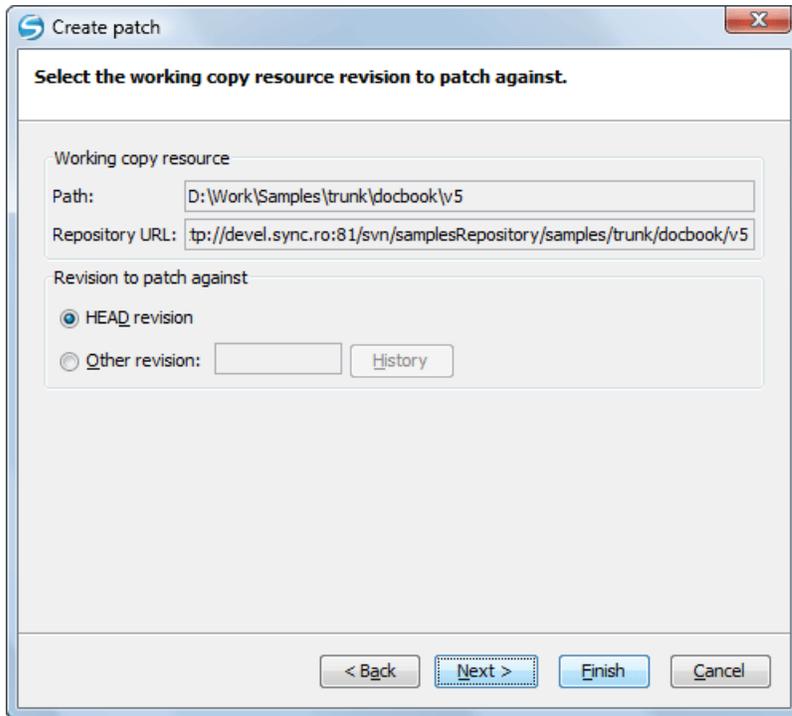
1. Go to menu **Tools > Create patch**.

This opens the **Create patch** wizard:



**Figure 357: The Create Patch Wizard - Patch Type**

2. Select the first option in the dialog.
3. Press the **Next** button.  
The second step of the wizard is opened:

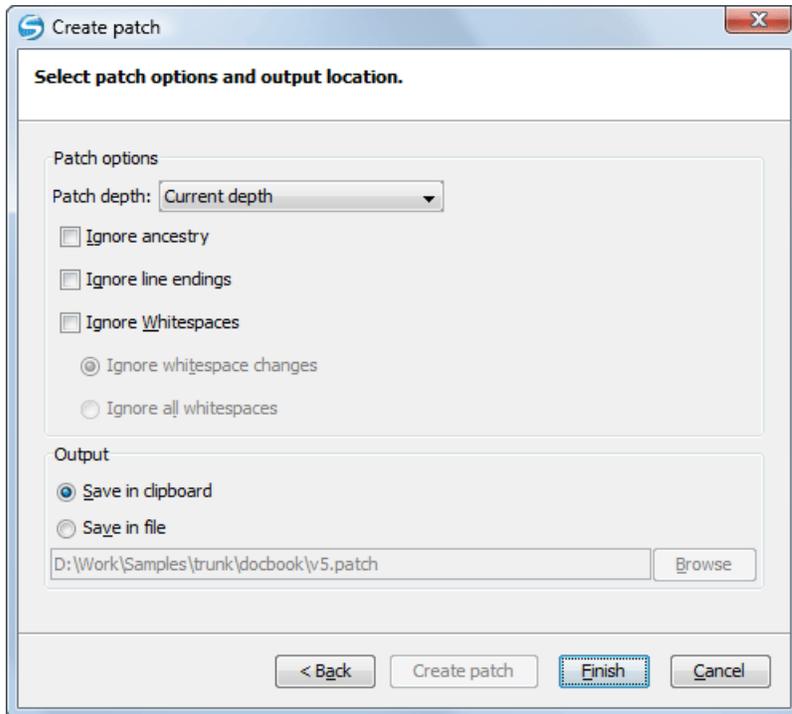


**Figure 358: The Create Patch Wizard - Step 2**

4. Specify the working copy resource.
  - a) Specify the local file path of the working copy resource.
  - b) Specify the repository URL corresponding to the working copy resource.
5. Select the repository revision.
 

You have the option of choosing between the HEAD revision and a specific revision number. For the second option you should press *the History button* to display a list of the repository revisions.
6. Press the **Next** button.
 

The next step of the wizard is displayed:



**Figure 359: The Create Patch Wizard - Options**

**7. Select the depth of the patch operation.**

In case of a file resource the depth is always zero. In case of a folder resource the depth has one of the following values:

- **Current depth** - The depth of going into the folder for creating the patch is the same as the depth of that folder in the working copy.
- **Recursive (infinity)** - The patch is created on all the files and folders contained in the selected folder.
- **Immediate children (immediates)** - The patch is created only on the child files and folders without going in subfolders.
- **File children only (files)** - The patch is created only on the child files.
- **This folder only (empty)** - The patch is created only on the selected folder (that is no child file or folder is included in the patch).

**8. Select the **Ignore ancestry** checkbox (optional).**

If checked, the SVN ancestry that exists when the two URLs have a common SVN history is ignored.

**9. Select the **Ignore line endings** checkbox (optional).**

If checked, the differences in line endings are ignored when the patch is created.

**10. Select the **Ignore whitespaces** checkbox (optional).**

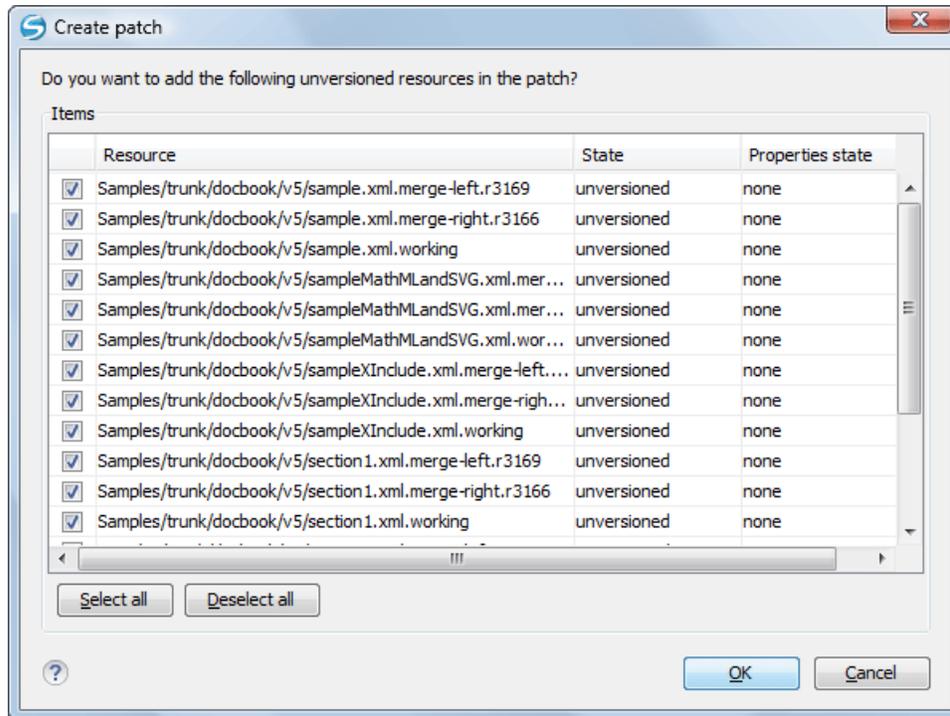
If checked, the differences in whitespaces are ignored when the patch is created.

**11. Select the output location.**

- **Save in clipboard** - The patch will be created and saved in clipboard. This is useful when you do not want to save the patch in a file on disk.
- **Save in file** - The patch will be created and saved in the specified file.

**12. Press the **Next** button.**

This will go to the final step of the wizard:



**Figure 360: The Patch Wizard - Add Unversioned Resources**

13. Select the unversioned files that will be included in the patch.

If the patch is applied on a folder of the working copy and that folder contains unversioned files this step of the wizard offers the option of selecting the ones that will be included in the patch.

14. Press the OK button.

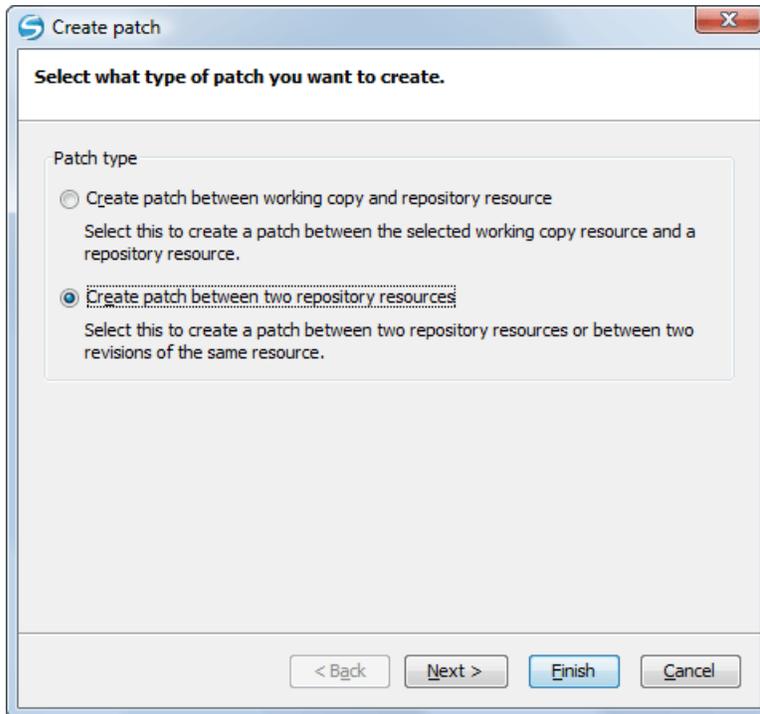
The patch is created by applying all the specified options.

### Create a Patch Between Two Repository Revisions

When a patch must include the differences between two repository revisions, in the same repository or in two different repositories, the steps for creating the patch are the following:

1. Go to menu **Tools > Create patch**.

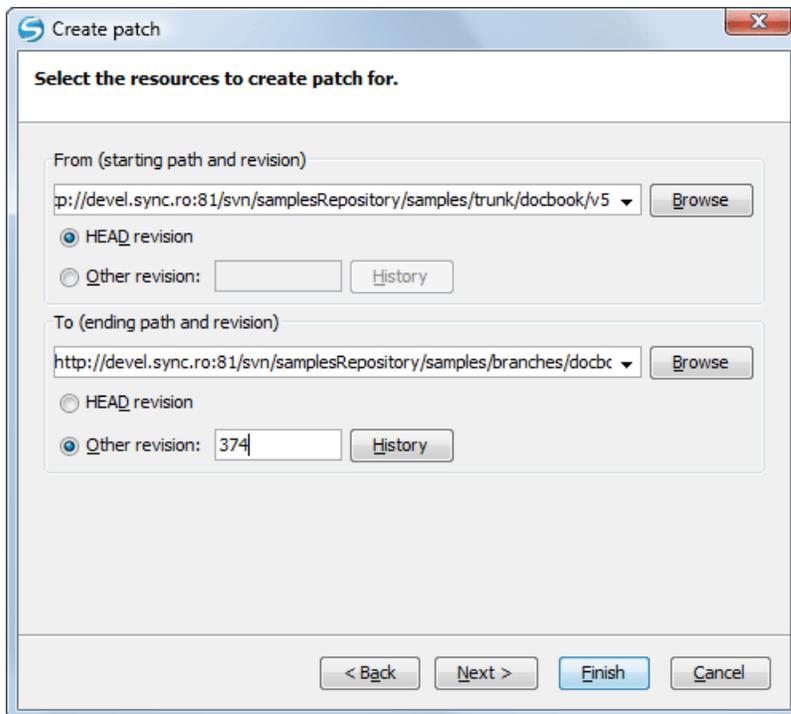
This opens the **Create patch** wizard:



**Figure 361: The Create Patch Wizard - Patch Type**

2. Select the second option in the dialog.
3. Press the **Next** button.

The second step of the wizard is opened:



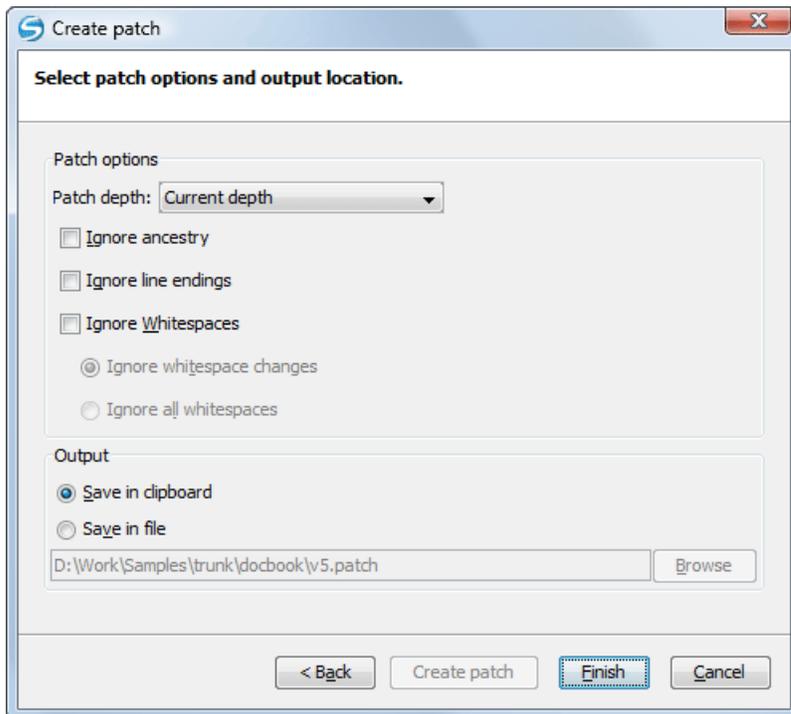
**Figure 362: The Create Patch Wizard - Step 2**

4. Select the first repository revision in the **From** panel.
5. Select the second repository revision in the **To** panel.

For both revisions you have the option of choosing between the HEAD revision and a specific revision number. For a specific number you should press *the History button* to display a list of the repository revisions.

6. Press the **Next** button.

The next step of the wizard is displayed:



**Figure 363: The Create Patch Wizard - Options**

7. Select the depth of the patch operation.

In case of a file resource the depth is always zero. In case of a folder resource the depth has one of the following values:

- **Current depth** - The depth of going into the folder for creating the patch is the same as the depth of that folder in the working copy.
- **Recursive (infinity)** - The patch is created on all the files and folders contained in the selected folder.
- **Immediate children (immediates)** - The patch is created only on the child files and folders without going in subfolders.
- **File children only (files)** - The patch is created only on the child files.
- **This folder only (empty)** - The patch is created only on the selected folder (that is no child file or folder is included in the patch).

8. Select the **Ignore ancestry** checkbox (optional).

If checked, the SVN ancestry that exists when the two URLs have a common SVN history is ignored.

9. Select the **Ignore line endings** checkbox (optional).

If checked, the differences in line endings are ignored when the patch is created.

10. Select the **Ignore whitespaces** checkbox (optional).

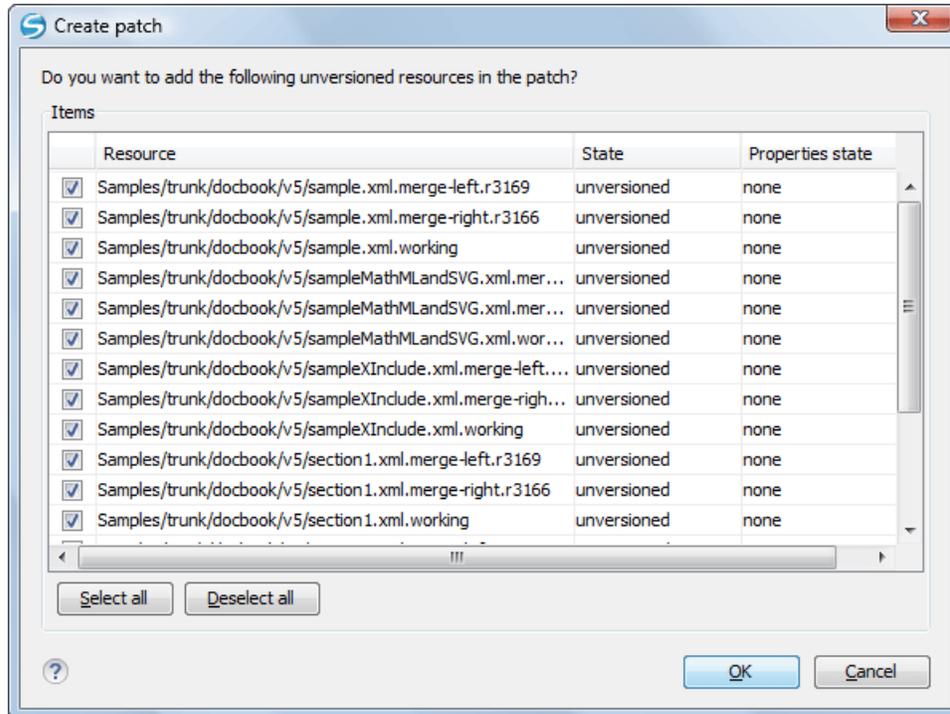
If checked, the differences in whitespaces are ignored when the patch is created.

11. Select the output location.

- **Save in clipboard** - The patch will be created and saved in clipboard. This is useful when you do not want to save the patch in a file on disk.
- **Save in file** - The patch will be created and saved in the specified file.

12. Press the **Next** button.

This will go to the final step of the wizard:



**Figure 364: The Patch Wizard - Add Unversioned Resources**

13. Select the unversioned files that will be included in the patch.

If the patch is applied on a folder of the working copy and that folder contains unversioned files this step of the wizard offers the option of selecting the ones that will be included in the patch.

14. Press the OK button.

The patch is created by applying all the specified options.

## Working with Repositories

This section explains how to locate and browse SVN repositories in Syncro SVN Client.

### Importing Resources Into a Repository

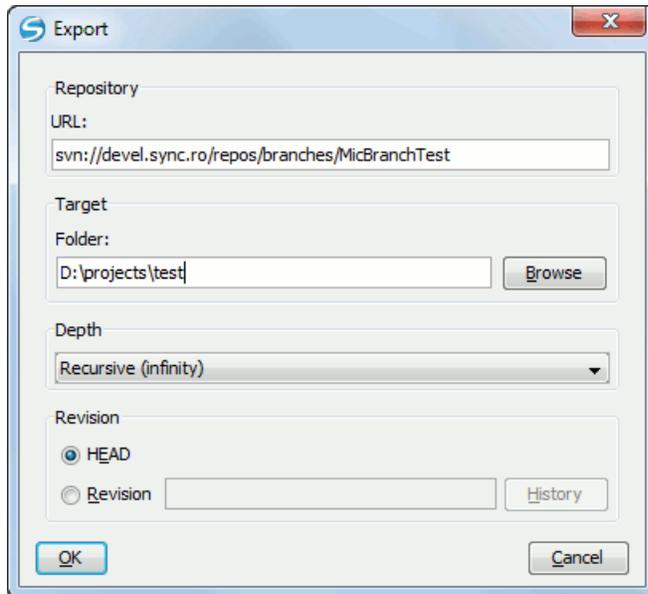
This is the process of taking a project and importing it into a repository so that it can be managed by an Apache Subversion™ server. If you have already been using Subversion and you have an existing working copy you want to use, then you will likely want to follow the procedure for *using an existing working copy*.

This process is started from menu **Repository > Import > Import Folder Content**. The same action is available in the **Repositories** view contextual menu. A dialog will ask you to select a directory that will be imported into the selected repository location. The complete directory tree will be imported into the repository including all files. The name of the imported folder will not appear in the repository, but only the contents of the folder will.

### Exporting Resources From a Repository

This is the process of taking a resource from the repository and saving it locally in a clean form, with no version control information. This is very useful when you need a clean build for an installation kit.

The export dialog is very similar to the check out dialog:



**Figure 365: Export from Repository**

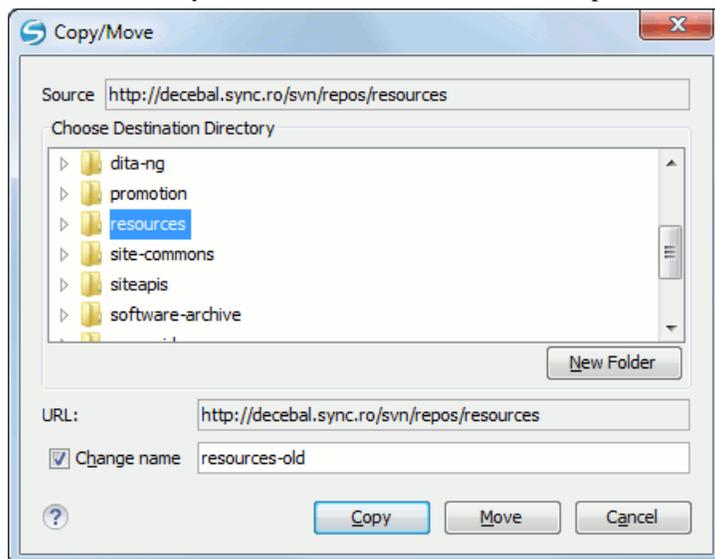
You can choose the target directory from the file system by pressing the **Browse** button. If you need to export a specific revision, you can select the **Revision** radio button and then click on the **History** button and choose a revision from the new dialog. Or you could simply type the revision number in the corresponding text field.

Please note that the content of the selected directory from the repository and not the directory itself will be exported to the file system.

### Copy / Move / Delete Resources From a Repository

Once you have a location defined in the [Repositories view](#) you can execute commands like copy, move and delete directly on the repository. The commands correspond to the following actions in the contextual menu:

- The **Copy/Move** action allows you to copy and move individual or multiple resources. After invoking the action the **Copy/Move** dialog will pop up. The dialog displays the path of the resource that is copied and the tree structure of the repository allowing you to choose the destination directory. The path of this target directory will be presented in the text field **URL**. If you choose to copy a single resource then an additional checkbox called **Change name** and a text field allow you to choose the new name of the copied/moved resource.



**Figure 366: Copy/Move Resources on a Repository**

- Another useful action is **Delete**. This action allows you to delete resources directly from the repository. After choosing the action from the *Repositories view contextual menu* a confirmation dialog will be displayed.

All three actions are commit operations and you will be prompted with the **Commit message** dialog.

## Sparse Checkout

Sometimes you need to check out only certain parts of a directory tree. For this you can checkout the top folder (*the action **Check Out** from the *Repositories view**) and then update recursively only the needed directories (*the action **Update** from the *Working Copy view**). Each directory now understands the notion of depth which has four possible values:

- **Recursive** (*infinity*) - Updates all descendant folders and files recursively.
- **Immediate children** (*immediates*) - Updates the folder including direct child folders and files but does not populate the child folders.
- **File children only** (*files*) - Updates the directory including only child files without the child folders.
- **This folder only** (*empty*) - Updates only the selected directory without updating any children.

For some operations you can use as depth the current depth of the resource from working copy (the value **Current depth**). This is the depth of directories from the working copy and it can have one of the values defined above. This is the depth value defined in a previous checkout or update operation.

The sparse checked out directories are marked in *the Working Copy view* with a marker corresponding to the depth value as follows:

- **Recursive** (*infinity*) - This is the default value and it is has no mark.
- **Immediate children** (*immediates*) - The directory is marked with a purple bubble  in the top left corner.
- **File children only** (*files*) - The directory is marked with a blue bubble  in the top left corner.
- **This folder only** (*empty*) - The directory is marked with a gray bubble  in the top left corner.

The depth information is also presented in the **Information** view and the tool tip displayed when hovering over the directory in the **Working Copy** view.

This feature requires the SVN client to support SVN 1.5 or above and will work most efficiently if the server is 1.5 or above. The client will work also with a 1.4 server or lower but will be less efficient.

## Syncro SVN Client Views

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The main working area occupies the center of the application window, which contains the most important views:

- *Repositories View*
- *Working Copy View*
- *History View*
- *Console View*

The other views that support the main working area are also presented in this section.

### Repositories View

The **Repositories** view allows you to define and manage Apache Subversion™ repository locations and browse repositories. Repository files and folders are presented in a tree view with the repository locations at the first level, where each location represents a connection to a specific repository. More information about each resource is displayed in a tabular form:

- **Date** - Date when the resource was last modified;
- **Revision** - The revision number at which the resource was last time modified;
- **Author** - Name of the person who made the last modification on the resource;
- **Size** - Resource size on disk;

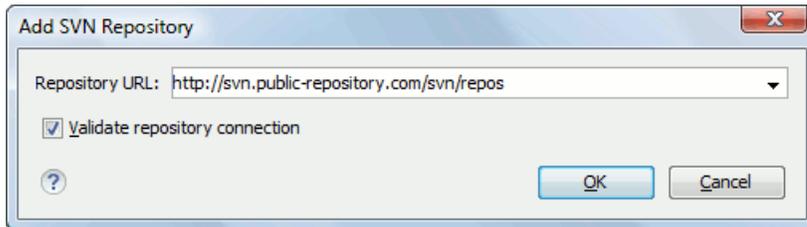


-  **Settings** - Allows you to configure the resource table appearance.

### Contextual Menu Actions

The **Repositories** view contextual menu contains different actions depending on the selected item. If a repository location is selected, the following management actions are available:

-  **New Repository Location (Ctrl + Alt + N)** - Displays the **Add SVN Repository** dialog. This dialog allows you to define a new repository location.



**Figure 368: Add SVN Repository Dialog Box**

If the **Validate repository connection** option is selected, the URL connection is validated before being added to the **Repositories** view.

-  **Edit Repository Location (Ctrl + Alt + E)** - Context-dependent action that allows you to edit the selected repository location using the **Edit SVN Repository** dialog. It is active only when a repository location root is selected.
- **Change the Revision to Browse (Ctrl + Alt + Shift + B)** - Context-dependent action that allows you to change the selected repository revision using the **Change the Revision to Browse** dialog. It is active only when a repository location root is selected.
-  **Remove Repository Location (Ctrl + Alt + Shift + R)** - Allows you to remove the selected repository location from the view. It shows you a confirmation dialog before removal. It is active only when a repository location root is selected.

The following actions are common to all repository resources:

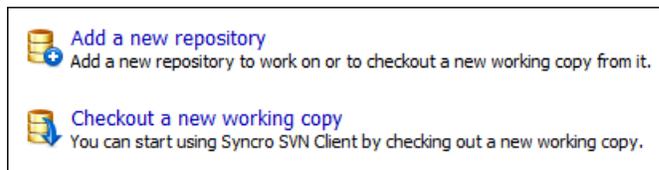
- **Open** - Opens the selected file in the Editor view in read-only mode.
- **Open with** - Displays the *Open with...* dialog to specify the editor in which the selected file is opened. In case multiple files are selected, only external applications can be used to open the files.
- **Save as** - Saves the selected files locally, as they are in the browsed revision.
-  **Refresh** - Refreshes the resource selected in the **Repositories** view.
-  **Check Out (Ctrl + Alt + Shift + C)** - Allows you to copy resources from a repository into your local file system. To use this operation, select a repository root location or a folder from a repository, but never a file. If you do not select anything, you can specify an URL to a folder resource from a repository in the **Check Out** dialog that appears when performing this operation. To read more about this operation, see the section *Check out a working copy*.
- **Branch/Tag** - Allows you to create a branch or a tag from the selected folder in the repository. To read more about how to create a branch/tag, see the *Creation and management of Branches/Tags* section.
- **Share project** - Allows you to *share a new project* using an SVN repository. The local project is automatically converted into an SVN working copy.
- **Import** sub-menu:
  - **Import Folder Content (Ctrl + Alt + Shift + M)** - Depending on the selected folder from a repository, allows you to import the contents of a specified folder from the file system into it. To read more about this operation, see the section *Importing resources into a repository*.

 **Note:** The difference between **Import Folder Content** and **Share project** actions is that the latter one also converts the selected directory into a working copy.

- **Import File(s) (Ctrl + Alt + I)** - Imports the files selected from the files system into the selected folder from the repository.
- **Export** - Exports a folder from the repository to the local file system.
-  **Show History (Ctrl + H)** - Displays the history of the selected resource. At the start of the operation, you can set filtering options.
-  **Show Annotation (Ctrl + Shift + A)** - Complex action that does the following operations:
  - opens the selected resource in the **Annotations** editor;
  - displays corresponding annotations list in the **Annotations** view;
  - displays the history of the selected resource.
-  **Revision Graph (Ctrl + Shift + G)** - This action allows you to see the graphical representation of a resource history. For more details about a resource revision graph see the section [Revision Graph](#). This operation is enabled for any resource selected into the **Repositories** view or **Working Copy** view.
- **Copy URL Location (Ctrl + Alt + U)** - Copies to clipboard the URL location of the selected resource.
-  **Copy/Move to (Ctrl + M)** - Copies or moves to a specified location the selected resource.
- **Rename (F2)** - Renames the selected resource.
-  **Delete (Delete)** - Deletes the selected resource.
- **New Folder** - Allows you to create a folder in the selected repository path (available only for folders).
- **Locking** (available only for files):
  -  **Lock (Ctrl + K)** - Allows you to lock certain files for which you need exclusive access. For more details on the use of this action, see [Locking a file](#).
  -  **Unlock (Ctrl + Shift + K)** - Releases the exclusive access to a file from the repository. You can also choose to unlock it by force (*break the lock*).
-  **Show SVN Properties (Ctrl + Shift + P)** - Brings up the [Properties view](#) displaying the SVN properties for the selected resource. This view does not allow adding, editing, or removing SVN properties of a repository resource. These operations are allowed only for working copy resources.
-  **File Information (Ctrl + I)** - provides additional information for the selected resource. For more details, see the section [Information view](#).

## Assistant Actions

When there is no repository configured, the **Repositories** view mode lists the following two actions:



## Working Copy View

The **Working Copy** view allows you to manage the content of an SVN working copy.

The toolbar contains:

- the list of defined working copies
- a set of view modes that allow you to filter the content of the working copy based on the resource status (like incoming or outgoing changes)
- **Settings** menu

If you click any of the view modes (**All Files**, **Modified**, **Incoming**, **Outgoing**, **Conflicts**), the information displayed changes as follows:

- **All Files** - Resources (files and folders) are presented in a hierarchical structure with the root of the tree representing the location of the working copy on the file system. Each resource has an icon representation which describes the type of resource and also depicts the state of that resource with a small overlay icon.

Name	Date	Revision	Author	Size	Type
E:\svnkit	May 15, 2011	7636	alex		File Folder
gradle	May 4, 2011	7623	alex		File Folder
wrapper	May 4, 2011	7623	alex		File Folder
gradle-wrapper.jar	May 4, 2011	7618	alex	12 KB	Executable ...
gradle-wrapper.properties	May 4, 2011	7623	alex	1 KB	PROPERTIE...
svnkit	May 15, 2011	7636	alex		File Folder
svnkit-ci	May 10, 2011	7630	alex		File Folder
.settings	May 4, 2011	7618	alex		File Folder
src	May 10, 2011	7630	alex		File Folder
main	May 10, 2011	7630	alex		File Folder
conf	May 4, 2011	7618	alex		File Folder
java	May 4, 2011	7622	alex		File Folder
resources	May 4, 2011	7618	alex		File Folder
scripts	May 10, 2011	7630	alex		File Folder
jsvn	May 4, 2011	7618	alex	2 KB	File
jsvn.bat	May 10, 2011	7630	alex	2 KB	Windows B...
jsvnsetup.openvms	May 4, 2011	7618	alex	1 KB	OPENVMS File
build.gradle	May 4, 2011	7618	alex	2 KB	GRADLE File
svnkit-dav	May 4, 2011	7620	alex		File Folder
svnkit-distribution	May 4, 2011	7623	alex		File Folder
svnkit-javahl16	May 4, 2011	7618	alex		File Folder
svnkit-osgi	May 4, 2011	7623	alex		File Folder
svnkit-test	May 12, 2011	7635	alex		File Folder
.settings	May 4, 2011	7618	alex		File Folder
configurations	May 4, 2011	7618	alex		File Folder

**Figure 369: Working Copy View - All Files View Mode**

- **Modified** - The resource tree presents resources modified locally (including those with conflicting content) and remotely. Decorator icons are used to differentiate between various resource states:
  - - incoming modification from repository:
    - - file content modified remotely;
    - - new file added remotely;
    - - file deleted remotely;
  - - outgoing modification to repository:
    - - file content modified locally;
    - - new file added locally;
    - - file deleted locally;
  - - pseudo-conflict state - a resource being locally and remotely modified at the same time;
  - - real conflict state - a resource that had both incoming and outgoing changes and not all the differences could be merged automatically through the update operation (manually editing the local file is necessary for resolving the conflict).

Name	Remote date	Remote revision	Remote author	Size	Type
UserGuide	Today 11:44 AM	12368	sorin		Folder
DITA					Folder
img					Folder
references					Folder
tasks					Folder
topics					Folder
ignore-resources-working-copy.dita				2 KB	dita
oxygenEntitiesDictionary.dita	Today 11:44 AM	12368	sorin	2 KB	dita
preferences-svn-working-copy.dita				4 KB	dita
properties-view.dita				2 KB	dita
revert-changes.dita				3 KB	dita
show-history.dita				1 KB	dita
svn-main-menu.dita				26 KB	dita
svn-main-toolbar.dita				3 KB	dita
svn-toolbar.dita				2 KB	dita
tree-conflict.dita				1 KB	dita
update-working-copy.dita				4 KB	dita
views.dita				3 KB	dita
working-copy-menu.dita				20 KB	dita
working-copy-settings.dita	Today 11:28 AM	12366	sorin	2 KB	dita
working-copy-view.dita				15 KB	dita
EditorUserManual.ditamap				102 KB	ditamap
.project		12368		1 KB	File
build.xml	Nov 17, 2010	12337	sorin	14 KB	xml
build_part.xml	Nov 16, 2010	12323	sorin	18 KB	xml
userguide.xpr				2 MB	xpr

**Figure 370: Working Copy View - Modified View Mode**

- **Incoming** - The resource tree presents only incoming changes.
- **Outgoing** - The resource tree presents only outgoing changes.
- **Conflicts** - The resource tree presents only conflicting changes (real conflicts, pseudo-conflicts, and files in *the Name conflict state*).

The following columns provide information about the resources:

- **Name** - Resource name. Resource icons can have the following decorator icons:
  - **Propagated modification marker** - A folder marked with this icon indicates that the folder itself presents some changes (like modified properties) or a child resource has been modified.
  - **External** - This indicates a mapping of a local directory to the URL of a versioned resource. It is declared with a *svn:externals* property in the parent folder.
  - **Switched** - This indicates a resource that has been switched from the initial repository location to a new location within the same repository. The resource goes to this state as a result of *the Switch action* executed from the contextual menu of the Working Copy view.
  - **Grayed** - A resource with a grayed icon but no overlaid icon is an ignored resource. It is obtained with the **Add to svn:ignore** action.
- Current SVN depth of a folder:

- 📁 **Immediate children (immediates)** (a variant of *sparse checkout*) - The directory contains only direct file and folder children. Child folders ignore their content.
  - 📄 **File children only (files)** (a variant of *sparse checkout*) - The directory contains only direct file children, disregarding any child folders.
  - 🗑️ **This folder only (empty)** (a variant of *sparse checkout*) - The directory discards any child resource.
- 👉 **Note:**
- Any folder not marked with one of the depth icons, has recursive depth (*infinity*) set by default (presents all levels of child resources).
  - Although folders not under version control can have no depth set, Syncro SVN Client presents *unversioned* and *ignored* folders with *empty* depth when **Show unversioned directories content** or **Show ignored directories content** options are disabled.
- 📄 **Local file status** - Shows the changes of working copy resources that were not committed to the repository yet. The following icons are used to mark resource status:
    - 🚫 - Resource is *not under version control*.
    - 🗑️ - Resource is being *ignored* because it is not under version control and its name matches a file name pattern defined in one of the following places:
      - *global-ignores* section in the SVN client-side '*config*' file;
      - *Application global ignores option* of Syncro SVN Client;
      - the value of a *svn:ignore property* set on the parent folder of the resource being ignored.
    - ➕ - Marks a newly created resource, *scheduled for addition* to the version control system.
    - ➕ - Marks a resource *scheduled for addition*, created by copying a resource already under version control and inheriting all its SVN history.
    - ✎ - The content of the resource has been *modified*.
    - 🔄 - Resource has been *replaced* in your working copy (the file was scheduled for deletion, and then a new file with the same name was scheduled for addition in its place).
    - 🗑️ - Resource is *scheduled for deletion*.
    - 🚧 - The resource is *incomplete* (as a result of an interrupted *checkout* or *update* operation).
    - 📄 - The resource is *missing* because it was moved or deleted without using an SVN-aware application.
    - 🗑️ - The contents of the resource is in *real conflict state*.
    - 🗑️ - Resource is in *tree conflict* state after an update operation because:
      - Resource was locally modified and incoming deleted from repository;
      - Resource was locally scheduled for deletion and incoming modified.
    - 🗑️ - Resource is *obstructed* (versioned as one kind of object: file, directory, or symbolic link, but has been replaced outside Syncro SVN Client by a different kind of object).
    - 🗑️ - Resource is in *name conflict* state (only on case insensitive systems like Windows). This happens when two files having the same name (ignoring letter-cases) exist in the same repository folder (for example `file.txt` and `File.txt`). The two files were added to repository from a case-sensitive operating system like Linux or Mac OS X. This state is reported after an *update* operation and most of the Apache Subversion™ operations cannot be performed over such files. The solution is to rename one of the files from a case-sensitive operating system or directly from the **Repositories** view in order to have the files with completely different names.
  - 📄 **Local properties status** - Marks the resources that have SVN properties, with the following possible states:
    - 🟢 - The resource has SVN properties set.
    - 🔧 - The resource properties have been modified.
    - 🗑️ - Properties for this resource are in *real conflict* with property updates received from the repository.

- **Revision** - The current revision number of the resource.
- **Date** - Date when the resource was last time modified on the disk.
- **BASE Revision** - The revision number of the pristine version of the resource.
- **BASE Date** - Date when the pristine version of the resource was last time committed in the repository.
- **Author** - Name of the person who made the last modification on the pristine version of the resource.
-  **Remote file status** - Shows changes of resources recently modified in the repository. The following icons are used to mark incoming resource status:
  -  - Resource is newly added in repository.
  -  - The content of the resource has been modified in repository.
  -  - Resource was replaced in repository.
  -  - Resource was deleted from repository.
-  **Remote properties status** - Resources marked with the  icon have incoming modified properties from the repository.
- **Remote revision** - Revision number of the resource latest committed modification.
- **Remote date** - Date of the resource latest modification committed on the repository.
- **Remote author** - Name of the author who committed the latest modification on the repository.
-  **Lock information** - Shows the lock state of a resource. The lock mechanism is a convention intended to help you signal other users that you are working with a particular set of files. It minimizes the time and effort wasted in solving possible conflicts generated by clashing commits. A lock gives you exclusive rights over a file, only if other users follow this convention and they do not try to bypass the lock state of a file.

A folder can be locked only by the SVN client application, completely transparent to the user, if an operation in progress was interrupted unexpectedly. As a result, folders affected by the operation are marked with the  symbol. To clear the locked state of a folder, use the **Cleanup** action.

 **Note:** Users can lock only files.

The following lock states are displayed:

- *no lock* - the file is not locked. This is the default state of a file in the SVN repository;
- *remotely locked* () - shown when:
  - another user has locked the file in the repository;
  - the file was locked by the same user from another working copy;
  - the file was locked from the **Repositories** view.

If you try to commit a new revision of the file to the repository, the server does not allow you to bypass the file lock.

 **Note:** To commit a new revision, you need to wait for the file to be unlocked. Ultimately, you might try to *break* or *steal* the lock, but this is not what other users expect. Use these actions carefully, especially when you are not the file lock owner.

- *locked* () - displayed after you have locked a file from the current working copy. Now you have exclusive rights over the corresponding file, being the only one who can commit changes to the file in the repository.
  -  **Note:** Working copies keep track of their locked files, so the locks are presented between different sessions of the application. Synchronize your working copy with the repository to make sure that the locks are still valid (not *stolen* or *broken*).
- *stolen* () - a file already locked from your working copy is being locked by another user. Now the owner of the file lock is the user who stole the lock from you.
- *broken* () - a file already locked from your working copy is no longer locked in the repository (it was unlocked by another user).

 **Note:** To remove the *stolen* or *broken* states from your working copy files, you have to **Update** them.

If one of your working copy files is locked, hover the mouse pointer over the lock icon to see more information:

- lock type - current file lock state;
- owner - the name of the user who created the lock;
- date - the date when the user locked the file;
- expires on - date when the lock expires. Lock expiry policy is set in the repository options, on the server side;
- comment - the message attached when the file was locked.
- **Size** - Resource size on disk;
- **Type** - Contains the resource type or file extension.

 **Note:** The working copy table allows you to show or hide any of its columns and also to sort its contents by any of the displayed columns. The table header provides a contextual menu which allows you to customize the displayed information.

The toolbar allows you to switch between two working copies:

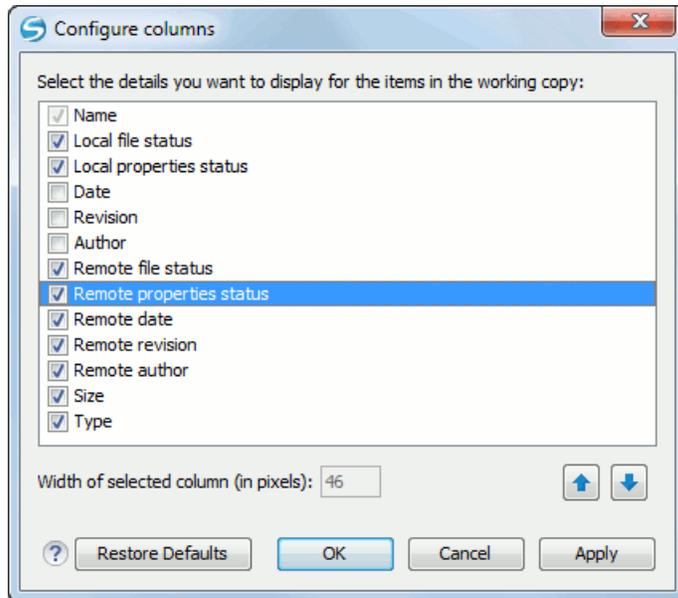
- Drop down list - Contains all the working copies Syncro SVN Client is aware of. When you select another working copy from the list, the newly selected working copy content is scanned and displayed in the **Working Copy** view.
-  (on Mac OS X) **Working Copies Manager** - opens a dialog box that displays the working copies Syncro SVN Client is aware of. In this dialog box, you can add existing working copies or remove those you no longer need. If you try to add a folder which is not a valid Subversion working copy, Syncro SVN Client warns you that the selected directory is not under version control.

 **Note:** Removing a working copy from this dialog does NOT remove it from your file system; you will have to do that manually.

## Working Copy Settings

The **Settings** button from the toolbar of the **Working Copy** view provides the following options:

- **Show unversioned directories content** - displays the content of unversioned directories;
- **Show ignored items** - displays the ignored resource when **All Files** mode is selected;
- **Show ignored directories content** - displays the content of ignored directories when **All Files** mode is selected;
- **Show deleted items** - displays the deleted resource when **All Files** mode is selected. All other modes always display deleted resources, disregarding this option;
-  **Tree** /  **Compressed** /  **Flat** - affect the way information is displayed inside the **Modified**, **Incoming**, **Outgoing**, and **Conflicts** view modes;
- **Configure columns** - allows you to customize the structure of the **Working Copy** view data. This action opens the following dialog box:



**Figure 371: Configure Columns of Working Copy View**

The order of the columns can be changed with the two arrow buttons. The column size can be edited in the **Width of selected column** field. The **Restore Defaults** button reverts all columns to the default order, width and enabled/disabled state from the installation of the application.

### Working Copy Format

When an SVN working copy is loaded, Syncro SVN Client first checks the format of the working copy. If the format is older than SVN 1.7, a dialog box asks you whether you want to upgrade to the latest known working copy format - that is SVN 1.7.

In case you select the **Never ask me again** check box, your choice is used as default for similar situations. You can change how working copy formats are handled from **Options > Preferences > SVN > Working copy**, in the [Administrative area](#) section.

#### **Note:**

- The format of the working copy can be downgraded or upgraded at any time with the **Upgrade** and **Downgrade** actions available in the **Tools** menu. These actions allow switching between SVN 1.4, SVN 1.5 and SVN 1.6 working copy formats.
- SVN 1.7 working copies cannot be downgraded to older formats.

### Refresh a Working Copy

A refresh is a frequent operation triggered automatically when you switch between two working copies using the toolbar selector of the **Working Copy** view and when you switch between Syncro SVN Client and other applications.

The **Working Copy** view features a fast refresh mechanism: the content is cached locally when loading the working copy for the first time. Later on, when the same working copy is displayed again, the application uses this cache to detect the changes between the cached content and the current content found on disk. The refresh operation is run on these changes only, thus improving the response time. improvement is noticeable especially when working with large working copies.

### Contextual Menu Actions

The contextual menu in the Working Copy view contains the following actions:

- **Edit conflict (Ctrl+E)** - Opens the **Compare** editor, allowing you to modify the content of the currently conflicting resources. For more information on editing conflicts, see [Edit conflicts](#).
- **Open in Compare Editor (Ctrl+Alt+C)** - Displays changes made in the currently selected file.
-  **Open (Ctrl+O)** - Opens the selected resource from the working copy. Files are opened with an internal editor or an external application associated with that file type, while folders are opened with a default file system browsing application (e.g. Windows Explorer on Windows, Finder on Mac OS X, etc).
- **Open with** submenu that allows you to open the selected resource either with <oxygen/> XML or with another application.
-  **Expand all (Ctrl+Alt+X)** - Displays all descendants of the selected folder. You can obtain a similar behavior by double-clicking on a collapsed folder.
-  **Refresh (F5)** - Re-scans the selected resources recursively and refreshes their status in the working copy view.
-  **Synchronize (Ctrl+Shift+S)** - Connects to the repository and determines the working copy and repository changes made to the selected resources. The application switches to **Modified** view mode if the *Always switch to 'Modified' mode* option is selected.
- **Update (Ctrl+U)** - Updates the selected resources to the *HEAD* revision (latest modifications) from the repository. If the selection contains a directory, it will be updated depending on its *depth*.
- **Update to revision/depth** - Allows you to update the selected resources from the working copy to an earlier revision from the repository. You can also select the update *depth* for the current folder. You can find out more about the *depth* term in the [sparse checkouts](#) section.
- **Commit** - Collects the outgoing changes from the selected resources in the working copy and allows you to choose exactly what to commit by selecting or not resources. A directory will always be committed recursively. The unversioned resources will be deselected by default. In the commit dialog you can also enter a commit comment before sending your changes to the repository.
-  **Revert (Ctrl+Shift+V)** - Undoes all local changes for the selected resources. It does not contact the repository, the files are obtained from Apache Subversion™ pristine copy. It is enabled only for modified resources. See [Revert your changes](#) for more information.
- **Override and Update** - Drops any outgoing change and replaces the local resource with the *HEAD* revision. Action available on resources with outgoing changes, including the conflicting ones. See the [Revert your changes](#) section.
- **Override and Commit** - Drops any incoming changes and sends your local version of the resource to the repository. Action available on conflicting resources. See also the section [Drop incoming modifications](#).
-  **Mark Resolved (Ctrl+Shift+R)** - Instructs the Subversion system that you resolved a conflicting resource. For more information, see [Merge conflicts](#).
-  **Mark as Merged (Ctrl+Shift+M)** - Instructs the Subversion system that you resolved the pseudo-conflict by merging the changes and you want to commit the resource. Read the [Merge conflicts](#) section for more information about how you can solve the pseudo-conflicts.
-  **Create patch (Ctrl+Alt+P)** - Allows you to create a file containing all the differences between two resources, based on the `svn diff` command. To read more about creating patches, see [the section about patches](#).
- **Compare with:**
  - **Latest from HEAD (Ctrl+Alt+H)** - Performs a 3-way diff operation between the selected file and the *HEAD* revision from the repository and displays the result in the **Compare view**. The common ancestor of the 3-way diff operation is the *BASE* version of the file from the local working copy.
  - **BASE revision (Ctrl+Alt+C)** - Compares the working copy file with the *BASE* revision file (the so-called *pristine copy*).
  - **Revision (Ctrl+Alt+R)** - Shows the **History view** containing the log history of that resource.

- **Branch/Tag** - Compares the working copy file with a revision of the file from a branch or tag. The revision is specified by URL (selected with a repository browser dialog) and revision number (selected with a revision browser dialog).
- **Each other** - Compares two selected files with each other.

These *compare* actions are enabled only if the selected resource is a file.

- **Replace with:**

- **Latest from HEAD** - Replaces the selected resources with their versions from the *HEAD* revision of the repository.
- **BASE revision** - Replace the selected resources with their versions from the pristine copy (the *BASE* revision).



**Note:** In some cases it is impossible to replace the current selected resources with their versions from the *BASE/HEAD* revision:

- for **Replace with BASE revision** action, the resources being unversioned or added have no *BASE* revision, so they cannot be replaced. However, they will be deleted if the action is invoked on a parent folder. The action will never work for missing folders or for obstructing files (folders being obstructed by a file), because you cannot recover a tree of folders;
  - for **Replace with latest from HEAD** action, you must be aware that there are cases when resources will be completely deleted or reverted to *BASE* revision and after that updated to *HEAD* revision, in order to avoid conflicts. These cases are:
    - the resource is *unversioned, added, obstructed or modified*;
    - the resource is affected by a *svn:ignore* or *svn:externals* property which is locally added on the parent folder and not yet committed to the repository.
- **Show History (Ctrl + H)** - Displays the **History view** where the log history for the selected resource will be presented. For more details about resource history see the sections about [the resource history view](#) and [requesting the history for a resource](#).
  - **Show Annotation (Ctrl + Shift + A)** - It will display the **Annotations view** where all the users that modified the selected resource will be presented together with the specific lines and revision numbers modified by each user. For more details about resource annotations see [Annotations View](#).
  - **Revision Graph (Ctrl + Shift + G)** - This action allows you to see the graphical representation of a resource's history. For more details about a resource's revision graph see [Revision Graph](#).
  - **Copy URL Location (Ctrl + Alt + U)** - Copies the encoded URL of the selected resource from the Working Copy to the clipboard.
  - **Copy/Move to (Ctrl + M)** - Copies or moves to a specified location the currently selected resource.
  - **Rename (F2)** - You can only rename one resource at a time. As for the move command, a copy of the original resource will be made with the new name and the original will be marked as deleted.
  - **Delete (Delete)** - Allows you to delete resources from the Subversion working copy. If *unversioned, added or modified* resources will be encountered, a dialog will prompt you to confirm their deletion, because their content cannot be recovered. The action is not enabled when the selection contains *missing* resources.
  - **New:**
    - **New File** - Creates a new file inside the selected folder. The newly created file will be added under version control only if the parent folder is already versioned.
    - **New Folder (Ctrl + Shift + F)** - Creates a child folder inside the selected folder. The newly created folder will be added under version control only if its parent is already versioned.

- **New External Folder (Ctrl + Shift + W)** - Creates a new folder inside the selected folder, having the contents of a target folder from the current working copy's repository. The application does this by setting a `svn:externals` property on the selected folder and updating the folder in order to bring all the newly pointed resources inside your current working copy. The operation shows a dialog which allows you to specify the new folder's name and easily select the target folder by browsing the repository's contents.

Subversion 1.5 and higher clients support relative external URLs. You can specify the repository URLs to which the external folders point using the following relative formats:

- `../` - Relative to the URL of the directory on which the `svn:externals` property is set.
  - `^/` - Relative to the root of the repository in which the `svn:externals` property is versioned.
  - `//` - Relative to the scheme of the URL of the directory on which the `svn:externals` property is set.
  - `/` - Relative to the root URL of the server on which the `svn:externals` property is versioned.
-  **Add to version control (Ctrl + Alt + V)** - Allows you to schedule for addition resources that are not under version control. For further details, see [Add Resources to Version Control](#) section.
  - **Add to "svn:ignore" (Ctrl + Alt + I)** - Allows you to keep inside your working copy files that should not participate to the version control operations. This action can only be performed on resources not under version control. It actually modifies the value of the `svn:ignore` property of the resource's parent directory. Read more about this in the [Ignore Resources Not Under Version Control](#) section.
  -  **Cleanup (Ctrl + Shift + C)** - Performs a maintenance cleanup operation to the selected resources from the working copy. This operation removes the Subversion maintenance locks that were left behind. Useful when you already know where the problem originated and want to fix it as quickly as possible. Only active for resources under version control.
  - **Locking:**
    - **Scan for locks (Ctrl + L)** - Contacts the repository and recursively obtains the list of locks for the selected resources. A dialog containing the locked files and the lock description will be displayed. Only active for resources under version control. For more details see [Scanning for locks](#).
    -  **Lock (Ctrl + K)** - Allows you to lock certain files for which you need exclusive access. You can write a comment describing the reason for the lock and you can also force (*steal*) the lock. The action is active only on files under version control. For more details on the use of this action see [Locking a file](#).
    -  **Unlock (Ctrl + Alt + K)** - Releases the exclusive access to a file from the repository. You can also choose to unlock it by force (*break the lock*).
  -  **Show SVN Properties (Ctrl + P)** - Brings up the [Properties view](#) and displays the SVN properties for the selected resource.
  -  **File Information (Ctrl + I)** - Provides additional information for the selected resource from the working copy. For more details please see [Obtain information for a resource](#).

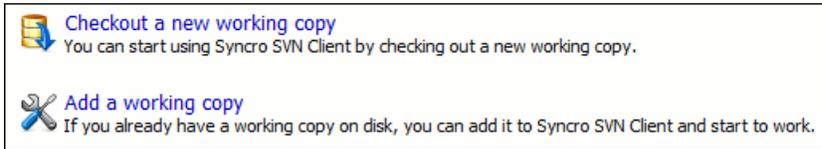
## Drag and Drop Operations

Files and folders can be added to the file tree of the Working Copy view as unversioned resources by drag and drop operations from other applications, for example Windows Explorer on Windows or Finder on Mac OS X. Also the structure of the files tree can be changed with drag and drop operations inside the view.

## Assistant Actions

To ensure a continuous and productive work flow, when a view mode has no files to present, it offers a set of guiding actions with some possible paths to follow.

Initially, when there is no working copy configured the **All Files** view mode lists the following two actions:



**Figure 372: All Files Panel**

For **Modified**, **Incoming**, **Outgoing**, **Conflicts** view modes, the following actions may be available, depending on the current working copy state in different contexts:

-  Information message - Informs you why there are no resources presented in the currently selected view mode;
-  **Synchronize with Repository** - Available only when there is nothing to present in the **Modified** and **Incoming** view modes;
-  **Switch to Incoming** - Selects the **Incoming** view mode.
-  **Switch to Outgoing** - Selects the **Outgoing** view mode.
-  **Switch to Conflicts** - Selects the **Conflicts** view mode.
-  **Show all changes/incoming/outgoing/conflicts** - Depending on the currently selected view mode, this action presents the corresponding resources after a synchronize operation was executed only on a part of the working copy resources.

## History View

In Apache Subversion™, both files and directories are versioned and have a history. If you want to examine the history for a selected resource and find out what happened at a certain revision you can use the **History view** that can be accessed from *Repositories view*, *Working Copy view*, *Revision Graph*, or *Directory Change Set view*. From the **Working copy view** you can display the history of local versioned resources.

The view consists of four distinct areas:

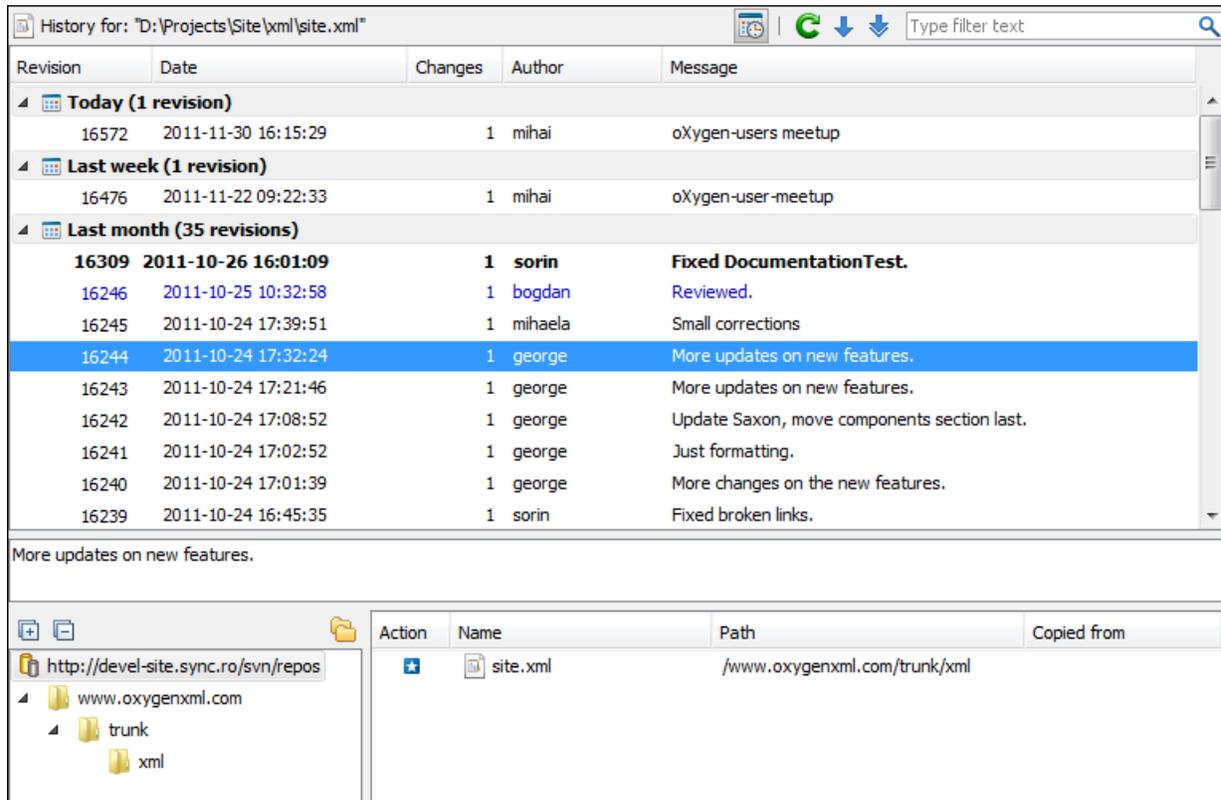
- The table showing details about each revision, like: revision number, commit date and time, number of changes (more details available in the tooltip), author's name, and a fragment of the commit message.

Some revisions may be highlighted to emphasize:

- the current revision of the resource for which the history is displayed - a bold font revision;
- the last revision in which the content or properties of the resource were modified - blue font revision.

 **Note:** Both font highlights may be applied for the same revision.

- The complete commit message for the selected revision;
- A tree structure showing the folders where the modified resources are located. You can compress this structure to a more compact form that focuses on the folders that contain the actual modifications;
- The list of resources modified in the selected revision. For each resource, the type of action done against it is marked with one of the following symbols:
  -  - A newly created resource;
  -  - A newly created resource, copied from another repository location;
  -  - The content/properties of the resource were *modified*;
  -  - Resource was *replaced* in the repository;
  -  - Resource was deleted from the repository.

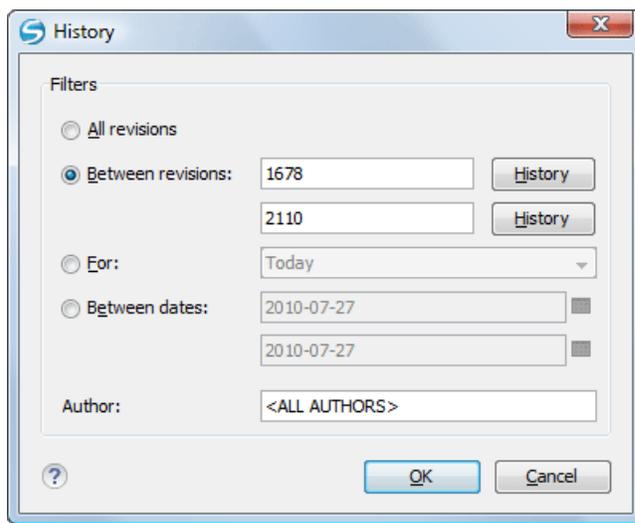


**Figure 373: History View**

You can group revisions in predefined time frames (today, yesterday, this week, this month), by pressing the  **Group by date** button from the toolbar.

### The History Filter Dialog

The **History view** does not always show all the changes ever made to a resource because there may be thousands of changes and retrieving the entire list can take a long time. Normally you are interested in the more recent ones. That is why you can specify the criteria for the revisions displayed in the **History view** by selecting one of several options presented in the **History** dialog which is displayed when you invoke the **Show History** action.



**Figure 374: History Filters Dialog**

Options for the set of revisions presented in the History view are:

- all revisions of the selected resource;
- only revisions between a start revision number and an end revision number;
- only revisions added in a period of time like today, last week, last month, etc.;
- only revisions between a start and an end date;
- only revisions committed by a specified SVN user.

The toolbar of the **History view** has two buttons for extending the set of revisions presented in the view: **Get next 50** and **Get all**.

### The History Filter Field

When only the history entries which contain a specified substring need to be displayed in the **History view** the filter field displayed at the top of this view is the perfect fit. Just enter the search string in the field next to the label **Find**. Only the items with an author name, commit message, revision number or date which match the search string are kept in the **History view**. The filter action is executed and the content of the table is updated when the button  **Search** is pressed.

### Features

Single selection actions:

- **Compare with working copy** - Compares the selected revision with your working copy file. It is enabled only when you select a file.
-  **Open** - Opens the selected revision of the file into the Editor. This is enabled only for files.
- **Open with ...** - Displays the *Open with...* dialog to specify the editor in which the selected file will be opened.
- **Get Contents** - Replaces the current version from the working copy with the contents of the selected revision from the history of the file. The *BASE* version of the file is not changed in the working copy so that after this action the file will appear as modified in a synchronization operation, that is newer than the *BASE* version, even if the contents is from an older version from history.
- **Save as** - Allows you to save the contents of a file as it was committed at a certain revision. This option is available only when you access the history of a file.
- **Revert changes from this revision** - Reverts changes which were made in the selected revision. The changes are reverted only in your working copy file, so it does not affect the repository file. It does not replace your working copy file with the entire file at the earlier revision, but only rolls-back earlier changes when other unrelated changes have been made since the date of the revision. This action is enabled when the resource history was launched for a local working copy resource.
- **Update to revision** - Updates your working copy resource to the selected revision. This is useful if you want your working copy to reflect a time in the past. It is best to update a whole directory in your working copy, not just one file, otherwise your working copy is inconsistent and you are unable to commit your changes.
- **Check out from revision** - Gets the content of the selected revision for the resource into local file system.
-  **Show Annotation** - Computes the latest revision number and author name that modified each line of the file up to the selected revision, that is no modification later than the selected revision is taken into account.
- **Change** - Allows you to change commit data for a file:
  - *Author* - Changes the name of the SVN user that committed the selected revision.
  - *Message* - Changes the commit message of the selected revision.

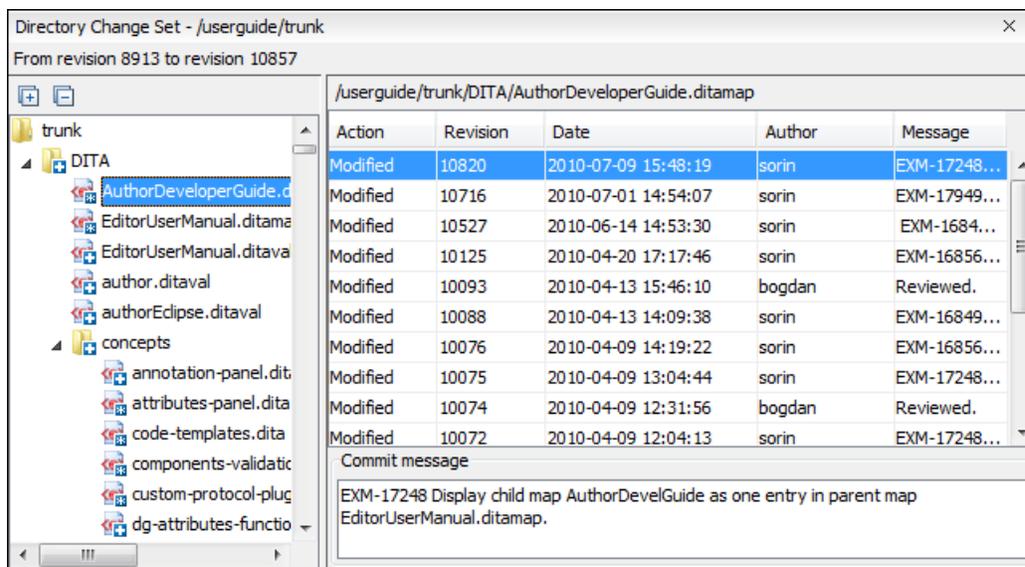
When two resources are selected in the **History view**, the contextual menu contains the following actions:

- **Compare revisions** - When the resource is a file, the action compares the two selected revisions using the **Compare** view. When the resource is a folder, the action displays the set of all resources from that folder that were changed between the two revision numbers.
- **Revert changes from these revisions** - Similar to the `svn-merge` command, it merges two selected revisions into the working copy resource. This action is only enabled when the resource history was requested for a working copy item.

For more information about the **History view** and its features please read the sections [Request history for a resource](#) and [Using the resource history view](#)

## Directory Change Set View

The result of comparing two reference revisions from the history of a folder resource is a set with all the resources changed between the two revision numbers. The changed resources can be contained in the folder or in a subfolder of that folder. These resources are presented in a tree format. For each changed resource all the revisions committed between the two reference revision numbers are presented.



**Figure 375: Directory Change Set View**

The set of changed resources displayed in the tree is obtained by running the action **Compare revisions** available on the context menu of the **History** view when two revisions of a folder resource are selected in the **History** view.

The left side panel of the view contains the tree hierarchy with the names of all the changed resources between the two reference revision numbers. The right side panel presents the list with all the revisions of the resource selected in the left side tree. These revisions were committed between the two reference revision numbers. Selecting one revision in the list displays the commit message of that revision in the bottom area of the right side panel.

A double click on a file listed in the left side tree performs a diff operation between the two revisions of the file corresponding to the two reference revisions. A double click on one of the revisions displayed in the right side list of the view performs a diff operation between that revision and the previous one of the same file.

The context menu of the right side list contains the following actions:

- **Compare with previous version** - Performs a diff operation between the selected revision in the list and the previous one.
- **Open** - Opens the selected revision in the associated editor type.
- **Open with...** - *Displays a dialog* with the available editor types and allows the user to select the editor type for opening the selected revision.
- **Save as** - Saves the selected revision in a file on disk.

- **Show Annotation** - Requests the annotations of the file and *displays them in the **Annotations view***.

## The Editor Panel of SVN Client

You can open a file for editing in an internal built-in editor. There are default associations between frequently used file types and the internal editors in *the **File Types preferences panel***.

The internal editor can be accessed either from the ***Working copy view*** or from the ***History view***. No actions that modify the content are allowed when the editor is opened with a revision from history.

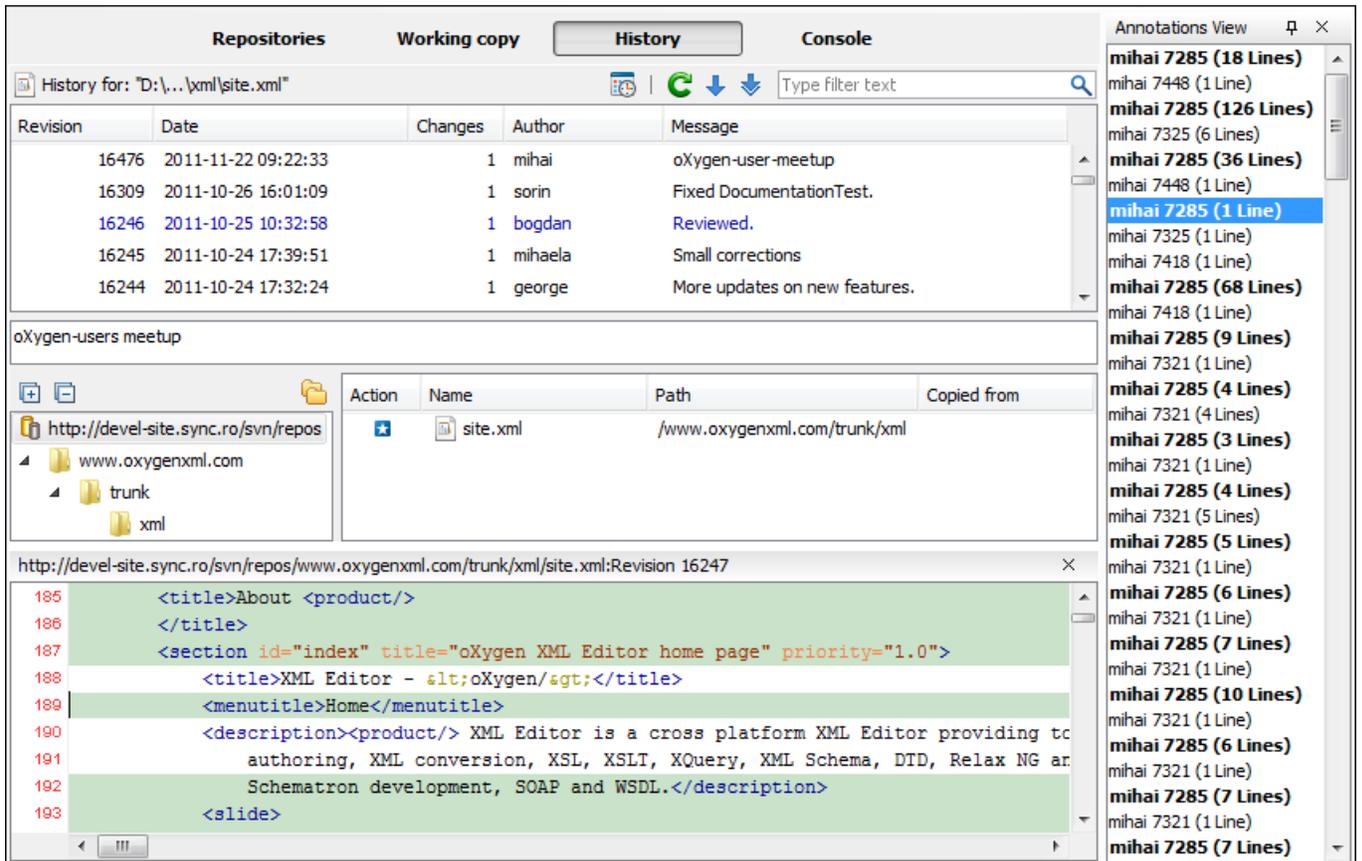
Only one file at a time can be edited in an internal editor. If you try to open another file it will be opened in the same editor window. The editor provides syntax highlighting for known file types. This means that a different color will be used for each recognized token type found in the file. If the file's content type is unknown you will be prompted to choose the proper way the file should be opened.

After editing the content of the file in an internal editor you can save it to disk by using the **Save** action from the ***File*** menu or the Ctrl + S key shortcut. After saving your file you can see the file changed status in *the **Working Copy view***.

If the internal editor associated with a file type is not the XML Editor, then the encoding set in *the preference **Encoding for non XML files*** is used for opening and saving a file of that type. This is necessary because in case of XML files the encoding is usually declared at the beginning of the XML file in a special declaration or it assumes the default value UTF-8 but in case of non XML files there is no standard mechanism for declaring the file's encoding.

## Annotations View

Sometimes you need to know not only what was changed in a file, but also who made those changes. This view displays the author and the revision that changed every line in a file. Just click on a line in the editor panel where the file is opened to see the revision that edited that line last time highlighted in the **History view** and to see all the lines changed by that revision highlighted in the editor panel. Also the entries of the **Annotations view** corresponding to that revision are highlighted. So the **Annotations view**, the **History view** and the editor panel are synchronized. Clicking on a line in one of them highlights the corresponding lines in the other two.



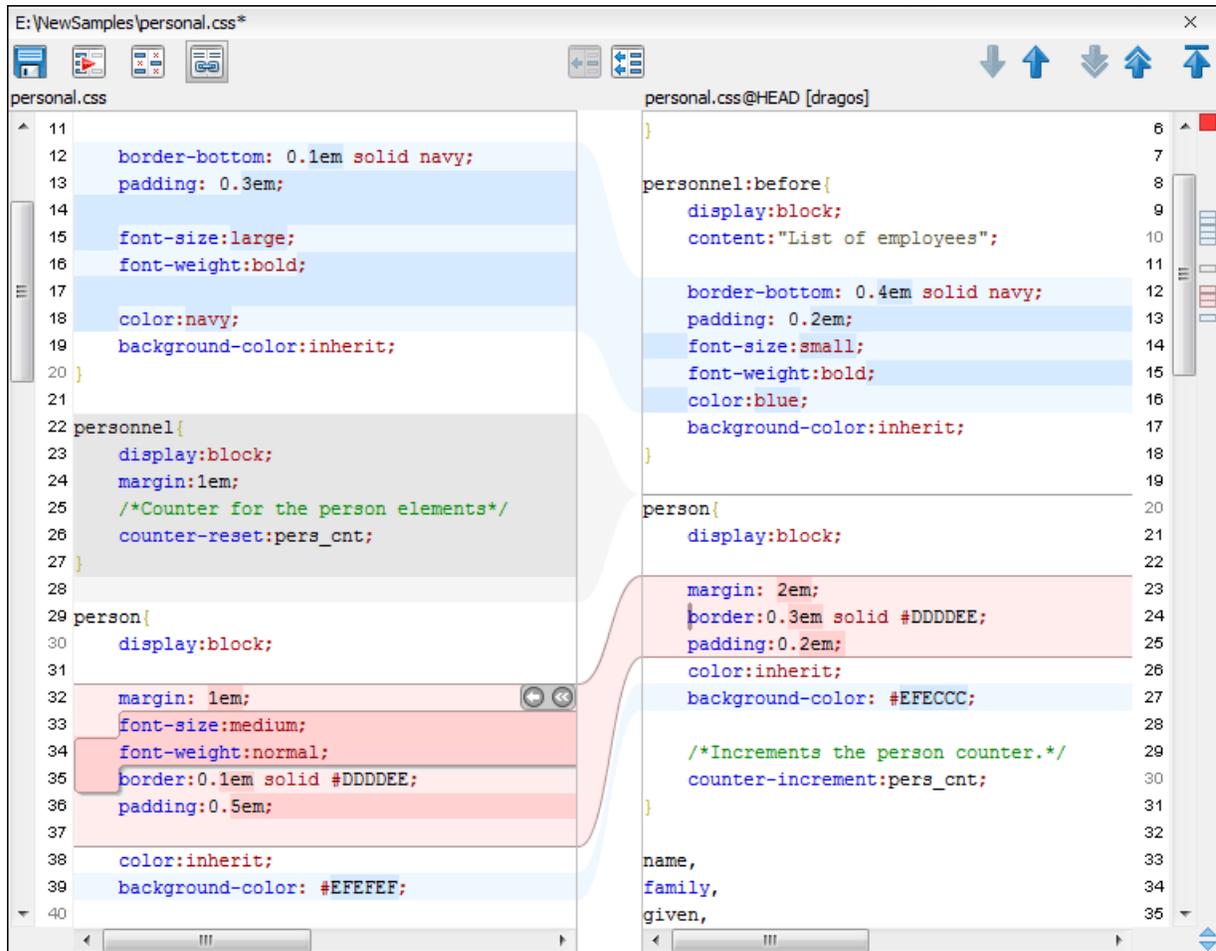
**Figure 376: The Annotations View**

The annotations of a file are computed with the **Show Annotation** action available on the right click menu of *the History view* and *the Repository view*.

If the file has a very long history, the computation of the annotation data can take long. If you want only the annotations of a range of revisions you can specify the start revision and the end revision of the range in a dialog similar with *the History filter dialog* that will be displayed in *the History view*. The action is called **Show Annotation** and is available on the right click menu of *the Working Copy view*.

## Compare View

In the Syncro SVN Client there are three types of files that can be checked for differences: text files, image files and binary files. For the text files and image files you can use the built-in **Compare view**.



**Figure 377: Compare View**

At the top of each of the two editors, there are presented the name of the opened file, the corresponding SVN revision number (for remote resources) and the author who committed the associated revision.

When comparing text, the differences are computed using a *line differencing algorithm*. The view can be used to show the differences between two files in the following cases:

- after obtaining the outgoing status of a file with a **Refresh** operation, the view can be used to show the differences between your working file and the pristine copy. In this way you can find out what changes you will be committing;
- after obtaining the incoming and outgoing status of the file with the **Synchronize** operation, you can examine the exact differences between your local file and the *HEAD* revision file;
- you can use the **Compare view** from the **History view** to compare the local file and a selected revision or compare two revisions of the same file.

The Compare view contains two editors. Edits are allowed only in the left editor and only when it contains the working copy file. To learn more about how the view can be used in the day by day work see [View differences](#).

### Toolbar

The list of actions available in the toolbar consists of:

-  **Save action** - Saves the content of the left editor when it can be edited.
-  **Perform Files Differencing** - Performs a comparison between the source and target files.

-  **Ignore Whitespaces** - Enables or disables the whitespace ignoring feature. Ignoring whitespace means that before performing the comparison, the application normalizes the content and trims its leading and trailing whitespaces.
-  **Synchronized scrolling** - Synchronizes scrolling of the two open files, so that a selected difference can be seen on both sides of the application window. This action enables/disables the previous described behavior.
-  **Next Block of Changes** - Jumps to the next block of changes. This action is disabled when the cursor is positioned on the last change block or when there are no changes in the document.
-  **Previous Block of Changes** - Jumps to the previous block of changes. This action is disabled when the cursor is positioned on the first change block or when there are no changes in the document.
-  **Next Change** - Jumps to the next change from the current block of changes. When the last change from the current block of changes is reached, it highlights the next block of changes. This action is disabled when the cursor is positioned on the last change.
-  **Previous Change** - Jumps to the previous change from the current block of changes. When the first change from the current block of changes is reached, it highlights the previous block of changes. This action is disabled when the cursor is positioned on the first change.
-  **First Change** - Jumps to the first change from the current file.
-  **Copy change from right to left** - Copies the selected change from the right editor to the left editor.
-  **Copy all non-conflicting changes from right to left** - Copies all non-conflicting changes from the right editor to the left editor. A non-conflicting change from the right editor is a change that does not overlap with a left editor change.

These actions are available also from the [Compare](#) menu.

## Image Preview

You can view your local files by using the built-in **Image preview** component. The view can be accessed from the [Working copy view](#) or from the [Repository view](#). It can also be used from the [History view](#) to view a selected revision of a image file.

Only one image file can be opened at a time. If an image file is opened in the *Image preview* and you try to open another one it will be opened in the same window. Supported image types are *GIF, JPEG/JPG, PNG, BMP*. Once the image is displayed in the **Image preview** panel using the actions from the contextual menu one can scale the image at its original size (**1:1** action) or scale it down to fit in the view's available area (**Scale to fit** action).

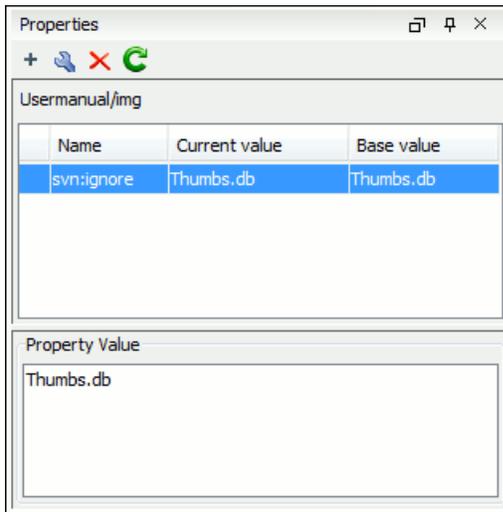
## Compare Images View

The images are compared using the Compare images view. The images are presented in the left and right part of the view, scaled to fit the view's available area. You can use the contextual menu actions to scale the images at their original size or scale them down to fit the view's available area.

The supported image types are: *GIF, JPG / JPEG, PNG, BMP*.

## Properties View

The properties view presents Apache Subversion™ properties for the currently selected resource from either the **Working Copy** view or the **Repositories** view.



**Figure 378: The Properties View**

Above the table it is specified the currently active resource for which the properties are presented. Here you will also find a warning when an unversioned resource is selected.

The table in which the properties are presented has four columns:

- **State** - can be one of:
  - (empty) - normal unmodified property, same current and base values;
  - \*(asterisk) - modified property, current and base values are different;
  - +(plus sign) - new property;
  - -(minus sign) - removed property.
- **Name** - the property name.
- **Current value** - the current value of the property.
- **Base value** - the base(original) value of the property.

### The `svn:externals` Property

The `svn:externals` property can be set on a folder or a file. In the first case it stores *the URL of a folder from other repository*.

In the second case it stores the URL of a file from other repository. The external file will be added into the working copy as a versioned item. There are a few differences between directory and file externals:

- The path to the file external must be in a working copy that is already checked out. While directory externals can place the external directory at any depth and it will create any intermediate directories, file externals must be placed into a working copy that is already checked out.
- The external file URL must be in the same repository as the URL that the file external will be inserted into; inter-repository file externals are not supported.
- While commits do not descend into a directory external, a commit in a directory containing a file external will commit any modifications to the file external.

The differences between a normal versioned file and a file external:

- File externals cannot be moved or deleted; the `svn:externals` property must be modified instead; however, file externals can be copied.

A file external shows up as a X in the switched status column.



**Attention:**

Incomplete support - In subversion 1.6 it is not possible to remove a file external from your working copy once you have added it, even if you delete the `svn:externals` property altogether. You have to checkout a fresh working copy to remove the file.

### Toolbar / Contextual Menu

The properties view toolbar and contextual menu contain the following actions:

- **+** **Add a new property** - This button invokes the *Add property* dialog in which you can specify the property name and value.
- **🔗** **Edit property** - This button invokes the *Edit property* dialog in which you can change the property value and also see its original(base) value.
- **✗** **Remove property** - This button will prompt a dialog to confirm the property deletion. You can also specify if you want to remove the property recursively.
- **🔄** **Refresh** - This action will refresh the properties for the current resource.

### Console View

The **Console View** shows the traces of all the actions performed by the application. Part of the displayed messages mirror the communication between the application and the Apache Subversion™ server. The output is expressed as subcommands to the Subversion server and simulates the Subversion command-line notation. For a detailed description of the Subversion console output read the **SVN User Manual**.

The view has a simple layout, with most of its space occupied by a message area. On its right side, there is a toolbar holding the following buttons:

- **✖** **Clear** - Erases all the displayed messages;
- **🔒** **Lock scroll** - Disables the automatic scrolling when new messages are appended in the view.

The maximum number of lines displayed in the console (length of the buffer) can be modified in the [Preferences](#) page. By default this value is set to 100.

### Dynamic Help View

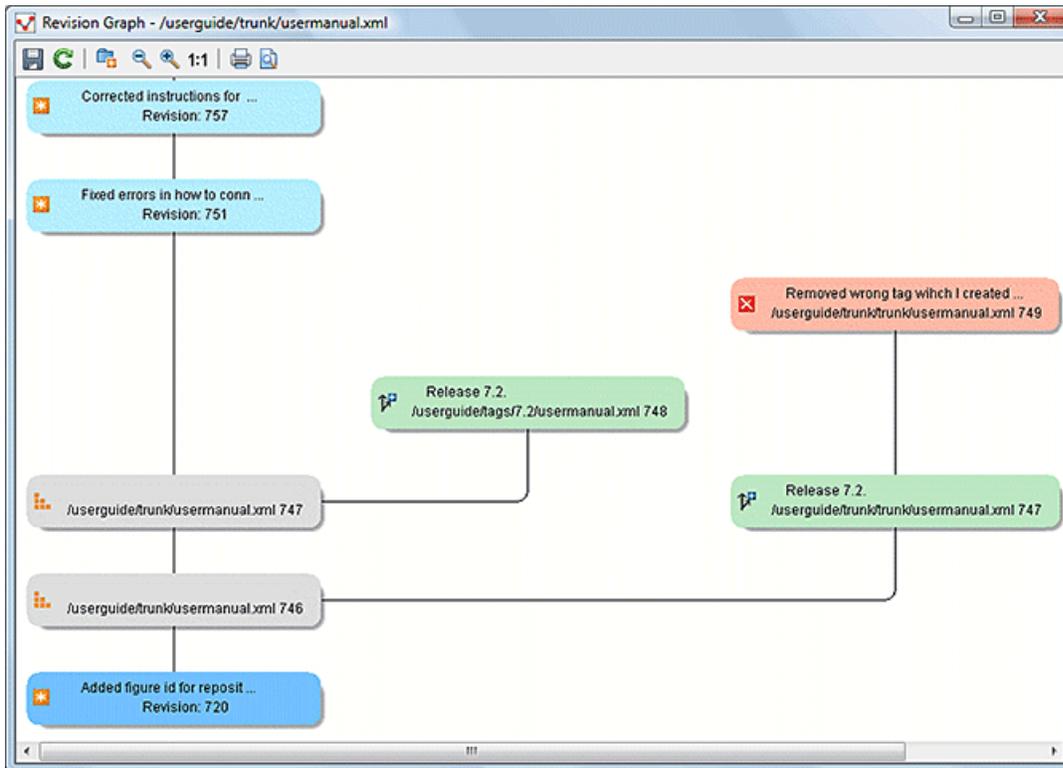
**Dynamic Help view** is a help window that changes its content to display the help section referring to the currently selected view. As you change the focused view, you are able to read a short description of it and its functionality.

## The Revision Graph of a SVN Resource

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The history of a SVN resource can be watched on a graphical representation of all the revisions of that resource together with the tags in which the resource was included. The graphical representation is identical to a tree structure and very easy to follow.

The graphical representation of a resource history is invoked with the **🔗** **Revision graph** action available on the right click menu of a SVN resource in *the Working Copy view* and *the Repository view*.



**Figure 379: The Revision Graph of a File Resource**

In every node of the revision graph an icon and the background color represent the type of operation that created the revision represented in that node. Also the commit message associated with that revision, the repository path and the revision number are contained in the node. The tooltip displayed when the mouse pointer hovers over a node specifies the URL of the resource, the SVN user who created the revision of that node, the revision number, the date of creation, the commit message, the modification type and *the affected paths*.

The types of nodes used in the graph are:

- **Added resource** - the icon for a new resource added to the repository (  ) and green background;
- **Copied resource** - the icon for a resource copied to other location, for example when a SVN tag is created (  ) and green background;
- **Modified resource** - the icon for a modified resource (  ) and blue background;
- **Deleted resource** - the icon for a resource deleted from the repository (  ) and red background;
- **Replaced resource** - the icon for a resource removed and replaced with another one on the repository (  ) and orange background;
- **Indirect resource** - the icon for a revision from where the resource was copied or an indirectly modified resource, that is a directory in which a resource was modified (  ) and grey background; the *Modification type* field of the tooltip specifies how that revision was obtained in the history of the resource.

A directory resource is represented with two types of graphs:

- **simplified graph** - lists only the changes applied directly to the directory;
- **complete graph** - lists also the indirect changes of the directory resource, that is the changes applied to the resources contained in the directory.

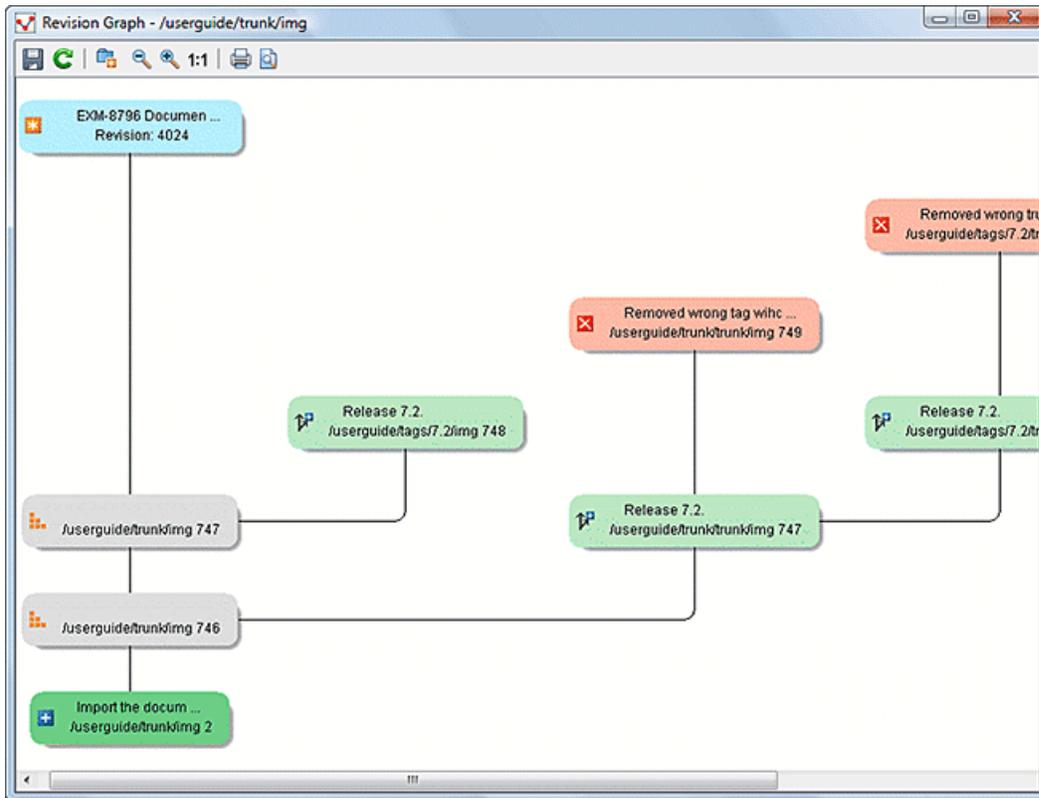


Figure 380: The Revision Graph of a Directory (Direct Changes)

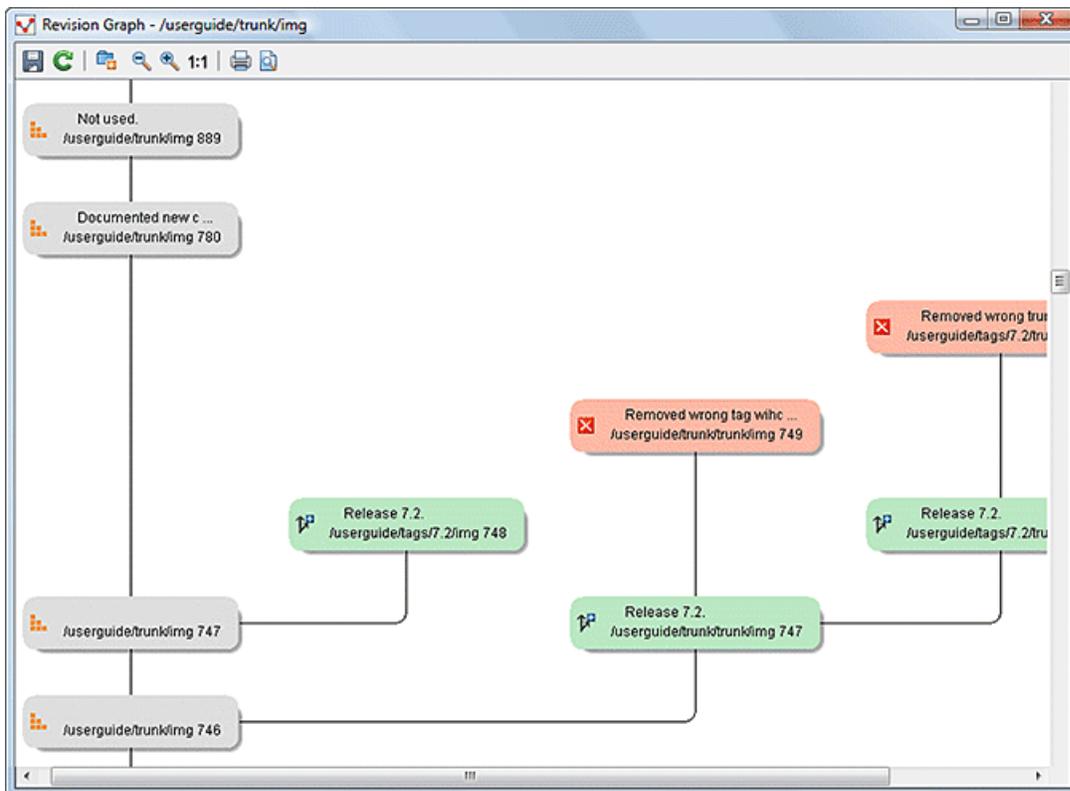


Figure 381: The Revision Graph of a Directory (Also Indirect Changes)

The **Revision graph** dialog toolbar contains the following actions:

-  **Save as image** - Saves the graphical representation as image. For a large revision graph you have to *set more memory in the startup script*. The default memory size is not enough when there are more than 100 revisions that are included in the graph.
-  **Show/Hide indirect modifications** - Switches between simplified and complete graph.
-  **Zoom In** - Zooms in the graph.
-  **Zoom Out** - Zooms out the graph. When the font reaches its minimum size, the graph nodes will display only the icons, leading to a very compact representation of the graph.
- **1:1 Reset scale** - Resets the graphical scale to a default setting.
-  **Print** - Prints the graph.
-  **Print preview** - Offers a preview of the graph to allow you to check the information to be printed.

Right clicking any of the graph nodes display a contextual menu containing the following actions:

-  **Open** - Opens the selected revision in the editor panel. Available only for files.
- **Open with** - Opens the selected revision in the editor panel. Available only for files.
- **Save as** - Saves the file for which the revision graph was generated, based on the selected node revision.
- **Compare with HEAD** - Compares the selected revision with the HEAD revision and displays the result in the diff panel. Available only for files.
-  **Show History** - Displays the history of the resource in *the History view*. Available for both files and directories.
-  **Check Out** - *Checks out* the selected revision of the directory. Available only for directories.

When two nodes are selected in the revision graph of a file the right click menu of this selection contains only the **Compare** for comparing the two revisions corresponding to the selected nodes. If the resource for which the revision graph was built is a folder then the right click menu displayed for a two nodes selection also contains the **Compare** action but it computes the differences between the two selected revisions as a set of directory changes. The result is displayed in the *Directory Change Set* view.



#### Attention:

Generating the revision graph of a resource with many revisions may be a slow operation. You should enable caching for revision graph actions so that future actions on the same repository will not request the same data again from the SVN server which will finish the operation much faster.

## Syncro SVN Client Preferences

---

The options used in the SVN client are saved and loaded independently from the Syncro SVN Client options. However if at the Syncro SVN Client's first startup it cannot be determined a set of SVN options to be loaded, some of the preferences are imported from the XML Editor options (e.g. License key and HTTP Proxy settings).

The preferences dialog can be accessed from the *Options* -> Preferences. The preferences panels are called *Global*, *SVN*, *Diff colors* and HTTP/Proxy Configuration.

There is a second set of preferences applied to the SVN client: the preferences set in the global SVN files called 'config' and 'servers'. These are the files holding parameters that act as defaults applied to all the SVN client tools that are used by the same user on his/hers login account on the computer. These files can be opened for editing with the two edit actions available in the SVN client tool on the **Global Runtime Configuration** submenu of the **Options** menu.

## Command Line Reference

---

This section specifies the equivalent Apache Subversion™ commands for each action available in the graphical user interface of Syncro SVN Client.

### Checkout Command

Used to pull a SVN tree from the server to the local file system. The syntax of checkout command is the following.

```
svn checkout --revision rev URL PATH
```

rev	The desired revision number (optional)	
URL		Repository URL you want to check out from.
PATH		Checkout target on file system.

## Update Command

Brings changes from the repository into your working copy. The syntax of update command is the following.

```
svn update --revision rev PATH
```

rev	The desired revision number (optional)	
PATH		Checkout target on file system.

Updates resources to the last revision on which they were synchronized or to the *HEAD* revision, if no repository information is available.

## Commit Command

Sends changes from your working copy to the repository.

```
svn commit -m "log message"--no-unlock PATH
```

-m "log message"	Specifies the commit comment.	
--no-unlock		Specifies that the resource should keep locks after commit if this is the case.
PATH		Location on the file system of the resource to commit. Can be more than one.

## Diff Command

Displays the differences found between two revisions.

```
svn diff --revision rev1:rev2 PATH
```

rev1:rev2	Specifies the revisions to be compared.	
PATH		Location on the file system of the resource to be compared.

If you use the **Compare with latest from HEAD** **Ctrl+Alt+H (Meta+Alt+E on Mac OS)** from the [Working copy view](#) you will be comparing the local file with the HEAD revision file. If you use **Compare with BASE revision** the local file will be compared with the pristine copy. You can choose to compare the local file with an older revision or two revisions of the same file from the [History view](#).

## Show History

Display commit log messages.

```
svn log --revision rev1:rev2 --limit N --verbose PATH
```

rev1:rev2	Specifies the range of revisions for which to obtain the log.	
--limit N		Limits the number of messages brought to N.

--verbose	Gives detailed information about this command's execution.
-----------	--

Syncro SVN Client uses by default the *--limit* option in order to obtain only 50 log messages.

## Refresh

Print the status of working copy files and directories.

```
svn status --verbose PATH
```

--verbose	Specifies that the status of all files should be reported.
PATH	Location on the file system of the resource to get status for.

## Synchronize

```
svn status --show-updates PATH
```

--show-updates	Gets the resource status by contacting the repository.
PATH	Location on the file system of the resource to get status for.

## Import

Commits an unversioned file or tree into the repository.

```
svn import -m "log message" PATH URL
```

-m "log message"	Specifies the commit log message.	
PATH		Local path to the resource on the file system.
URL	URL on the repository where the resource will be imported.	

## Export

Exports a directory tree.

```
svn export --revision rev URL PATH
```

rev	Specifies the desired revision(if necessary).	
URL		Repository URL you want to export from.
PATH		Location on the file system where to export.

## Information

Displays information about a local or remote item.

```
svn info --revision rev PATH|URL
```

rev	Specifies the revision number for which the information will be requested.	
PATH		Local file system path to the resource.
URL		Repository URL for the resource.

## Add

Add files, directories, or symbolic links.

```
svn add PATH..
```

PATH	Local file system path of the unversioned resources to be added to version control. More than one can be specified.
------	---

## Add to svn:ignore

```
svn propset svn:ignore PATH PARENTPATH
```

svn:ignore	Predefined property name for ignoring resources.	
PATH		Relative path from the working copy root for the resource to be ignored.
PARENTPATH		Path to the parent of the resource to be ignored.

## Delete

Deletes resources from a working copy or from an Apache Subversion™ repository.

```
svn delete --recursive PATH | URL
```

--recursive	Specifies that the operation should be performed recursively.	
PATH		Local file system path of the resource to delete.
PARENTPATH		Repository URL of the resource to delete.

## Copy

Copy a file or directory in a working copy or in the repository.

```
svn copy(SRCPATH DSTPATH) | (SRCURL DSTURL)
```

SRCPATH	Working copy path of the resource to be copied.	
DSTPATH		Working copy path where the resource will be copied to.
SRCURL	Repository path of the resource to be copied.	
DSTURL	Repository path where the resource will be copied to.	

## Move / Rename

Move a file or directory.

```
svn move(SRCPATH DSTPATH) | (SRCURL DSTURL)
```

SRCPATH	Working copy path of the resource to be moved.	
DSTPATH		Working copy path where the resource will be moved to.
SRCURL	Repository path of the resource to be moved.	
DSTURL	Repository path where the resource will be moved to.	

## Mark resolved

```
svn resolved --recursive PATH
```

--recursive	Specifies that the operation should be performed recursively.	
PATH		Path to the resource in the local working copy.

## Revert

Undo all local edits.

```
svn revert [--recursive] PATH
```

--recursive	Specifies that the operation should be performed recursively.	
PATH		Local working copy path to revert to.

## Cleanup

Recursively cleans up the working copy.

```
svn cleanup PATH
```

PATH	Local working copy path to clean up.
------	--------------------------------------

## Show / Refresh Properties

```
svn proplist PATH
```

```
svn propget PROPNAME PATH
```

PATH	Local path of the resource.
PROPNAME	Property name.

First you can discover the property names with `svn proplist`, then you can obtain their values with `svn propget`.

## Branch / Tag

```
svn copy -m "log message" URL1 URL2
```

```
svn copy -m "log message" URL1@rev1 URL2
```

```
svn copy -m "log message" PATH URL
```

-m "log message"	Commit message.	
URL1		Source repository URL.
rev1	Revision of the source.	
URL2	Destination repository URL.	
PATH	Source working copy path.	
URL	Destination repository URL.	

## Merge

Apply the differences between two sources to a working copy path.

```
svn merge [--dry-run] rev1:rev2 URL PATH
```

```
svn merge [--dry-run] URL1@rev1 URL2@rev2 PATH
```

--dry-run	Specifies that the operation will be simulated without making any modifications.	
URL		Repository URL for the resource to merge.
URL1	Repository URL for the start branch to merge.	
rev1	Start revision for the resource to merge.	
URL2	Repository URL for the end branch to merge.	
rev2	End revision for the resource to merge.	
PATH	Destination path in the working copy for the result of the merge.	

## Scan for locks

Obtains the repository status for all the resources in the path.

```
svn status --show-updates --verbose PATH
```

--show-updates	Get the resource status by contacting the repository.	
--verbose		Specifies that the status of all files should be reported.
PATH		The location on the file system to get status for.

## Lock

Lock working copy paths or URLs in the repository so that no other user can commit changes to them.

```
svn lock [--force] [-m "log message"] PATH
```

--force	Forces(steals) the lock.	
-m "log message"		Lock message.
PATH		Path to the file to be locked.

## Unlock

Unlock working copy paths or URLs.

```
svn unlock [--force] PATH
```

--force	Forces(breaks) the lock.	
PATH		Path to the file from the working copy..

## Mark as merged

```
rename FILE FILE.TMP
```

```
svn update FILE
```

```
rename FILE.TMP FILE
```

FILE	File to be marked as merged.
------	------------------------------

FILE.TMP	Temporary filename.
----------	---------------------

## Override and update

```
svn revert PATH
```

```
svn update PATH
```

PATH	Path of the resource to be overridden.
------	--

## Override and Commit

If the resource is in conflict first you should perform a [Mark Resolved action](#). If the resource has incoming changes you should perform a [Mark as Merged action](#) followed by a [Commit action](#).

## Add / Edit property

```
svn propset [--recursive] PROPNAME PROPVALUE PATH
```

--recursive	Specifies that the property should be set recursively.	
PROPNAME		Property name.
PROPVALUE	Property value.	
PATH		Resource's path.

## Remove property

Removes a property from an item.

```
svn propdel [--recursive] PROPNAME PATH
```

--recursive	Specifies that the property should be deleted recursively.	
PROPNAME		Property name.
PATH		Resource's path.

## Revert changes from this revision

```
svn merge rev:rev-1 URL
```

rev	Revision whose changes must be reverted.	
URL		The SVN URL corresponding to the resource.

## Revert changes from these revisions

Short reference description.

```
svn merge rev1:rev2 URL
```

rev1	First revision number.	
rev2	Second revision number.	
URL		The SVN URL corresponding to the resource.

## Technical Issues

---

This section contains special technical issues found during the use of Syncro SVN Client.

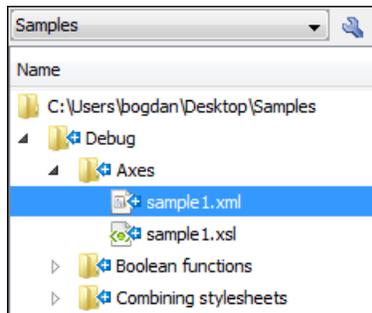
### Authentication Certificates Not Saved

If Syncro SVN Client prompts you to enter the authentication certificate, although you already provided it in a previous session, then you should make sure that your local machine user account has the necessary rights to store certificate files in the *Subversion* configuration folder (write access to *Subversion* folder and all its subfolders). Usually, it is located in the following locations:

- Windows: user's home directory\AppData\Roaming\Subversion
- Mac OS X and Linux: user's home directory/.subversion

### Updating Newly Added Resources

When you want to get from the repository a resource which is part of a newly created structure of folders, you need to also get its parent folders.



**Figure 382: An incoming structure of folders from the repository**

Syncro SVN Client allows you to choose how you want to deal with the entire structure from that moment onwards:

- **Update ancestor directories recursively** - This option brings the entire newly added folders structure into your working copy. In this case, the update time depends on the total number of newly incoming resources, because of the full update operation (not updating only selected resource).
- **Update selected files only (leave ancestor directories empty)** - This option brings a skeleton structure composed of the resource's parent folders only, and the selected resource at the end of the operation. All of the parent directories will have depth set to *empty* in your working copy, thus subsequent **Synchronize** operations will not report any remote modifications in those folders. If you need to update the folders to full-depth, you can use **Update to revision/depth** option from the working copy.

### Cannot Access a Repository through HTTPS

If you have issues when trying to access a repository through HTTPS protocol, one of the possible causes can be the encryption protocol currently used by the application. This is happening when:

- you are running Syncro SVN Client with Java 1.6 or older;
- the repository is set to use only one of the SSLv3 or TLSv1 encryption protocols.

To solve this issue, set the **HTTPS encryption protocols** option to **SSLv3 only** or **TLSv1 only** (depending on the repository configuration).



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# Chapter 23

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## Extending Oxygen XML Editor with Plugins

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### Topics:

- [Introduction](#)
- [General configuration of an Oxygen XML Editor plugin](#)
- [Types of plugins](#)
- [How to](#)
- [Installation](#)
- [Example - A Selection Plugin](#)
- [Creating and Running Automated Tests](#)
- [Disabling a Plugin](#)

This chapter explains how to write and install a plugin for Oxygen XML Editor. It treats only the standalone version, as the Eclipse plugin version can be extended with other plugins following the rules of the Eclipse platform.

## Introduction

---

Oxygen XML Editor defines a couple of extension points to allow providing custom functionality via plugins. The plugin support includes the following types of plugins:

- General plugins
- Selection plugins
- Document plugins
- Custom protocol plugins
- Resource locking custom protocol plugins
- Components validation plugins
- Workspace access plugins
- Open redirect plugins

A selection plugin can be applied to both an XML document and a non-XML document. Other types of plugins can be applied only to XML documents.

A components validation plugin and a workspace access plugin are not connected with one document type, they have access to some resources of the application workspace used by all opened documents.

In order to develop a plugin a Java development environment must be installed. Apart from any library that the specific plugin requires, the file `oxygen.jar` is necessary for plugin compilation. Also an Oxygen XML Editor installation is helpful for testing the deployment and plugin the functionality.

## General configuration of an Oxygen XML Editor plugin

---

The Oxygen XML Editor functionality can be extended with plugins that implement a clearly specified API. A plugin includes at least a descriptor file which is an XML file called `plugin.xml` and two Java classes that extend `ro.sync.exml.plugin.Plugin` and `ro.sync.exml.plugin.PluginExtension`. Most plugins work only in the Text mode of the XML editor panel while others work at the workspace level. For extending the Author mode of the XML editor panel, see *Author Developer Guide* for the custom Author actions API.

On the Oxygen XML Editor website there is a [plugin development kit](#) with some sample plugins (source code and compiled code) and the Javadoc API necessary for developing custom plugins.

The minimal implementation of a plugin must provide:

- a Java class that extends the `ro.sync.exml.plugin.Plugin` class
- a Java class that implements the `ro.sync.exml.plugin.PluginExtension` interface
- a plugin descriptor file called `plugin.xml`

A `ro.sync.exml.plugin.PluginDescriptor` object is passed to the constructor of the subclass of the `ro.sync.exml.plugin.Plugin` class. It contains the following data items about the plugin:

- `basedir` - *File* object - the base directory of the plugin.
- `description` - *String* object - the description of the plugin.
- `name` - *String* object - the name of the plugin.
- `vendor` - *String* object - the vendor name of the plugin.
- `version` - *String* object - the plugin version.

The `ro.sync.exml.plugin.PluginDescriptor` fields are filled with information from the plugin descriptor file.

The plugin descriptor is an XML file that defines how the plugin is integrated in Oxygen XML Editor and what libraries are loaded. The structure of the plugin descriptor file is fully described in a DTD grammar located in

OXYGEN\_INSTALLATION\_FOLDER/plugins/plugin.dtd. Here is a sample plugin descriptor used by the *Capitalize Lines* sample plugin:

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE plugin SYSTEM "../plugin.dtd">
<plugin
  name="Capitalize Lines"
  description="Capitalize the first character on each line"
  version="1.0.0"
  vendor="SyncRO"
  class="ro.sync.sample.plugin.caplignes.CapLinesPlugin">
  <runtime>
    <library name="lib/caplignes.jar"/>
  </runtime>
  <extension type="selectionProcessor"
    class="ro.sync.sample.plugin.caplignes.CapLinesPluginExtension" keyboardShortcut="ctrl shift EQUALS"/>
</plugin>
```

If your plugin is of type *Selection*, *Document* or *General*, and thus contributes an action either to the contextual menu or to the main menu, then you can assign a keyboard shortcut for it. You can use the `keyboardShortcut` attribute for each `extension` element to specify the desired shortcut.

 **Tip:** To compose string representations of the desired shortcut keys you can go to the Oxygen XML Editor **Menu Shortcut Keys** preferences page, press **Edit** on any action, press the desired key sequence and use the representation which appears in the edit dialog.

## Types of plugins

---

### General Plugin

This plugin type allows the developer to invoke custom code and to interact with the workspace of Oxygen XML Editor.

This plugin is the most general plugin type. It provides a limited API:

- The interface `GeneralPluginExtension` - Intended for general-purpose plugins, kind of external tools but triggered from the **Plugins** menu. The implementing classes must provide the method `process(GeneralPluginContext)` which must provide the plugin processing. This method takes as a parameter a `GeneralPluginContext` object.
- The class `GeneralPluginContext` - Represents the context in which the general plugin extension does its processing. The `getPluginWorkspace()` method allows you access to the workspace of Oxygen XML Editor.

### Selection Plugin

A selection plugin can be applied to both an XML document and a non-XML document. It works as follows: the user makes a selection in the editor, displays the contextual menu, and selects from the **Plugins** submenu the item corresponding to the plugin.

This plugin type provides the following API:

- The interface `SelectionPluginExtension` - The context containing the selected text is passed to the extension and the processed result is going to replace the initial selection. The `process(GeneralPluginContext)` method must return a `SelectionPluginResult` object which contains the result of the processing. The `String` value returned by the `SelectionPluginResult` object can include editor variables like `#{caret}` and `#{selection}`.
- The `SelectionPluginContext` object represents the context. It provides four methods:
  - `getSelection()` - Returns a `String` that is the current selection of text.
  - `getFrame()` - Returns a `Frame` that is the editing frame.
  - `getPluginWorkspace()` - Returns access to the workspace of Oxygen XML Editor.
  - `getDocumentURL()` - Returns the URL of the current edited document.

## Document Plugin

This plugin type can be applied only to an XML document. It can modify the current document which is received as callback parameter.

The plugin is started by selecting the corresponding menu item from the contextual menu of the XML editor (Text mode), **Plugins** submenu. It provides the following API:

- The interface `DocumentPluginExtension` - Receives the context object containing the current document in order to be processed. The `process(GeneralPluginContext)` method can return a `DocumentPluginResult` object containing a new document.
- The `DocumentPluginContext` object represents the context. It provides three methods:
  - `getDocument()` - Returns a `javax.swing.text.Document` object that represents the current document.
  - `getFrame()` - Returns a `java.awt.Frame` object that represents the editing frame.
  - `getPluginWorkspace()` - Returns access to the workspace of Oxygen XML Editor.

## Custom Protocol Plugin

This type of plugins allows the developer to work with a custom designed protocol for retrieving and storing files.

It provides the following API:

- The interface `URLStreamHandlerPluginExtension` - There is one method that must be implemented:
  - `getURLStreamHandler(String protocol)` - It takes as an argument the name of the protocol and returns a `URLStreamHandler` object, or null if there is no URL handler for the specified protocol.
- With the help of the `URLChooserPluginExtension2` interface, it is possible to write your own dialog that works with the custom protocol. This interface provides two methods:
  - `chooseURLs(StandalonePluginWorkspace workspaceAccess)` - Returns a `URL[]` object that contains the URLs the user decided to open with the custom protocol. You can invoke your own URL chooser dialog here and then return the chosen URLs having your own custom protocol. You have access to the workspace of Oxygen XML Editor.
  - `getMenuName()` - Returns a `String` object that is the name of the entry added in the **File** menu.
- With the help of the `URLChooserToolBarExtension` interface, it is possible to provide a toolbar entry which is used for launching the custom URLs chooser from the `URLChooserPluginExtension` implementation. This interface provides two methods:
  - `getToolBarIcon()` - Returns the `javax.swing.Icon` image used on the toolbar.
  - `getToolBarTooltip()` - Returns a `String` that is the tooltip used on the toolbar button.

## Resource Locking Custom Protocol Plugin

This plugin type allows the developer to work with a custom designed protocol for retrieving and storing files. It can lock a resource on opening it in Oxygen XML Editor. This type of plugin extends the custom protocol plugin type with resource locking support.

Such a plugin provides the following API:

- The interface `URLStreamHandlerWithLockPluginExtension` - The plugin receives callbacks following the simple protocol for resource locking and unlocking imposed by Oxygen XML Editor.

There are two additional methods that must be implemented:

- `getLockHandler()` - Returns a `LockHandler` implementation class with the implementation of the lock specific methods from the plugin.
- `isSupported(String protocol)` - Returns a `boolean` that is `true` if the plugin accepts to manage locking for a certain URL protocol scheme like `ftp`, `http`, `https`, or `customName`.

## Components Validation Plugin

This plugin type allows the developer to make customization of the editor menus, toolbars, and some other components by allowing or filtering them from the user interface.

This plugin provides the following API:

- The interface `ComponentsValidatorPluginExtension` - There is one method that must be implemented:
  - `getComponentsValidator()` - Returns a `ro.sync.exml.ComponentsValidator` implementation class used for validating the menus, toolbars, and their actions.
- The `ComponentsValidator` interface provides methods to filter various features from being added to the GUI of Oxygen XML Editor:
  - `validateMenuOrTaggedAction(String[] menuOrActionPath)` - Checks if a menu or a tag action from a menu is allowed and returns a `boolean` value. A tag is used to uniquely identifying an action. The `String[]` argument is the tag of the menu / action and the tags of its parent menus if any.
  - `validateToolbarTaggedAction(String[] toolbarOrAction)` - Checks if an action from a toolbar is allowed and returns a `boolean` value. The `String[]` argument is the tag of the action from a toolbar and the tag of its parent toolbar if any.
  - `validateComponent(String key)` - Checks if the given component is allowed and returns a `boolean` value. The `String` argument is the tag identifying the component. You can remove toolbars entirely using this callback.
  - `validateAccelAction(String category, String tag)` - Checks if the given accelerator action is allowed to appear in the GUI and returns a `boolean` value. An accelerator action can be uniquely identified so it will be removed both from toolbars or menus. The first argument represents the action category, the second is the tag of the action.
  - `validateContentType(String contentType)` - Checks if the given content type is allowed and returns a `boolean` value. The `String` argument represents the content type. You can instruct Oxygen XML Editor to ignore content types like `text/xsl` or `text/xquery`.
  - `validateOptionPane(String optionPaneKey)` - Checks if the given options page can be added in the preferences option tree and returns a `boolean` value. The `String` argument is the option pane key.
  - `validateOption(String optionKey)` - Checks if the given option can be added in the option page and returns a `boolean` value. The `String` argument is the option key. This method is mostly used for internal use and it is not called for each option in a preferences page.
  - `validateLibrary(String library)` - Checks if the given library is allowed to appear listed in the **About** dialog and returns a `boolean` value. The `String` argument is the library. This method is mostly for internal use.
  - `validateNewEditorTemplate(EditorTemplate editorTemplate)` - Checks if the given template for a new editor is allowed and returns a `boolean` value. The `EditorTemplate` argument is the editor template. An `EditorTemplate` is used to create an editor for a given extension. You can thus filter what appears in the **New** dialog list.
  - `isDebuggerperspectiveAllowed()` - Check if the debugger perspective is allowed and returns a `boolean` value.
  - `validateSHMarker(String marker)` - Checks if the given marker is allowed and returns a `boolean` value. The `String` argument represents the syntax highlight marker to be checked. If you decide to filter certain content types, you can also filter the syntax highlight options so that the content type is no longer present in the Preferences options tree.

 **Tip:** The best way to decide what to filter is to observe the values that Oxygen XML Editor passes when these callbacks are called. You have to create an implementation for this interface which lists in the console all values received by each function. Then you can decide on the values to filter and act accordingly.

## Workspace Access Plugin

This plugin type allows the developer to contribute actions to the main menu and toolbars of Oxygen XML Editor, to create custom views and to interact with the application workspace

Many complex integrations, like integrations with Content Management Systems (CMS) usually requires access to some workspace resources like the toolbar, menus and to the opened XML editors. This type of plugin is also useful because it allows you to make modifications to an opened editor's XML content.

The plugin must implement the interface

[ro.sync.exml.plugin.workspace.WorkspaceAccessPluginExtension](#). The callback method

`applicationStarted` of this interface allows access to a parameter of type

[ro.sync.exml.workspace.api.standalone.StandalonePluginWorkspace](#) which in its turn allows for API access to the application workspace.

The interface `StandalonePluginWorkspace` has three methods which can be called in order to customize the toolbars, menus and views:

- `addToolbarComponentsCustomizer` - Contributes to or modifies existing toolbars. You can specify in the associated `plugin.xml` descriptor additional toolbar IDs using the following construct:

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE plugin SYSTEM "../plugin.dtd">
<plugin name="CustomWorkspaceAccess" .....>
  <runtime>
    .....
  </runtime>

  <extension type="WorkspaceAccess" ...../>
  .....
  <toolbar id="SampleWorkspaceAccessToolbarID" initialSide="NORTH" initialRow="1"/>
</plugin>
```

The toolbar element adds a toolbar in the Oxygen XML Editor interface and allows you to contribute your own plugin specific actions. The following attributes are available:

- `id` - unique identifier of the plugin toolbar;
- `initialSide` - specifies the place where the toolbar is initially displayed. The allowed values are NORTH and SOUTH.
- `initialRow` - specifies the initial row on the specified side where the toolbar is displayed. For example the main menu has an initial row of "0" and the "Edit" toolbar has an initial row of "1".

The [ro.sync.exml.workspace.api.standalone.ToolbarInfo](#) toolbar component information with the specified id will be provided to you by the customizer interface. You will thus be able to provide Swing components which will appear on the toolbar when the application starts.

- `addViewComponentCustomizer` - Contributes to or modifies existing views or contributes to the reserved custom view. You can specify in the associated `plugin.xml` descriptor additional view IDs using the following construct:

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE plugin SYSTEM "../plugin.dtd">
<plugin name="CustomWorkspaceAccess" .....>
  <runtime>
    .....
  </runtime>

  <extension type="WorkspaceAccess" ...../>
  .....
  <view id="SampleWorkspaceAccessID" initialSide="WEST" initialRow="0"/>
</plugin>
```

The view element adds a view in the Oxygen XML Editor interface and allows you to contribute your own plugin specific UI components. The following attributes are available:

- `id` - unique identifier of the view component.
- `initialSide` - specifies the place where the view is initially displayed. The allowed values are NORTH, SOUTH, EAST and WEST.
- `initialRow` - specifies the initial row on the specified side where the view is displayed. For example the **Project** view has an initial row of 0 and the Outline view has an initial row of 1. Both views are in the WEST part of the workbench.

The `ro.sync.exml.workspace.api.standalone.ViewInfo` view component information with the specified id will be provided to you by the customizer interface. You will thus be able to provide Swing components which will appear on the view when the application starts.

- `addMenuBarCustomizer` - Contributes to or modifies existing menu components.

Access to the opened editors can be done first by getting access to all URLs opened in the workspace using the API method `StandalonePluginWorkspace.getAllEditorLocations(int editingArea)`. There are two available editing areas: the DITA Maps Manager editing area where only DITA Maps are edited and the main editing area. Using the URL of an opened resource you can gain access to it using the `StandalonePluginWorkspace.getEditorAccess(URL location, int editingArea)` API method. A `ro.sync.exml.workspace.api.editor.WSEditor` allows then access to the current editing page. Special editing API is supported only for the **Text** (`ro.sync.exml.workspace.api.editor.page.text.WSTextEditorPage`) page and the **Author** (`ro.sync.exml.workspace.api.editor.page.author.WSAuthorEditorPage`) page.

In order to be notified when editors are opened, selected and closed you can use the API method `StandalonePluginWorkspace.addEditorChangeListener` to add a listener.

## Open Redirect Plugin

This type of plugin is useful for opening more than one file with only one open action.

For example when a zip archive or an ODF file or an OOXML file is open in the **Archive Browser** view a plugin of this type can decide to open a file also from the archive in an XML editor panel. This file can be the document.xml main file from an OOXML file archive or a specific XML file from a zip archive.

The plugin must implement the interface `OpenRedirectExtension`. It has only one callback: `redirect(URL)` that receives the URL of the file opened by the Oxygen XML Editor user. If the plugin decides to open also other files it must return an array of information objects (`OpenRedirectInformation[]`) that correspond to these files. Such an information object must contain the URL that is opened in a new editor panel and the content type, for example `text/xml`. The content type is used for determining the type of editor panel. A `null` content type allows auto-detection of the file type.

## Targeted URL Stream Handler Plugin

This type of plugin can be used when it is necessary to impose custom URL stream handlers for specific URLs.

This plugin extension can handle the following protocols: `http`, `https`, `ftp` or `sftp`, for which Oxygen XML Editor usually provides specific fixed URL stream handlers. If it is set to handle connections for a specific protocol, this extension will be asked to provide the URL stream handler for each opened connection of an URL having that protocol.

To use this type of plugin, you have to implement the `ro.sync.exml.plugin.urlstreamhandler.TargetedURLStreamHandlerPluginExtension` interface, that provides the following methods:

- `boolean canHandleProtocol(String protocol)`

This method checks if the plugin can handle a specific protocol. If this method returns `true` for a specific protocol, the `getURLStreamHandler(URL)` method will be called for each opened connection of an URL having this protocol.

- `URLStreamHandler getURLStreamHandler(URL url)`

This method provides the URL handler for the specified URL and it is called for each opened connection of an URL with a protocol for which the `canHandleProtocol(String)` method returns `true`.

If this method returns `null`, the Oxygen `URLStreamHandler` is used.

To use this type of extension in your plugin, create an extension of `TargetedURLHandler` type in your `plugin.xml` and specify the class that implements `TargetedURLStreamHandlerPluginExtension`:

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE plugin SYSTEM "../plugin.dtd">
<plugin name="CustomTargetedURLStreamHandlerPlugin" .....>
  <runtime>
    .....
  </runtime>

  <extension type="TargetedURLHandler" class="CustomTargetedURLStreamHandlerPluginExtension"/>
  .....
</plugin>
```

This extension can be useful in situations when connections opened from a specific host must be handled in a particular way. For example, the Oxygen HTTP `URLStreamHandler` may not be compatible for sending and receiving SOAP using the SUN Webservices implementation. In this case you can override the stream handler set by Oxygen for HTTP to use the default SUN `URLStreamHandler` which is more compatible with sending and receiving SOAP requests.

```
public class CustomTargetedURLStreamHandlerPluginExtension
    implements TargetedURLStreamHandlerPluginExtension {

    @Override
    public boolean canHandleProtocol(String protocol) {
        boolean handleProtocol = false;
        if ("http".equals(protocol) || "https".equals(protocol)) {
            // This extension handles both HTTP and HTTPS protocols
            handleProtocol = true;
        }
        return handleProtocol;
    }

    @Override
    public URLStreamHandler getURLStreamHandler(URL url) {
        // This method is called only for the URLs with a protocol
        // for which the canHandleProtocol(String) method returns true (HTTP and HTTPS)

        URLStreamHandler handler = null;

        String host = url.getHost();
        String protocol = url.getProtocol();
        if ("some_host".equals(host)) {
            // When there are connections opened from some_host, the SUN HTTP(S)
            // handlers are used
            if ("http".equals(protocol)) {
                handler = new sun.net.www.protocol.http.Handler();
            } else {
                handler = new sun.net.www.protocol.https.Handler();
            }
        }
        return handler;
    }
}
```

## Lock Handler Factory Plugin

This type of extension is used for locking resources from a specific protocol.

It provides the following API:

- The interface `LockHandlerFactoryPluginExtension`.

You need to implement the following two methods:

- `LockHandler getLockHandler()`  
Gets the lock handler for the current handled protocol. Might be null if not supported.
- `boolean isLockingSupported(String protocol)`  
Checks if a lock handler can be provided for a specific protocol.

To use this type of extension in your plugin, create an extension of `LockHandlerFactory` type in your `plugin.xml` and specify the class implementing `LockHandlerFactoryPluginExtension`:

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE plugin SYSTEM "../plugin.dtd">
<plugin name="CustomLockHandler" .....>
  <runtime>
    .....
  </runtime>

  <extension type="LockHandlerFactory" class="LockHandlerFactoryPluginExtensionImpl"/>
  .....
</plugin>
```

## StylesFilter Plugin

This plugin type allows the developer to dynamically modify the CSS styles used to render elements in the **Author** mode.

The plugin must extend the `ro.sync.exml.plugin.author.css.filter.GeneralStylesFilterExtension` class. This class has a callback on which you can alter the styles for an Author element.

This extension point is similar with the Styles Filter that you set at the *Document Type* level. The only difference is that the plugin filters styles from any opened XML document, regardless of the document type. The changes made by this plugin are prioritised over the changes made by the Document Type level filter.

## How to

---

Different tutorials about how to implement complex plugins.

## How to Write a CMS Integration Plugin

In order to have a complete integration between Oxygen XML Editor and any CMS you usually have to write a plugin which combines two available plugin extensions:

- [Workspace Access](#)
- [Custom protocol](#)

The usual set of requirements for an integration between Oxygen XML Editor and the CMS are the following:

- Contribute to the Oxygen XML Editor toolbars and main menu with your custom **Check Out** and **Check In** actions:
  - **Check Out** triggers your custom dialogs which allow you to browse the remote CMS and choose the resources you want to open;
  - **Check In** allows you to send back to the server the modified content.

You can use the **Workspace Access** plugin extension (and provided sample Java code) for all these operations.

- When **Check Out** is called, use the Oxygen XML Editor API to open your custom URLs (URLs created using your custom protocol). It is important to implement and use a **Custom Protocol** extension in order to be notified when the files are opened and saved and to be able to provide to Oxygen XML Editor the content for the relative references the files may contain. Your custom `java.net.URLStreamHandler` implementation checks out the resource content from the server, stores it locally and provides its content. Sample **Check Out** implementation:

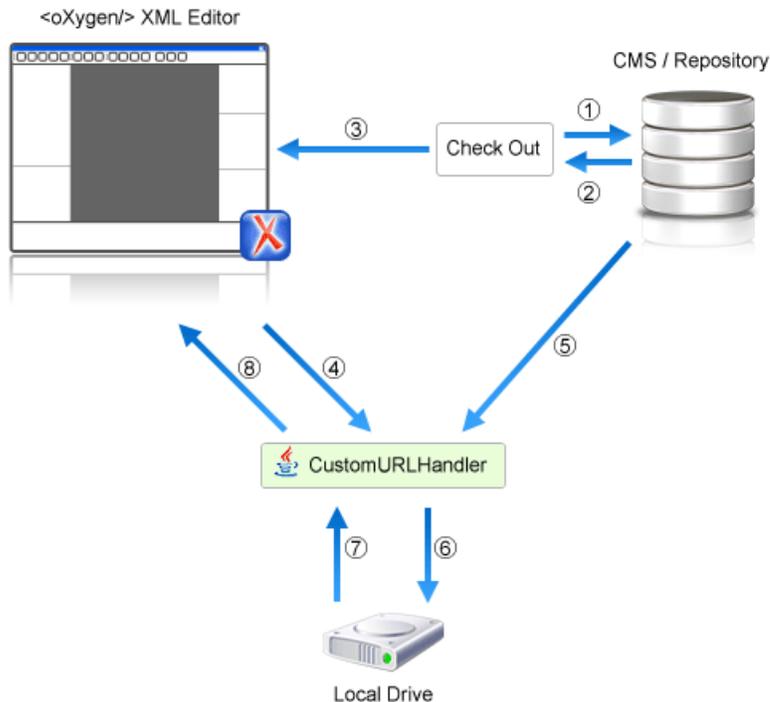
```
/**
 * Sample implementation for the "Check Out" method.
 *
 * @param pluginWorkspaceAccess The plugin workspace access (Workspace Access plugin).
 * @throws MalformedURLException
 */
private void checkOut(StandalonePluginWorkspace pluginWorkspaceAccess) throws MalformedURLException {
  //TODO Show the user a custom dialog for browsing the CMS
  //TODO after the user selected the resource create an URL with a custom protocol
  // which will uniquely map to the resource on the CMS using the URLHandler
}
```

```

//something like:
URL customURL = new URL("mycms://host/path/to/file.xml");
//Ask Oxygen to open the URL
pluginWorkspaceAccess.open(customURL);
//Oxygen will then your custom protocol handler to provide the contents for the resource
"mycms://host/path/to/file.xml"
//Your custom protocol handler will check out the file in a temporary directory for example and provide
the content from it.
//Oxygen will also pass through your URLHandler if you have any relative references which need to be
opened/obtained.
}

```

Here is a diagram of the **Check Out** process:



Each phase is described below:

1. Browse CMS repository
2. User chooses a resource
3. Use API to open custom URL: mycms://path/to/file.xml
4. Get content of URL: mycms://path/to/file.xml
5. Get content of resource
6. Store on disk for faster access
7. Retrieve content from disk if already checked out
8. Retrieved content

- Contribute a special **Browse CMS** action to every dialog in Oxygen XML Editor where an URL can be chosen to perform a special action (like the **Insert a DITA Content Reference** action or the **Insert Image Reference** action). Sample code:

```

//Add an additional browse action to all dialogs/places where Oxygen allows selecting an URL.
pluginWorkspaceAccess.addInputURLChooserCustomizer(new InputURLChooserCustomizer() {
    public void customizeBrowseActions(List<Action> existingBrowseActions, final InputURLChooser chooser)
    {
        //IMPORTANT, you also need to set a custom icon on the action for situations when its text is not
        used for display.
        Action browseCMS = new AbstractAction("CMS") {
            public void actionPerformed(ActionEvent e) {
                URL chosenResource = browseCMSAndChooseResource();
                if (chosenResource != null) {
                    try {
                        //Set the chosen resource in the dialog's combo box chooser.
                    }
                }
            }
        };
        existingBrowseActions.add(browseCMS);
    }
});

```

```

        chooser.urlChosen(chosenResource);
    } catch (MalformedURLException e1) {
        //
    }
}
};
existingBrowseActions.add(browseCMS);
}
});

```

When inserting references to other resources using the actions already implemented in Oxygen XML Editor, the reference to the resource is made by default relative to the absolute location of the edited XML file. You can gain control over the way in which the reference is made relative for a specific protocol like:

```

//Add a custom relative reference resolver for your custom protocol.
//Usually when inserting references from one URL to another Oxygen makes the inserted path relative.
//If your custom protocol needs special relativization techniques then it should set up a custom relative

//references resolver to be notified when resolving needs to be done.
pluginWorkspaceAccess.addRelativeReferencesResolver(
    //Your custom URL protocol for which you already have a custom URLStreamHandlerPluginExtension set
    up.
        "mycms",
        //The relative references resolver
        new RelativeReferenceResolver() {
            public String makeRelative(URL baseURL, URL childURL) {
                //Return the referenced path as absolute for example.
                //return childURL.toString();
                //Or return null for the default behavior.
                return null;
            }
        }
    );

```

- Write the `plugin.xml` descriptor. Your plugin combines the two extensions using a single set of libraries. The descriptor would look like:

```

<!DOCTYPE plugin SYSTEM "../plugin.dtd">
<plugin
  name="CustomCMSAccess"
  description="Test"
  version="1.0.0"
  vendor="ACME"
  class="custom.cms.CMSAccessPlugin">
  <runtime>
    <library name="lib/cmsaccess.jar"/>
  </runtime>
  <!--Access to add actions to the main menu and toolbars or to add custom views.-->
  <!--See the "ro.sync.sample.plugin.workspace.CustomWorkspaceAccessPluginExtension" Java sample for more
  details-->
  <extension type="WorkspaceAccess"
    class="custom.cms.CustomWorkspaceAccessPluginExtension"/>
  <!--The custom URL handler which will communicate with the CMS implementation-->
  <!--See the "ro.sync.sample.plugin.workspace.customprotocol.CustomProtocolURLHandlerExtension" Java sample
  for more details-->
  <extension type="URLHandler"
    class="custom.cms.CustomProtocolURLHandlerExtension"/>
</plugin>

```

- Create a `cmsaccess.jar` JAR archive containing your implementation classes.
- Copy your new plugin directory in the `plugins` subfolder of the Oxygen XML Editor install folder and start Oxygen XML Editor.

## Class Loading Issues

It is possible that the Java libraries you have specified in the plugin libraries list conflict with the ones already loaded by Oxygen XML Editor. In order to instruct the plugin to prefer its libraries over the ones used by Oxygen XML Editor, you can add the following attribute on the `<plugin>` root element: `classLoaderType="preferReferencedResources"` from the `plugin.xml` descriptor.

A **Late Delegation Class Loader** (the main class loader in Oxygen XML Editor) is a `java.net.URLClassLoader` extension which prefers to search classes in its own libraries list and only if a class is not found there to delegate to the parent class loader.

The main Oxygen XML Editor Class Loader uses as libraries all jars specified in the `OXYGEN_INSTALL_DIR\lib` directory. Its parent class loader is the default JVM Class loader. For each instantiated plugin a separate class loader is created having as parent the Oxygen XML Editor Class Loader.

The plugin class loader can be either a standard `java.net.URLClassLoader` or a `LateDelegationClassLoader` (depending on the attribute `classLoaderType` in the `plugin.xml`). Its parent class loader is always the Oxygen XML Editor `LateDelegationClassLoader`.

If you experience additional problems like the following:

```
java.lang.LinkageError: ClassCastException: attempting to cast
jar:file:/C:/jdk1.6.0_06/jre/lib/rt.jar!/javax/xml/ws/spi/Provider.class to jar:file:/D:/Program
Files/Oxygen XML Editor
12/plugins/wspcaccess/../../xdocs/lib/jaxws/jaxws-api.jar!/javax/xml/ws/spi/Provider.class
at javax.xml.ws.spi.Provider.provider(Provider.java:94) at
javax.xml.ws.Service.<init>(Service.java:56)
.....
```

The cause could be the fact that some classes are instantiated using the context class loader of the current thread. The most straightforward fix is to write your code in a *try/finally* statement:

```
ClassLoader oldClassLoader = Thread.currentThread().getContextClassLoader();
try {
    //This is the implementation of the WorkspaceAccessPluginExtension plugin interface.
    Thread.currentThread().setContextClassLoader(
        CustomWorkspaceAccessPluginExtension.this.getClass().getClassLoader());
    //WRITE YOUR CODE HERE
} finally {
    Thread.currentThread().setContextClassLoader(oldClassLoader);
}
```

## How to Write A Custom Protocol Plugin

For creating a custom protocol plugin, apply the following steps:

1. Write the handler class for your protocol that implements the `java.net.URLStreamHandler` interface. Be careful to provide ways to correct and uncorrect the URLs of your files.
2. Write the plugin class by extending `ro.sync.exml.plugin.Plugin`.
3. Write the plugin extension class that implements the `ro.sync.exml.plugin.urlstreamhandler.URLStreamHandlerPluginExtension` interface.

It is necessary that the plugin extension for the custom protocol implements the `URLStreamHandlerPluginExtension` interface. Without it, you cannot use your plugin, because Oxygen XML Editor is not able to find the protocol handler.

You can choose also to implement the `URLChooserPluginExtension` interface. It allows you to write and display your own customized dialog for selecting resources that are loaded with the custom protocol.

An implementation of the extension `URLHandlerReadOnlyCheckerExtension` allows you to:

- mark a resource as read-only when it is opened
- switch between marking the resource as read-only and read-write while it is edited

It is useful when opening and editing CMS resources.

4. Write the `plugin.xml` descriptor. Remember to set the name of the plugin class to the one from the second step and the plugin extension class name with the one you have chosen at step 3.
5. Create a .jar archive with all these files.
6. Install your new plugin in the `plugins` subfolder of the Oxygen XML Editor install folder.

## How to deploy a plugin as an Oxygen XML Editor add-on

To deploy a plugin as an Oxygen XML Editor add-on, follow the next steps:

1. Pack the plugin as a ZIP file;
2. Create a descriptor file. You can use a template that Oxygen XML Editor provides. To use this template, go to **File > New** and create an Oxygen XML Editor descriptor file;
3. Copy the ZIP file and the descriptor file to an HTTP server. The URL to this location serves as the **Update Site** URL.

## Installation

---

In the directory where Oxygen XML Editor is installed there exists a directory called `plugins` that contains all the available plugins. In order for Oxygen XML Editor to use the new functionality you provided, follow the next steps:

1. In the `plugins` folder create a subfolder to store the plugin files.
2. Put in this new folder the plugin descriptor file `plugin.xml`, the Java classes of the plugin and the other files that are referenced in the descriptor file.
3. Restart Oxygen XML Editor.

## Example - A Selection Plugin

---

The following plugin is called `UppercasePlugin` and is an example of *selection plugin*. It is used in Oxygen XML Editor for capitalizing the characters in the current selection. This example consists of two Java classes and the plugin descriptor:

- `UppercasePlugin.java`:

```
package ro.sync.sample.plugin.uppercase;

import ro.sync.exml.plugin.Plugin;
import ro.sync.exml.plugin.PluginDescriptor;

public class UppercasePlugin extends Plugin {
    /**
     * Plugin instance.
     */
    private static UppercasePlugin instance = null;

    /**
     * UppercasePlugin constructor.
     *
     * @param descriptor Plugin descriptor object.
     */
    public UppercasePlugin(PluginDescriptor descriptor) {
        super(descriptor);

        if (instance != null) {
            throw new IllegalStateException("Already instantiated !");
        }
        instance = this;
    }

    /**
     * Get the plugin instance.
     *
     * @return the shared plugin instance.
     */
    public static UppercasePlugin getInstance() {
        return instance;
    }
}
```

- `UppercasePluginExtension.java`:

```
package ro.sync.sample.plugin.uppercase;

import ro.sync.exml.plugin.selection.SelectionPluginContext;
import ro.sync.exml.plugin.selection.SelectionPluginExtension;
import ro.sync.exml.plugin.selection.SelectionPluginResult;
import ro.sync.exml.plugin.selection.SelectionPluginResultImpl;

public class UppercasePluginExtension implements SelectionPluginExtension {
```

```

/**
 * Convert the text to uppercase.
 *
 * @param context Selection context.
 * @return Uppercase plugin result.
 */
public SelectionPluginResult process(SelectionPluginContext context) {
    return new SelectionPluginResultImpl(
        context.getSelection().toUpperCase());
}

```

- `plugin.xml`:

```

<!DOCTYPE plugin SYSTEM "../plugin.dtd">
<plugin
  name="UpperCase"
  description="Convert the selection to uppercase"
  version="1.0.0"
  vendor="SyncRO"
  class="ro.sync.sample.plugin.uppercase.UppercasePlugin">
  <runtime>
    <library name="lib/uppercase.jar"/>
  </runtime>
  <extension type="selectionProcessor"
    class="ro.sync.sample.plugin.uppercase.UppercasePluginExtension"/>
</plugin>

```

## Creating and Running Automated Tests

If you have developed complex custom plugins and/or document types the best way to test your implementation and insure that further changes will not interfere with the current behavior is to make automated tests for your customization.

An Oxygen XML Editor installation standalone (Author or Editor) comes with a main `oxygen.jar` library located in the `OXYGEN_INSTALLATION_DIRECTORY`. That JAR library contains a base class for testing developer customizations named `ro.sync.exml.workspace.api.PluginWorkspaceTCBase`.

Please see below some steps in order to develop JUnit tests for your customizations using the **Eclipse** workbench:

1. Create a new Eclipse Java project and copy to it the entire contents of the `OXYGEN_INSTALLATION_DIRECTORY`.
2. Add to the **Java Build Path**->**Libraries** tab all JAR libraries present in the `OXYGEN_INSTALLATION_DIRECTORY/lib` directory. Make sure that the main JAR library `oxygen.jar` or `oxygenAuthor.jar` is the first one in the Java classpath by moving it up in the **Order and Export** tab.
3. Download and add to the Java build path the additional JUnit libraries `jfcunit.jar` and `junit.jar`.
4. Create a new Java class which extends `ro.sync.exml.workspace.api.PluginWorkspaceTCBase`.
5. Pass on to the constructor of the super class the following parameters:
  - File `frameworksFolder` The file path to the frameworks directory. It can point to a custom frameworks directory where the custom framework resides.
  - File `pluginsFolder` The file path to the plugins directory. It can point to a custom plugins directory where the custom plugins resides.
  - String `licenseKey` The license key used to license the test class.
6. Create test methods which use the API in the base class to open XML files and perform different actions on them. Your test class could look something like:

```

public class MyTestClass extends PluginWorkspaceTCBase {
    /**
     * Constructor.
     */
    public MyTestClass() throws Exception {
        super(new File("frameworks"), new File("plugins"),
            "-----START-LICENSE-KEY-----\n" +
            "\n" +
            "Registration_Name=Developer\n" +
            "\n" +
            "Company=\n" +
            "\n" +

```

```

"Category=Enterprise\n" +
"\n" +
"Component=XML-Editor, XSLT-Debugger, Saxon-SA\n" +
"\n" +
"Version=14\n" +
"\n" +
"Number_of_Licenses=1\n" +
"\n" +
"Date=09-04-2012\n" +
"\n" +
"Trial=31\n" +
"\n" +
"SGN=MCwCFGNoEGJSeic3XCYIyalvjzHhGhhqAhrNRDpEu8RIWb8icCJO7HqfVP4++A\\=\n" +
"\n" +
"-----END-LICENSE-KEY-----");
}

/**
 * <p><b>Description:</b> TC for opening a file and using the bold operation</p>
 * <p><b>Bug ID:</b> EXM-20417</p>
 *
 * @author radu_coravu
 *
 * @throws Exception
 */
public void testOpenFileAndBoldEXM_20417() throws Exception {
    WSEditor ed = open(new File("D:/projects/eXml/test/authorExtensions/dita/sampleSmall.xml").toURL());
    //Move caret
    moveCaretRelativeTo("Context", 1, false);

    //Insert <b>
    invokeAuthorExtensionActionForID("bold");
    assertEquals("<?xml version=\"1.0\" encoding=\"utf-8\"?>\n" +
        "<!DOCTYPE task PUBLIC \"-//OASIS//DTD DITA Task//EN\"
        \"http://docs.oasis-open.org/dita/v1.1/OS/dtd/task.dtd\">\n" +
        "<task id=\"taskId\">\n" +
        "  <title>Task <b>title</b></title>\n" +
        "  <prolog/>\n" +
        "  <taskbody>\n" +
        "    <context>\n" +
        "      <p>Context for the current task</p>\n" +
        "    </context>\n" +
        "    <steps>\n" +
        "      <step>\n" +
        "        <cmd>Task step.</cmd>\n" +
        "      </step>\n" +
        "    </steps>\n" +
        "  </taskbody>\n" +
        "</task>\n" +
        "", getCurrentEditorXMLContent());
}
}

```

## Disabling a Plugin

If you create an empty file called `plugin.disable` next to the plugin configuration file `plugin.xml`, the plugin will be disabled and will no longer be loaded by the application on startup. This is useful for developers if they want to temporarily stop work on a plugin and use the application without it.



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# Chapter 24

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## Text Editor Specific Actions

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### Topics:

- [\*Undoing and Redoing User Actions\*](#)
- [\*Copying and Pasting Text\*](#)
- [\*Finding and Replacing Text in the Current File\*](#)
- [\*Finding and Replacing Text in Multiple Files\*](#)
- [\*Spell Checking\*](#)
- [\*Changing the Font Size\*](#)
- [\*Word/Line Editor Actions\*](#)
- [\*Dragging and Dropping the Selected Text\*](#)
- [\*Inserting a File at Caret Position\*](#)
- [\*Opening the File at Caret in System Application\*](#)
- [\*Opening the File at Caret Position\*](#)
- [\*Switching Between Opened Tabs\*](#)
- [\*Printing a File\*](#)
- [\*Exiting the Application\*](#)

The **Text** mode of the editor panel provides the usual actions specific for a plain text editor: undo / redo, copy / paste, find / replace, etc. These actions are executed from the menu bar or toolbar and also by invoking their usual keyboard shortcuts.

## Undoing and Redoing User Actions

---

- **Undo** - menu **Edit > Undo (Ctrl+Z)** or the toolbar button  **Undo** - Reverses a maximum of 200 editing actions (configurable in the [Editor options page](#)) to return to the preceding state. Complex operations like **Replace All** or **Indent selection** count as a single undo event.
- **Redo** - menu **Edit > Redo (Ctrl+Y for Windows, Ctrl+Shift+Z for Mac OSX and Linux)** or the toolbar button  **Redo** - Recreates a maximum of 100 editing actions that were undone by the **Undo** function.

## Copying and Pasting Text

---

- **Edit > Cut (Ctrl+X)** or the toolbar button  **Cut** - Removes the current selected node from the document and places it in the clipboard as RTF. All text attributes such as color, font or syntax highlight are preserved when pasting into another application.
- **Edit > Copy (Ctrl+C)** or the toolbar button  **Copy** - Places a copy of the current selection in the clipboard as RTF. All text attributes such as color, font or syntax highlight are preserved when pasting into another application.
- **Edit > Paste (Ctrl+V)** or the toolbar button  **Paste** - Places the current clipboard content into the document at the cursor position.
- **Edit > Select All (Ctrl+A)** - Selects the entire body of the current document, including whitespace preceding the first and following the last character.

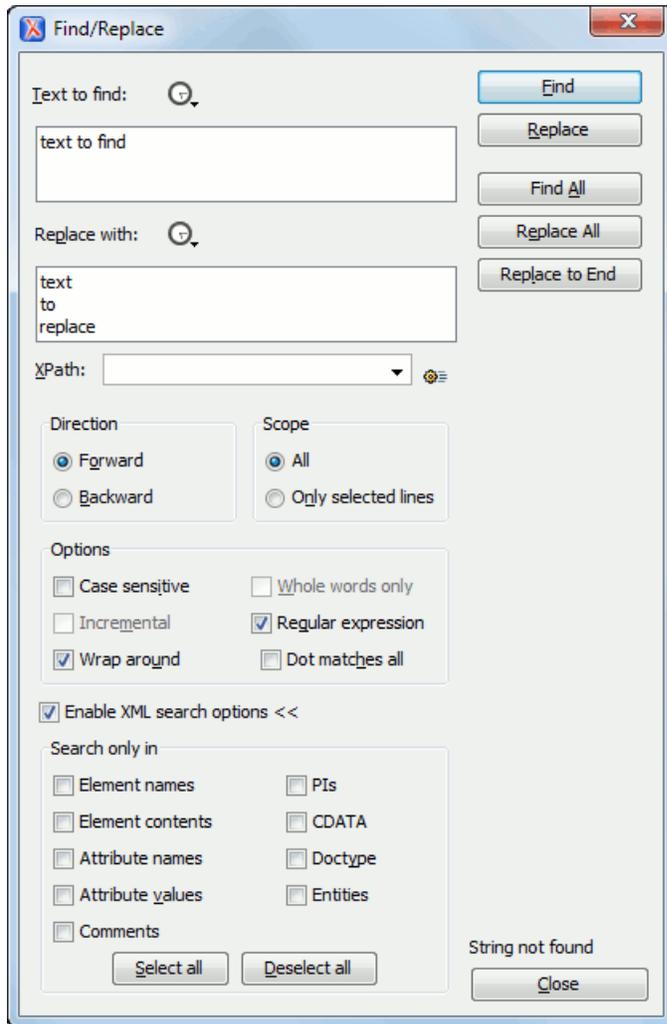
## Finding and Replacing Text in the Current File

---

This section explains how to use the find and replace features of the application.

### The Find / Replace Dialog

To open the **Find / Replace** dialog, either go to **Find > Find / Replace...** or click the  **Find / Replace** toolbar button. You can also press **Ctrl+F (Meta+F)** keys on your keyboard to display the **Find/Replace** dialog.



**Figure 383: Find / Replace Dialog**

You can use the **Find/Replace** dialog to perform the following operations:

- Replace occurrences of target defined in the **Text to find** area with a new fragment of text defined in **Replace with** area.
- Find all the occurrences of a word or string of characters (that can span over multiple lines) in the document you are editing. This operation also takes into account all the white spaces contained in the fragment you are searching for.

The *find* operation works on multiple lines, meaning that a find match can cover characters on more than one line of text. To input multiple-line text in the **Text to find** and **Replace with** areas, do one of the following:

- press **Ctrl+Enter** keys on your keyboard;
- use the **Insert newline** contextual menu action.

You can use *Perl 5* regular expressions to define patterns. A content completion assistant window is available in the **Text to find** and **Replace with** areas to help you edit regular expressions. It is activated every time you type \ (backslash key) or on demand if you press **Ctrl+Space** keys on your keyboard.

The *replace* operation can bind *Perl 5* regular expression group variables (\$1, \$2, and so on.) from the find match.

To replace an XML tag called tag-name with the tag tag-name1, use `<tag-name(\s+)(.*)>` in the **Text to find** area and `<tag-name1$1$2>` in the **Replace with** area.

The dialog contains the following options:

- **Text to find** - The target character string to search for. You can search for Unicode characters specified in the `\uNNNN` format. Also, hexadecimal notation (`\xNNNN`) and octal notation (`\0NNNN`) can be used. In this case you have to select the **Regular expression** option. For example, to search for a space character you can use the `\u0020` code.
- **Replace with** - The character string with which to replace the target. The string for replace can be on a line or on multiple lines. It can contain Perl 5 regular expression group markers, only if the search expression is a regular expression and the **Regular expression** option is selected.

 **Note:** Some regular expressions can block indefinitely the application. If the execution of the regular expression does not end in about 5 seconds, the application displays a dialog that allows you to interrupt the operation.

 **Note:** Special characters like *newline* and *tab* can be inserted in the **Text to find** and **Replace with** text boxes using dedicated actions in the contextual menu (**Insert newline** and **Insert tab**).

Unicode characters can also be used in the **Replace with** area.

- The history buttons  - Contain lists of the last find and replace expressions.
- **XPath** - The XPath 2.0 expression you input in this combo is used for restricting the search scope.  
The content completion assistant helps you input XPath expressions, valid in the current context.
- **Direction** - Specifies if the search direction is from current position to end of file (**Forward**) or to start of file (**Backward**).
- **Scope** - Specifies whether the **Find/Replace** operation is executed over the entire content of the edited document (**All** option), or over the selected lines of text (**Only selected lines** option). In case the selection spans across multiple lines, when you open the **Find/Replace** dialog box, the scope is set to **Only selected lines**.
- **Find** - Executes a find operation for the next occurrence of the target. It stops after highlighting the find match in the editor panel.
- **Replace** - Executes a replace operation for the target followed by a find operation for the next occurrence.
- **Find All** - Executes a find operation and displays all results in the **Results view**. The results are *displayed in the Results view*.
- **Replace All** - Executes a replace operation in the entire scope of the document.
- **Replace to End** - Executes a replace operation starting from current target until the end of the document, in the direction specified by the current selection of the **Direction** switch (**Forward** or **Backward**).
- **Case sensitive** - When checked, the search operation follows the exact letter case of the **Text to find**.
- **Whole words only** - Only entire occurrences of a word are included in the search operation.
- **Incremental** - The search operation is started every time you type or delete a letter in the **Text to find** text box.
- **Regular expression** - When this option is enabled, you can use regular expressions in Perl 5 syntax to look for specific pieces of text. A match can span over multiple lines of text.
- **Dot matches all** - A dot used in a regular expression matches also end of line characters.
- **Wrap around** - When the end of the document is reached, the search operation is continued from the start of the document, until its entire content is covered.
- **Enable XML search options** - Provides access to a set of options that allow you to search specific XML component types when editing in **Text** mode:
  - **Element names** - Only the element names are included in the search operation which ignores XML-tag notations (`<`, `'`, `>`), attributes or white-spaces.
  - **Element contents** - Search in the text content of XML elements.
  - **Attribute names** - Only the attribute names are included in the search operation, without the leading or trailing white-spaces.
  - **Attribute values** - Only the attribute values are included in the search operation, without single quotes(`'`) or double quotes(`"`).
  - **Comments** - Only the content of comments are included in the search operation, excluding the XML comment delimiters (`<!--`, `-->`).
  - **Processing Instructions (PIs)** - Only the content are searched, skipping `<?`, `?>`. e. g.: `<?processing instruction?>`

- **CDATA** - Searches inside content of CDATA sections.
- **DOCTYPE** - Searches inside content of DOCTYPE sections.
- **Entities** - Only the entity names are searched.

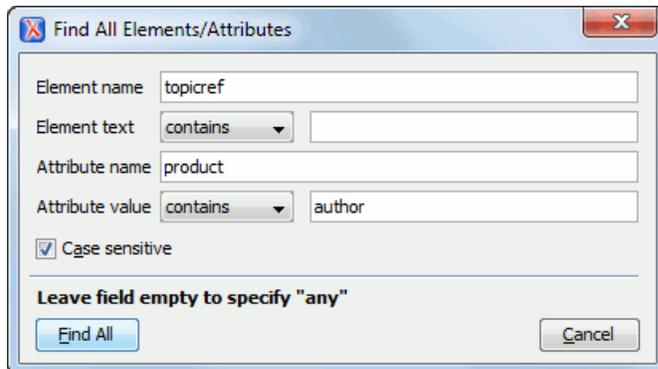
The two buttons **Select All** and **Deselect All** allow a simple activation and deactivation of all types of XML components.

 **Note:** Please note that since searching in some XML component types is performed only on their content skipping some of their headers / footers (see the list above), even if all the XML component types are checked, some filtering is still performed. To disable it completely, uncheck **Enable XML search options**.

- **Find All Elements / Attributes ...** - While editing in **Author** mode, press the **Find All Elements / Attributes ...** to extend the search scope to XML-specific markup (names and values of both attributes and elements).

## The Find All Elements / Attributes Dialog

This dialog is opened from menu **Find > Find All Elements...** (**Ctrl+Shift+E**) or from the shortcut **Find All Elements / Attributes** that is available in *the Find / Replace dialog* . It assists you in defining XML elements / attributes search operations on the current document.



**Figure 384: Find All Elements / Attributes dialog**

The dialog can perform the following actions:

- Find all the elements with a specified name.
- Find all the elements which contain or not a specified string in their text content.
- Find all the elements which have a specified attribute.
- Find all the elements which have an attribute with or without a specified value.

All these search criteria can be combined to fine filter your results.

The results of all the operations in the **Find All Elements / Attributes** dialog will be presented as a list in the message panel.

The dialog fields are described as follows:

- **Element name** - The target element name to search for. Only the elements with this exact name are returned. For any element name just leave the field empty.
- **Element text** - The target element text to search for. The combo box beside this field allows you to specify that you are looking for an exact or partial match of the element text. For any element text, select **contains** in the combo box and leave the field empty.

If you leave the field empty but select **equals** in the combo box, only elements with no text will be found. Select **not contains** to find all elements which do not have the specified text inside.

- **Attribute name** - The name of the attribute which needs to be present in the elements. Only the elements which have an attribute with this name will be returned. For any / no attribute name just leave the field empty.

- **Attribute value** - The combo box beside this field allows you to specify that you are looking for an exact or partial match of the attribute value. For any / no attribute value select **contains** in the combo box and leave the field empty.  
If you leave the field empty but select **equals** in the combo box, only elements that have at least an attribute with an empty value will be found.  
Select **not contains** to find all elements which have attributes without a specified value.
- **Case sensitive** - When this option is checked, operations are case sensitive.

## The Quick Find Toolbar

A reduced version of *the Find / Replace dialog* is available as a toolbar that is activated by the shortcut specified in the **Find** menu: **(Alt+Shift+F)** on Windows and Linux, **(Alt+Shift+F)** on Mac OS X. The toolbar is displayed by default at the bottom of the Oxygen XML Editor window, above the status bar.

The **Next**, **Previous**, **All**, **Incremental** and **Case sensitive** controls work *in the same way as in the Find / Replace dialog*. The search process works as if the **Search also in tags** option of *the Find / Replace dialog* is true, the **Whole words only** one is false, the **Regular expression** one is false and the **Wrap around** one is true. You can also use the last two toolbar actions to quickly open the *Find / Replace* and the *Find / Replace in Files* dialogs. The toolbar becomes invisible again when the **(ESC)** key is pressed.

The enabling shortcut can be changed in **Options > Preferences > Menu Shortcut Keys > Quick Find**. *As with any dockable toolbar*, the screen location of the Quick Find toolbar can be changed at any time by dragging (and docking) it to the desired location. However the buttons of this toolbar can be used only if it has a horizontal layout so docking it to the West side or the East side of the window is not allowed.

## Keyboard Shortcuts for Finding the Next and Previous Match

Navigation from a find match to the next one or the previous one is very easy with two keyboard shortcuts: F3 and Shift F3. They are useful to quickly repeat the last find action performed with *the Find / Replace dialog*, taking into account the same find options set there through check boxes.

- **Find > Find Next (F3)** - Performs another search in forward direction using the last search configuration.
- **Find > Find Previous (Shift+F3)** - Performs another search in backward direction using the last search configuration.

## Finding and Replacing Text in Multiple Files

---

You can open the **Find / Replace in Files** dialog from:

- **Find > Find / Replace in Files...** menu;
- the  **Find / Replace in Files** toolbar button;
- the contextual menu of the **DITA Maps Manager** view;
- the contextual menu of the **Project** view;
- the contextual menu of the **Data Source Explorer** view for Documentum xDb (X-Hive/DB), eXist and WebDAV connections. This action is available for Documentum (CMS), but lacks the *replace* feature.

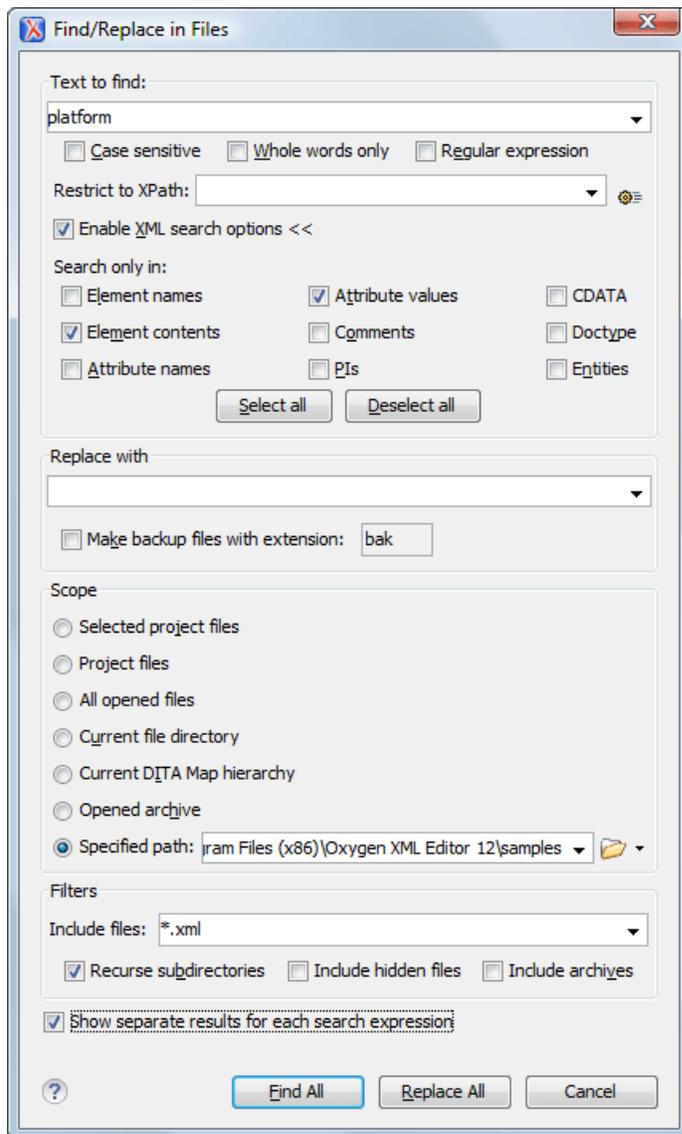
The operation works on both local and remote files from an (S)FTP, WebDAV or **CMS** server.

It enables you to define "search for" or "search for and replace" operations across a number of files. The find works at line level, which means a find match cannot cover characters on more than one line. The replace operation can bind Perl 5 regular expression group variables (\$1, \$2, etc.) from the find match. For example to replace the tag with attributes called `tag-name` with the tag `tag-name1` use as **Text to find** the expression `<tag-name(\s+)(.*)>` and as the **Replace with** expression `<tag-name1$1$2>`.

The encoding used to read and write the files is detected from the XML header or from the BOM. If a file does not have an XML header or BOM Oxygen XML Editor uses by default the UTF-8 encoding for files of type XML, that is for files with one of the extensions: `.xml`, `.xsl`, `.fo`, `.xsd`, `.rng`, `.nvd1`, `.sch`, `.wsdl` or *an extension associated with the XML editor type*. For the other files it uses *the encoding configured for non-XML files*.

You can cancel a long operation at any time by pressing the **Cancel** button of the progress dialog displayed when the operation is executed.

Because the content of read-only files cannot be modified, the **Replace** operation is not processing those files. For every such file, a warning message is displayed in the message panel.



**Figure 385: Find / Replace in Files**

The dialog contains the following options:

- **Text to find** - The target character string to search for. You can search for Unicode characters specified in the `\uNNNN` format. Also, hexadecimal notation (`\xNNNN`) and octal notation (`\0NNNN`) can be used. In this case you have to select the **Regular expression** option. For example, to search for a space character you can use the `\u0020` code.
- **Case sensitive** - When checked, the search operation follows the exact letter case of the **Text to find**.
- **Whole words only** - Only entire occurrences of a word are included in the search operation.
- **Regular expression** - When this option is enabled, you can use regular expressions in Perl 5 syntax to look for specific pieces of text. A match can span over multiple lines of text.
- **XPath** - The XPath 2.0 expression you input in this combo is used for restricting the search scope.

The content completion assistant helps you input XPath expressions, valid in the current context.

- **Enable XML search options** - Provides access to a set of options that allow you to search specific XML component types when editing in **Text** mode:
  - **Element names** - Only the element names are included in the search operation which ignores XML-tag notations ('<', '/', '>'), attributes or white-spaces.
  - **Element contents** - Search in the text content of XML elements.
  - **Attribute names** - Only the attribute names are included in the search operation, without the leading or trailing white-spaces.
  - **Attribute values** - Only the attribute values are included in the search operation, without single quotes(') or double quotes(").
  - **Comments** - Only the content of comments are included in the search operation, excluding the XML comment delimiters ('<!--', '-->').
  - **Processing Instructions (PIs)** - Only the content are searched, skipping '<?', '?>'. e. g.: <?processing instruction?>
  - **CDATA** - Searches inside content of CDATA sections.
  - **DOCTYPE** - Searches inside content of DOCTYPE sections.
  - **Entities** - Only the entity names are searched.

The two buttons **Select All** and **Deselect All** allow a simple activation and deactivation of all types of XML components.

 **Note:** Please note that since searching in some XML component types is performed only on their content skipping some of their headers / footers (see the list above), even if all the XML component types are checked, some filtering is still performed. To disable it completely, uncheck **Enable XML search options**.

- **Replace with** - The character string with which to replace the target. It may contain regular expression group markers if the search expression is a regular expression and the **Regular expression** checkbox is checked.
- **Make backup files with extension** - In the replace process Oxygen XML Editor makes backup files of the modified files. The default extension is .bak but you can change the extension as you prefer.
- **Selected project files** - Searches only in the selected files of the current opened project. Not displayed when dialog is started from contextual menu of *DITA Maps view* and *Archive Browser* view.
- **Project files** - Searches in all files from the current project. Not displayed when dialog is started from contextual menu of *DITA Maps view* and *Archive Browser* view.
- **All opened files** - Searches in all files opened in Oxygen XML Editor (regular files or DITA Maps). You are prompted to save all modified files before any operation is performed. Not displayed when dialog is started from contextual menu of *DITA Maps view* and *Archive Browser* view.
- **Current file directory** - The search is done in the directory of the file opened in the current editor panel. If there is no opened file, this option is disabled in the dialog. Not displayed when dialog is started from contextual menu of *DITA Maps view* and *Archive Browser* view.
- **Current DITA Map hierarchy** - The search is done in all maps and topics referenced by the current edited DITA Map. If **Recurse referenced maps** option is checked, the references from the maps referenced in the main DITA map are also searched in. If there is no opened DITA Map, this option is disabled in the dialog. You are prompted to save all modified files before any operation is performed. Displayed only when dialog is opened from *DITA Maps view*.
- **Opened archive** - The search is done in archive opened in *Archive Browser* view. Displayed only when dialog is opened from *Archive Browser* view.
- **Specified path** - Chooses the search path.
- **Include files** - Narrows the scope of the operation only to the files that match the given filters.
- **Recurse subdirectories** - When checked, the search is performed recursively in the sub directories found in the specified directory path.
- **Include hidden files** - When checked, the search is performed also in the hidden files.
- **Include archives** - When checked, the search is also done in all individual file entries from all supported ZIP-type archives.
- **Show separate results for each search expression** - When checked, the application opens a new tab to display the result of each new search expression. When the option is unchecked, the search results are displayed in the *Find in Files* tab, replacing any previous search results.

- **Find All** - Executes a find operation and returns the result list to the message panel. The results are *displayed in a view* that allows grouping the results as a tree with two levels.
- **Replace All** - Replaces all occurrences of the target contained in the specified files.

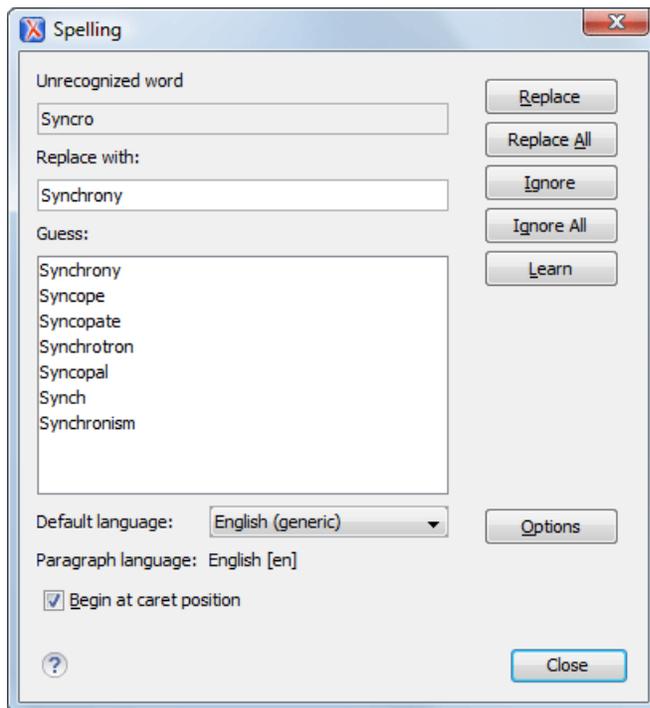
When you replace a fragment of text, Oxygen XML Editor provides a preview of the changes you make. The **Preview** dialog is divided in two sections. The first section presents a list of all the documents containing the fragment of text you want to modify. The second section offers a view of the original file and a view of the final result. It also allows you to highlight all changes using the vertical bar from the right side of the view. The **Next change** and **Previous change** buttons allow you to navigate through the changes displayed in the **Preview** dialog.



**Caution:** Use this option with caution. Global search and replace across all project files does not open the files containing the targets, nor does it prompt on a per occurrence basis, to confirm that a replace operation must be performed. As the operation simply matches the string defined in the find field, this may result in replacement of matching strings that were not originally intended to be replaced.

## Spell Checking

The **Spelling** dialog allows you to check the spelling of the edited document. To open this dialog, click the  **Check Spelling** button on the toolbar.



**Figure 386: The Check Spelling Dialog**

The dialog contains the following fields:

- **Unrecognized word** - Contains the word that cannot be found in the selected dictionary. The word is also highlighted in the XML document.
- **Replace with** - The character string which is suggested to replace the unrecognized word.
- **Guess** - Displays a list of words suggested to replace the unknown word. Double click a word to automatically insert it in the document and resume the spell checking process.
- **Default language** - Allows you to select the default dictionary used by the spelling engine.
- **Paragraph language** - In an XML document you can mix content written in different languages. To tell the spell checker engine what language was used to write a specific section, you need to set the language code in the `lang`

or `xml:lang` attribute to that section. Oxygen XML Editor automatically detects such sections and instructs the spell checker engine to apply the appropriate dictionary.

- **Replace** - Replaces the currently highlighted word in the XML document, with the selected word in the **Replace with** field.
- **Replace All** - Replaces all occurrences of the currently highlighted word in the XML document, with the selected word in the **Replace with** field.
- **Ignore** - Ignores the first occurrence of the unrecognized word and allows you to continue checking the document. Oxygen XML Editor skips the content of the XML elements *marked as ignorable*.
- **Ignore All** - Ignores all instances of the unknown word in the current document.
- **Learn** - Includes the unrecognized word in the list of valid words.
- **Options** - Sets the *configuration options of the spell checker*.
- **Begin at caret position** - Instructs the spell checker to begin checking the document starting from the current cursor position.
- **Close** - Closes the dialog.

## Spell Checking Dictionaries

There are two spell checking engines available in Oxygen XML Editor: **Hunspell** checker (default setting) and **Java** checker. You can set the spell check engine in the *Spell checking engine* preferences page. The dictionaries used by the two engines differ in format, so you need to follow specific procedures in order to add another dictionary to your installation of Oxygen XML Editor.

### Dictionaries for the Hunspell Checker

The Hunspell spell checker is open source and has LGPL license. The format of the Hunspell spell dictionary is supported by Mozilla, OpenOffice and the Chrome browser. Oxygen XML Editor comes with the following built-in dictionaries for the Hunspell checker:

- English (US);
- English (UK);
- French;
- German;
- Spanish.

Each language-country variant combination has its specific dictionary. If you cannot find a Hunspell dictionary that is already built for your language, you can build the dictionary you need. To build a dictionary from this list follow *these instructions*.

### Adding a Dictionary and Term Lists for the Hunspell Checker

To add a new spelling dictionary to Oxygen XML Editor or to replace an existing one follow these steps:

1. *Download* the files you need for your language dictionary.
2. The downloaded `.oxt` file is a *zip* archive. Copy the `.aff` and `.dic` files from this archive in the `spell` subfolder of the Oxygen XML Editor preferences folder, if you are creating a new dictionary.

The Oxygen XML Editor preferences folder is `[APPLICATION-DATA-FOLDER]/com.oxygenxml>`, where `[APPLICATION-DATA-FOLDER]` is:

- `C:\Users\[LOGIN-USER-NAME]\AppData\Roaming` on Windows Vista and Windows 7;
- `[USER-HOME-FOLDER]/Library/Preferences` on Mac OS X;
- `[USER-HOME-FOLDER]` on Linux.

3. Copy the `.aff` and `.dic` files into the folder `[Oxygen-install-folder]/dicts` if you are updating an existing dictionary.
4. Restart the application after copying the dictionary files.



**Note:** You can setup Oxygen XML Editor to use dictionaries and term lists from a custom location configured in the *Dictionaries preferences page*.

## Dictionaries for the Java Checker

A Java spell checker dictionary has the form of a `.dar` file located in the directory `[Oxygen-install-folder]/dicts`. Oxygen XML Editor comes with the following built-in dictionaries for the Java checker:

- English (US)
- English (UK)
- English (Canada)
- French (France)
- French (Belgium)
- French (Canada)
- French (Switzerland)
- German (old orthography)
- German (new orthography)
- Spanish

A pre-built dictionary can be added by copying the corresponding `.dar` file to the folder `[Oxygen-install-folder]/dicts` and restarting Oxygen XML Editor. There is one dictionary for each language-country variant combination.

## Learned Words

Spell checker engines rely on dictionary to decide that a word is correctly spelled. To tell the spell checker engine that an unknown word is actually correctly spelled, you need to add that word to its dictionary. There are two ways to do so:

- press the **Learn** button from the **Spelling** dialog;
- invoke the contextual menu on an unknown word, then press **Learn word**.

Learned words are stored into a persistent dictionary file. Its name is composed of the currently checked language code and the `.tdi` extension, for example `en_US.tdi`. It is located in the:

- `[user-home-folder]/Application Data/com.oxygenxml/spell` folder on Windows XP;
- `[user-home-folder]/AppData/Roaming/com.oxygenxml/spell` folder on Windows Vista;
- `[user-home-folder]/Library/Preferences/com.oxygenxml/spell` folder on Mac OS X;
- `[user-home-folder]/com.oxygenxml/spell` folder on Linux.

 **Note:** To change this folder go to the [Editor > Spell Check > Dictionaries preferences page](#).

 **Note:** To delete items from the list of learned words, press **Delete learned words** in the [Editor > Spell Check > Dictionaries preferences page](#).

## Ignored Words

The content of some XML elements like `programlisting`, `codeblock` or `screen` should always be skipped by the spell checking process. The skipping can be done manually word by word by the user using the **Ignore** button of [the Spelling dialog](#) or, more conveniently, automatically by maintaining a set of known element names that should never be checked. You maintain this set of element names [in the user preferences](#) as a list of XPath expressions that match the elements.

Only a small subset of XPath expressions is supported, that is only the `'` and `/'` separators and the `'*'` wildcard. Two examples of supported expressions are `/a/*b` and `//c/d/*`.

## Automatic Spell Check

To allow Oxygen XML Editor to automatically check the spelling as you write, you need to enable the **Automatic spell check** option from the [Spell Check](#) preferences page. Unknown words are highlighted and feature a contextual menu which offers the following:

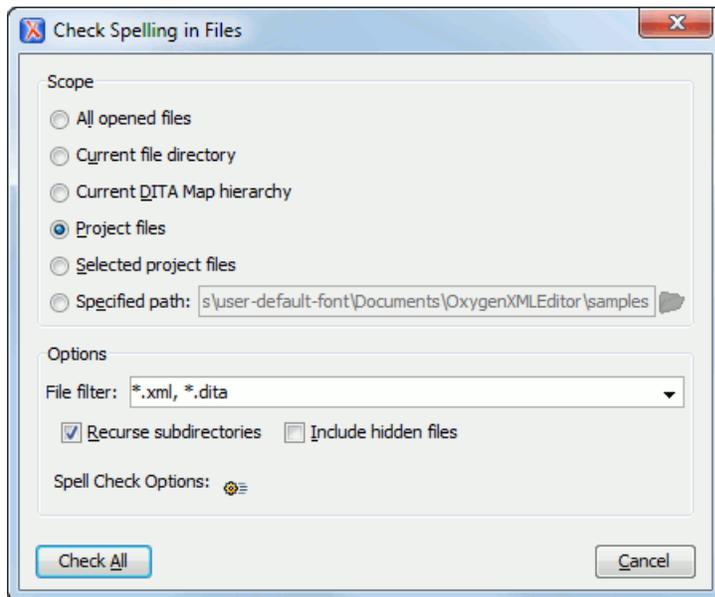
- **Delete Repeated Word** action - allows you to delete repeated words;
- a list of words suggested by the spell checking engine as possible replacements of the unknown word;
- **Learn Word** action - allows you to add the current unknown word to the persistent dictionary.

## Spell Checking in Multiple Files

The **Check Spelling in Files** action allows you to check the spelling on multiple local or remote documents. This action is available from:

- **Edit** menu;
- contextual menu of the **Project** view;
- contextual menu of the **DITA Maps Manager** view.

The results are *displayed in a view* that allows grouping the reported errors as a tree with two levels.



**Figure 387: Check Spelling in Files Dialog**

The following scopes are available:

- **All opened files** - Spell check in all opened files.
- **Directory of the current file** - All the files from the folder of the current edited file.
- **Scope of the current DITA Map** - All the files referred in the current DITA map opened in the **DITA Maps Manager** view.
- **Project files** - All files from the current project.
- **Selected project files** - The selected files from the current project.
- **Specified path** - A custom path.

You can also choose a file filter, decide whether to recurse subdirectories or process hidden files.

The spell checker processor uses the options available in the [Spell Check preferences panel](#).

## Changing the Font Size

The font size of the editor panel can be changed with the following actions:

- **Document > Font size > Increase editor font (Ctrl + NumPad + +)** - Increases the font size with one point for each execution of the action.

- **Document > Font size > Decrease editor font (Ctrl + NumPad + -)** - Decreases the font size with one point for each execution of the action.
- **Document > Font size > Normal editor font (Ctrl + 0)** - Resets the font size to *the value of the editor font set in Preferences*.

## Word/Line Editor Actions

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The Text editor implements the following actions:

- **(Ctrl+Delete (Meta+Delete on Mac))** - Deletes the next word.
- **(Ctrl+Backspace (Meta+Backspace on Mac))** - Deletes the previous word.
- **(Ctrl+W (Meta+W on Mac))** - Cuts the previous word.
- **(Ctrl+K (Meta+K on Mac))** - Cuts to end of line.

## Dragging and Dropping the Selected Text

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To move a whole region of text to other location in the same edited document just select the text, drag the selection by holding down the left mouse button and drop it to the target location.

## Inserting a File at Caret Position

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The action from menu **Document > File > Insert file...** inserts in the current document the content of the file with the file path at the current position of the caret.

## Opening the File at Caret in System Application

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The action from menu **Document > File > Open File at Caret in System Application** opens the filename under the current position of the caret with the default system application associated with the file.

## Opening the File at Caret Position

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The action from menu **Document > File > Open File at Caret** opens in a new panel the file with the file path at the caret position. If the path represents a directory path, it will be opened in system file browser. If the file does not exist at the specified location the error dialog that is displayed contains a **Create new file** button which starts the **New document** wizard. This allows you to choose the type or the template for the file. If the action succeeds, the file is created with the referred location and name and is opened in a new editor panel. This is useful when you decide first on the file name and after that you want to create it in the exact location specified at the current caret position.

## Switching Between Opened Tabs

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There are two actions for cycling through the opened file tabs:

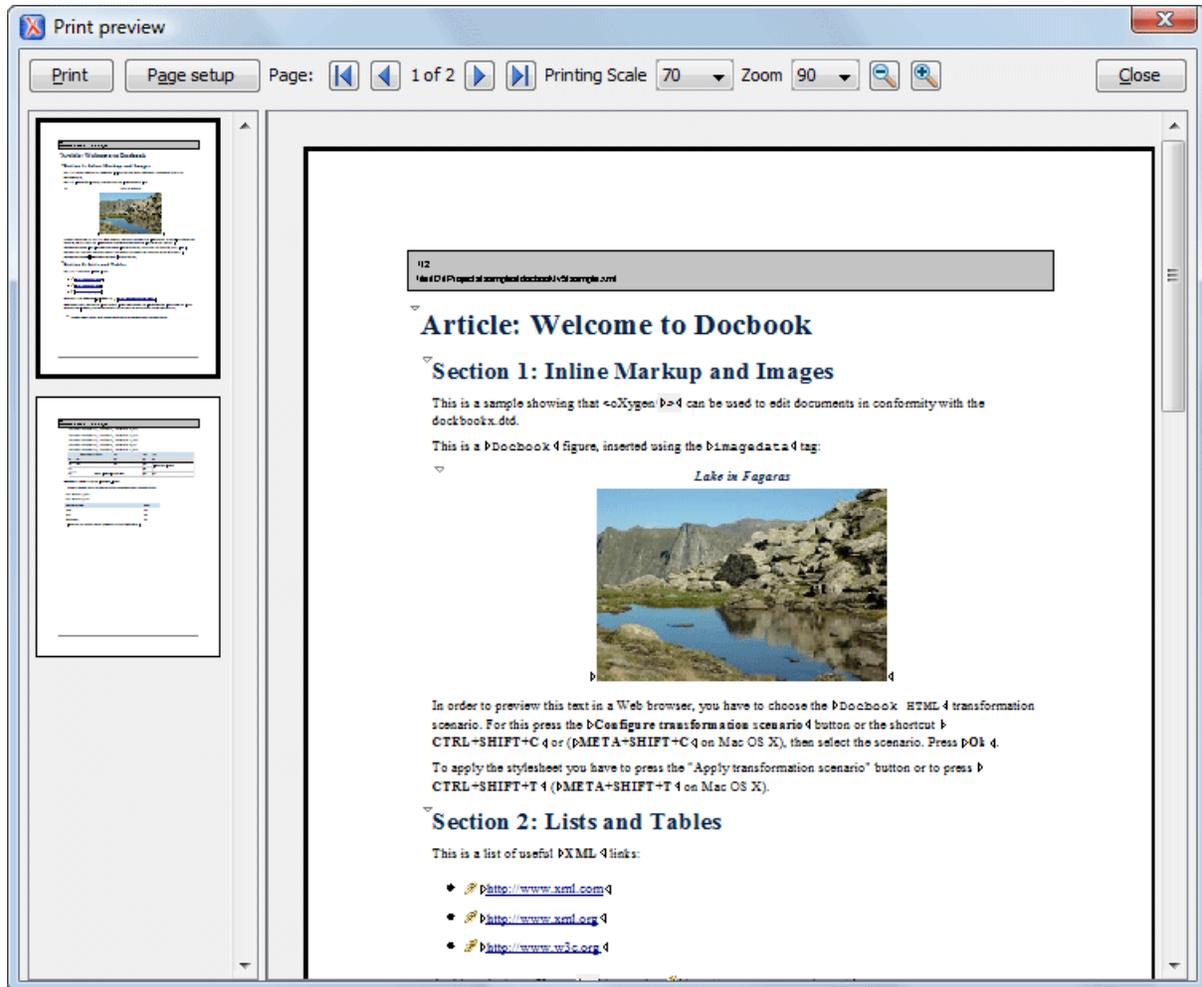
- **(Ctrl + Tab)** - Switches between the tabs with opened files in the order most recent ones first.
- **(Ctrl + Shift + Tab)** - Switches between the tabs with opened files in the reverse order.

## Printing a File

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Printing is supported in **Text**, **Author**, and **Grid** modes of the XML editor panel. The action from menu **File > Print (Ctrl+P)** displays the **Page Setup** dialog used for defining the page size and orientation properties for printing.

A **Print Preview** action is available in the **File** menu. It allows you to manage the format of the printed document:



**Figure 388: Print Preview Dialog**

The main window is split in three sections:

- **Preview area** - Displays the formatted document page as it will appear on printed paper.
- **Left stripe** - The left-hand side stripe which displays a list of thumbnail pages. Clicking any of them displays the page content in the main preview area.
- **Toolbar** - The toolbar top area which contains controls for printing, page settings, page navigation, print scaling, and zoom.

 **Note:** If your document is open in Author mode and contains *Track Changes*, you can print (or print preview) a copy of the document as if all changes have been accepted by switching the *Track Changes Visualization Modes* to **View Final**.

## Exiting the Application

The action from menu **File > Exit (Ctrl+Q)** terminates Oxygen XML Editor. Session information such as the current project, open documents and user preferences is made persistent. When Oxygen XML Editor is re-opened, this persistent information returns to the last saved state.

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# Chapter 25

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## Configuring the Application

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### Topics:

- [Configuring Options](#)
- [Importing / Exporting Global Options](#)
- [Preferences](#)
- [Reset Global Options](#)
- [Scenarios Management](#)
- [Editor Variables](#)
- [Configure Toolbars](#)
- [Custom System Properties](#)

This chapter presents all the user preferences that allow you to configure the application and the editor variables that are available for customizing the user defined commands.

## Configuring Options

A set of options controls Oxygen XML Editor, allowing you to configure most of the features. To offer you the highest degree of flexibility in customizing the application to fit the end-user's role in your organization, Oxygen XML Editor comes with several distinct layers of option values, arranged here according to their priority, from low to high:

- *Default Options* - should be regarded as factory defaults or built-in values.

This predefined set of values are tuned so Oxygen XML Editor behaves optimally in most working environments.

- *Customized Default Options* - designed to customize the initial option values for a group of users.

This layer allows an administrator to deploy the application preconfigured with a standardized set of option values.

 **Note:** Once this layer is set, it represents the initial state of Oxygen XML Editor when an end-user presses the **Restore defaults** or **Reset Global Options** buttons.

- *Global Options* - allows individual users to personalize Oxygen XML Editor according to their specific needs.
- *Project Options* - allow project managers to establish a set of rules for a specific project. These rules standardize the information exchanged by the team members (for example, if the project is stored in a repository, a common set of formatting rules avoid conflicts that may appear when documents modified by different team members are committed to the repository).



**Figure 389: Option lookup priority**

 **Note:** If you set a specific option in one of the layers, but it is not applied in the application, make sure that one of the higher priority layers is not overwriting it.

## Customized Default Options

You can overwrite the *Default Options* values by loading a set of options, from a specific XML structure, stored in one of the following file types:

- *options file* - containing all application options.

To create an *options file*, follow these steps:

- make sure the options that you want to set are not *stored at project level*;
- set the values you want to impose as defaults in the *Preferences pages*;
- select **Options > Export Global Options**.

- *project file* (*.xpr file extension*) - containing only the options different from the *Default Options*.

To create a *project file* (*.xpr file extension*), follow these steps:

- create an Oxygen project or open an already existing one in *the Project view*;
- store the options that you want to set with default values *at project level*
- set the values of the default options in the Preferences dialog so that they are saved in the project file.

There are two ways of telling the application to use such an options configuration file to extract the customized default options:

- set the file path of the options configuration file as value of `com.oxygenxml.default.options` *startup parameter*.

The file must be specified with an URL or a file path relative to the application installation folder. For example, :

```
-Dcom.oxygenxml.default.options=options/default.xml
```

- copy the options configuration file in the `[Oxygen-install-folder]/preferences` folder.

 **Note:** Make sure that the options configuration file has an `.xml` or an `.xpr` extension, like `default-options.xml`.

 **Note:**

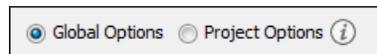
In the Java Webstart distribution, the same procedures apply.

If you want to specify the path to the default options using a parameter, the parameter `com.oxygenxml.default.options` must be set *in the .jnlp file* that launches the editor using a property element, for example:

```
<property name="oxy:com.oxygenxml.default.options"
value="http://host/path/to/default-options.xml"/>
```

## Project Level User Options

Oxygen XML Editor options can be set either globally or can be bound to a specific project by choosing the appropriate setting in the preferences pages:



**Figure 390: Controlling the Storage of the Preferences**

By default, **Global Options** is set, meaning that the options are stored on your computer, in your user home folder.

When you choose **Project Options**, the preferences are stored in the project file and can be shared with other users. For instance, if your project file and other files and folders are saved on a version control system (like SVN, CVS or Source Safe) or a shared folder, your team can use the same options/scenarios you have chosen to store in the project file.

You may decide that the default schema associations and catalogs must be shared with other team members. To do this, go to **Options > Preferences > XML > XML Catalog** options page, set **Project Options**. Now all the options set in the **XML Catalog** page are saved in your current project. At a later time, you can drop a preferences panel from being stored into the project by selecting the **Global Options** setting and then pressing the **OK** button.

The same mechanism is applied for saving transformation and validation scenarios.

## Importing / Exporting Global Options

The import/export operations are located in the **Options** menu. These operations allow you to load or save global preferences as an XML file. You can use this file to reload saved options both on your computer and on others.

The following actions are available in the **Options** menu:

- **Reset Global Options** - restores the preferences set to *Customized Default Options layer*, or if this level is not defined, to *Default Options layer*;

- **Import Global Options** - allows you to import a set of *Global Options* from an *options file*;
- **Export Global Options** - allows you to export the entire set of *Global Options* to an options file.

Oxygen XML Editor automatically stores your options in an `options` file. Depending on the platform you are using, this file is located in the following directories:

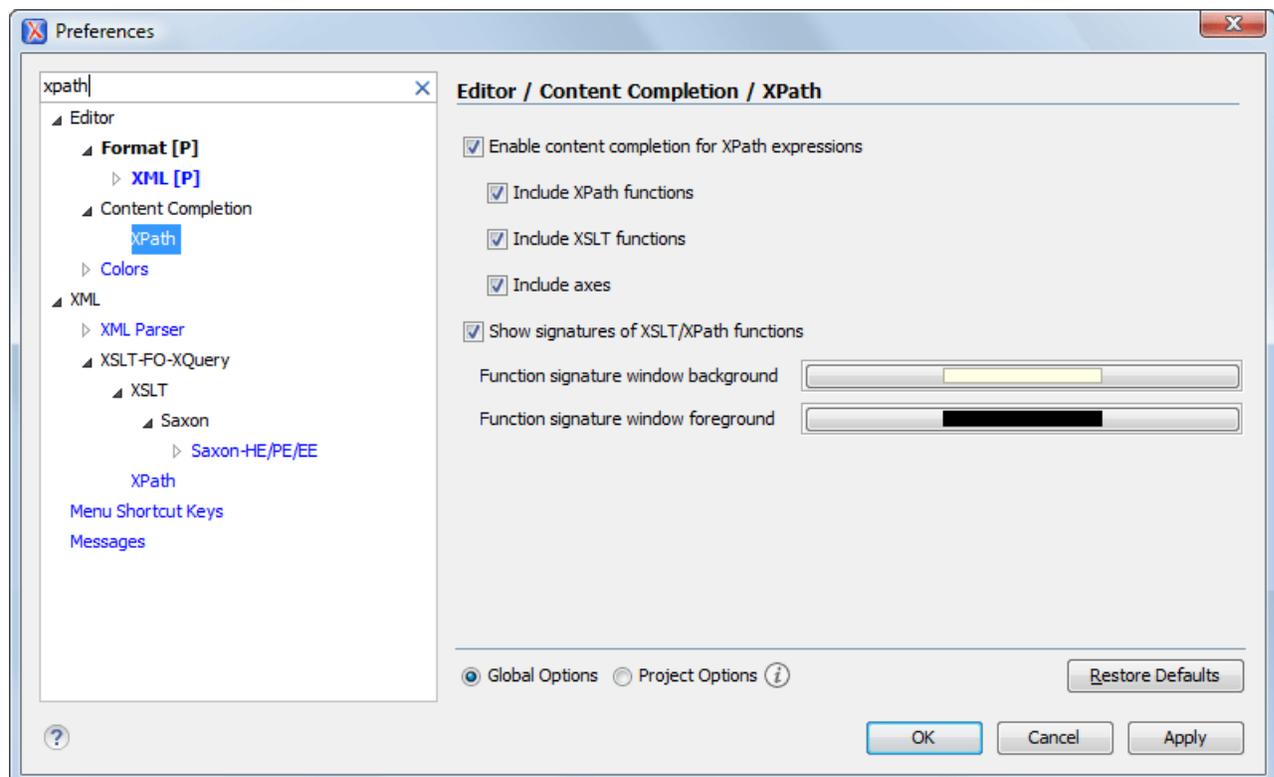
- [user-home-folder]\Application Data\com.oxygenxml for Windows XP;
- [user-home-folder]\AppData\Roaming\com.oxygenxml for Windows Vista/7;
- [user-home-folder]/Library/Preferences/com.oxygenxml for Mac OS X;
- [user-home-folder]/.com.oxygenxml for Linux.

The name of the `options` file of Oxygen XML Editor 14.2 is `oxyOptionsSa 14.2.xml`.

## Preferences

Once the application is installed you can use the **Preferences** dialog accessed from menu **Options > Preferences** to customize the application.

Option pages are organized hierarchically in a tree-like structure displayed in the left side of the **Preferences** dialog. The option tree features a search box that allows you to look for a specific option name: just type-in relevant keywords and the entire options structure is trimmed down. To navigate the tree structure, use the *Up/Down* keys or click the tree entries to display the options pages in the right side of the **Preferences** dialog.



**Figure 391: The Search field from the Preferences dialog**

You can always revert modifications to their default values by pressing the **Restore Defaults** button, available in each options page.

If you don't know how to use a specific preference that is available in any **Preferences** panel or what effect it will have you can open a help page about the current panel at any time pressing the help button  located in the left bottom corner of the dialog or pressing the F1 key.

Global options are stored in the following locations:

- [user-home-folder]\Application Data\com.oxygenxml for Windows XP
- [user-home-folder]\AppData\Roaming\com.oxygenxml for Windows Vista/7
- [user-home-folder]/Library/Preferences/com.oxygenxml for Mac OS X
- [user-home-folder]/.com.oxygenxml for Linux

## Global

To open the **Global** options preferences page, go to **Options > Preferences > Global**.

The following user options are available:

- **Automatic Version Checking** - checks whether a new version of Oxygen XML Editor is available;
- **Language** - allows you to localize the interface and change the language to English, French, German, Dutch, Japanese, or Italian. Restart the application to apply the current selection;
- **Other language** - allows you to set the file (either *properties* or XML) that contains interface messages translated into a different language than the default one; For details about creating this file, go to [Localization of the User Interface](#).



**Note:** After restarting the application, if some interface labels are not rendered correctly (for example Chinese or Korean characters), install the corresponding language pack from your OS installation kit (for example the East-Asian language pack).

- **Look and Feel** - use this option to change graphic style (look and feel) of the user interface;
- **Styles** - on Windows there are available the following styles:
  - Office 2003
  - Vsnet
  - Eclipse
  - Xerto
  - Default



**Note:** After changing the style, restart the application in order for the modification to take effect.

On Linux there are available the following styles:

- Eclipse
- Default



**Note:** After changing the style, you have to restart the application in order for the modification to take effect.

On Mac OS X this option is not available.

- **Themes** - on Windows this option is enabled only for the **Office 2003** and **Default** styles. In these cases, the following themes are available:
  - normal Color
  - home Stead
  - metallic
  - default
  - gray

On Linux and Mac OS X this option is not available.

- **Line separator** - this option defines the line separator. The **System Default** choice sets the platform-specific line separator;

- **Detect the line separator on file open** - when this option is checked, the editor detects the line separator when the edited file is loaded and it uses it when the file is saved. The new files are saved using the line separator defined by the **Line separator** option;
- **Default Internet browser** - the path to a web browser of choice, used for:
  - opening (X)HTML or PDF transformation results;
  - opening a web page (for example, pointing to specific paragraphs in the W3C recommendation of XML Schema in case of XML Schema validation errors).
- **Open last edited files from project** - when enabled, Oxygen XML Editor opens the last edited files from project at start-up;
- **Beep on operation finished** - Oxygen XML Editor emits a short beep when a validate, check well-formedness, or transform action has ended;
- **Show memory status** - enable this option to view the memory Oxygen XML Editor uses. To free memory, click the  **Run Garbage Collector** button located in the bottom right corner of the screen. The memory status bar has a light blue background which turns yellow or red when Oxygen XML Editor uses too much memory;
- **Show Java vendor warning at startup** - Sun Microsystems/Oracle Java VM (on Windows and Linux) or Apple Computer Java VM (on Mac OS X) is recommended for running the application. If a different Java Virtual Machine is used, then a warning is displayed. This option allows the user to choose whether the warning dialog is shown or not;
- **Current frameworks directory** - location of the directory that holds default framework-specific files (like templates, schema files and catalogs to name a few). You can change its value using the `com.oxygenxml.editor.frameworks.url` property set either in the Oxygen XML Editor *.vmoptions configuration files or in the startup scripts*;
- **Use custom frameworks directory** - for editing different types of XML documents (for content completion, validation, authoring) Oxygen XML Editor can use information from the document types which are stored in the `frameworks` subfolder of the application's install folder. If a custom `frameworks` folder is specified, then Oxygen XML Editor loads the document types from this location;
- **Check opened files for file system changes** - Oxygen XML Editor searches for changes in the source of the currently edited content. In case any differences between the content displayed in the editor and its source are found, you are prompted whether you want to reload the content of the document from the disk. Selecting **Reload** updates the content to match its source. In case you want your content automatically updated every time its source is modified, select **Always reload**.
  - 👉 **Note:** Selecting **Always reload** enables **Auto update unmodified editors on file system changes** automatically.
  - **Auto update unmodified editors on file system changes** - Oxygen XML Editor updates automatically unmodified editors when the edited file changes externally. By default this option is disabled, meaning that you are prompted to decide if you want Oxygen XML Editor to update the file content;
  - 👉 **Note:** **Check opened files for file system changes** and **Auto update unmodified editors on file system changes** influence only DITA documents.
- **Last visited directory** - when selected, the *Open file dialog* memorizes the last visited folder. When used next time, it starts directly in this folder;
- **Directory of the edited file** - the *Open file dialog* starts in the folder where the currently edited file is stored;
- **Show hidden files and directories** - shows system hidden files and folders in the file browser dialog and the folder browser dialog. This setting is not available on Mac OS X.

## Add-ons

To open the add-ons preferences page, go to **Options > Menu > Preferences > Add-ons**. The following options are available in the Add-ons preferences page:

- **enable automatic updates checking** - allows Oxygen XML Editor to search for available updates automatically;

- **Update Sites URLs** - this list contains the URLs of the update sites. An update site is an XML descriptor file which stores all the information about an add-on. You can add, edit, and delete URLs in this list.

## Fonts

To open the **Fonts** preferences page, go to **Options > Preferences > Fonts**.

The following options are available:

- **Editor** - The family and size of the font used for displaying text information in the text editor. This option affects both the Text and Grid mode.
  - 👉 **Note:** On Mac OS X, the default font, Monaco, cannot render bold typeface characters.
- **Author default font** - The family and size of the font used for displaying text in the Author mode. This value is used as default in case another one is not specified in the CSS file associated with the opened document.
- **Schema default font** - The family and size of the font used for displaying text in:
  - the **Design** mode of the W3C XML Schema editor (the schema diagram);
  - images with schema diagram fragments that are included in the HTML documentation generated from an XML Schema.
- **Text antialiasing** - Allows you to set text anti-aliasing behavior:
  - **Default** - allows the application to use the setting of the operating system, if available;
  - **On** - sets the text anti-aliasing to pixel level;
  - **Off** - disables text anti-aliasing;
  - sub-pixel anti-aliasing modes, like GASP, LCD\_HRGB, LCD\_HBGR, LCD\_VRGB, and LCD\_VBGR.
- **Text components** - The family and size of the font used for displaying text information in text components. After changing the font, restart the application for the change in this setting to take effect.
- **GUI** - The family and size of the font used for displaying user interface labels. After changing the font, restart the application for the change in this setting to take effect.

To edit the fields use the **Choose** and **Reset** buttons available next to each value. The **Choose** button opens a dialog that allows you to configure the **Font family**, the **Font size** and whether the text is rendered bold. A preview window is also available. The **Reset** button restores the setting to their default values.

## Document Type Association

A *document type* or *framework* is associated to an XML file according to a set of rules. It includes also many settings that improve editing in the Author mode for the category of XML files it applies for. These settings include:

- a default grammar used for validation and content completion in both Author mode and Text mode;
- CSS stylesheet(s) for rendering XML documents in Author mode;
- user actions invoked from toolbar or menu in Author mode;
- predefined scenarios used for transformation of the class of XML documents defined by the document type;
- XML catalogs;
- directories with file templates;
- user-defined extensions for customizing the interaction with the content author in Author mode.

To open the **Document Type Association** preferences page go to **Options > Preferences > Document Type Association**.

Oxygen XML Editor is highly customizable. Practically you can associate an entire class of documents (grouped logically by some common features like namespace, root element name or filename) to a bundle consisting of CSS stylesheets, validation schemas, catalog files, new files templates, transformation scenarios and even custom actions. The bundle is called *document type* and the association is called *Document Type Association* or, more generically, *framework*.

The following actions are available in this preferences panel:

- **Change framework directory location** - specifies a *custom frameworks folder* from where Oxygen XML Editor loads the document types;
  - **Document types table** - presents the currently defined document type associations, ordered by priority and alphabetically. Each row of the table represents a document type association, each holding the following information:
    - **Document type** - name of the document type;
    - **Enabled** - when checked, the corresponding document type association is enabled and analyzed when the application is trying to determine the type of an opened document;
    - **Storage** - displays the type of location where the framework configuration file is stored. Can be one of **External** (framework configuration is saved in a file) or **Internal** (framework configuration is stored in the application's internal options);
-  **Note:** Note that if you set the **Storage** to **Internal** and the document type association settings are already stored in a framework file, the file content is saved in application's internal options and the file is removed.
- **Priority** - depending on the priority level, Oxygen XML Editor establishes the order in which the existing document type associations are evaluated to determine the type of a document you are opening. It can be one of the following: Lowest, Low, Normal, High, Highest. You can set a higher priority to Document Type Associations you want to be evaluated first;

When expanding a **Document Type Association** its defined rules are presented. A rule is described by:

- **Namespace** - specifies the namespace of the root element from the association rules set (\* (*any*) by default). If you want to apply the rule only when the root element is in no namespace, leave this field empty (remove the `ANY_VALUE` string);
  - **Root local name** - specifies the local name of the root element (\* (*any*) by default);
  - **File name** - specifies the name of the file (\* (*any*) by default);
  - **Public ID** - represents the Public ID of the matched document;
  - **Java class** - presents the name of the Java class which is used to determine if a document matches the rule;
- **New** - opens a dialog box that allows you to add a new association;
  - **Edit** - opens a new dialog allowing you to edit an existing association;
-  **Note:** If you try to edit an existing association type when you have no write permissions to its store location, a dialog box will be shown, asking if you want to duplicate the document type.

- **Delete** - deletes the selected associations;
- **Enable DTD/XML Schema processing in document type detection** - when this option is enabled, the matching process also examines the DTD/XML Schema associated with the document. For example, the fixed attributes declared in the DTD for the root element are also analyzed, if this is specified in the association rules.

This is especially useful if you are writing DITA customizations. DITA topics and maps are also matched by looking for the `DITAArchVersion` attribute of the root element. This attribute is specified as `default` in the DTD and it is detected in the root element, helping Oxygen XML Editor to correctly match the DITA customization.

This option is enabled by default;

- **Only for local DTD's / XML Schemas** - when the previous feature is enabled, you can choose with this option to process only the local DTD's / XML Schemas.

This option is enabled by default.

## The Document Type Dialog

This dialog allows you to create or edit a *Document Type Association*. The following fields are available in this dialog:

- **Name** - the name of the *Document Type Association*;
- **Priority** - depending on the priority level, Oxygen XML Editor establishes the order in which the existing document type associations are evaluated to determine the type of a document you are opening. It can be one of the following:

Lowest, Low, Normal, High, Highest. You can set a higher priority to Document Type Associations you want to be evaluated first;

- **Description** - a detailed description of the framework;
- **Storage** - displays the type of location where the framework configuration file is stored. Can be one of **External** (framework configuration is saved in a file) or **Internal** (framework configuration is stored in the application's internal options);

 **Note:** Note that if you set the **Storage** to **Internal** and the document type association settings are already stored in a framework file, the file content is saved in application's internal options and the file is removed.

- **Initial edit mode** - sets the default edit mode when you open a document for the first time;

You are able to configure the options of each *framework* in the following tabs:

- *Association rules*;
- *Schema*;
- *Classpath*;
- *Author*;
- *Templates*;
- *Catalogs*;
- *Transformation*;
- *Validation*;
- *Extensions*.

### The Association Rules Tab

By combining multiple association rules you can instruct Oxygen XML Editor to identify the type of a document. An Oxygen XML Editor *association rule* holds information about *Namespace*, *Root local name*, *File name*, *Public ID*, *Attribute*, and *Java class*. Oxygen XML Editor identifies the type of a document when the document matches at least one of the *association rules*. Using the **Document type rule** dialog, you can create *association rules* that activate on any document matching all the criteria in the dialog.

In the **Association rules** tab you can perform the following actions:

-  **New** - opens the **document type rule** dialog allowing you to create *association rules*;
-  **Edit** - opens the **document type rule** dialog allowing you to edit the properties of the currently selected *association rule*;
-  **Delete** - deletes the currently selected *association rules*;
-  **Move Up** - moves the selection to the previous *association rule*;
-  **Move Down** - moves the selection to the following *association rule*.

### The Schema Tab

In the **Schema** tab you can specify a schema that Oxygen XML Editor uses in case an XML document does not contain a schema declaration and no default validation scenario is associated with it.

To set the **Schema URL**, use *editor variables* to specify the path to the Schema file.

 **Note:** It is a good practice to store all resources in the framework directory and use the `${framework}` editor variable to refer them. This is a recommended approach to designing a self-contained document type that can be easily maintained and shared between different users.

### The Classpath Tab

The **Classpath** tab displays a list of folders and JAR libraries that hold implementations for API extensions, implementations for custom Author operations, different resources (such as stylesheets), and framework translation files. Oxygen XML Editor loads the resources looking in the folders in the order they appear in the list.

In the **Classpath** tab you can perform the following actions:

-  **New** - opens a dialog that allows you to add a resource in the **Classpath** tab;
-  **Edit** - opens a dialog that allows you to edit a resource in the **Classpath** tab;
-  **Delete** - deletes the currently selected resource;
-  **Move Up** - moves the selection to the previous resource;
-  **Move Down** - moves the selection to the following resource.

## The Author Tab

The **Author** tab is a container that holds information regarding the CSS file used to render a document in the **Author** mode, and regarding framework-specific actions, menus, contextual menu, toolbar and content completion list of proposals.

The options that you configure in the **Author** tab are grouped in the following sub-tabs:

- *CSS*;
- *Actions*;
- *Menu*;
- *Contextual menu*;
- *Toolbar*;
- *Content Completion*.

### CSS

The **CSS** sub-tab contains the CSS files that Oxygen XML Editor uses to render a document in the **Author** mode. In this sub-tab, you set alternate CSS files. When you are editing a document in the **Author** mode, you are able to switch between these CSS files from the **Author CSS Alternatives** toolbar.

The following actions are available in the **CSS** sub-tab:

-  **New** - opens a dialog that allows you to add a CSS file;
-  **Edit** - opens a dialog that allows you to edit a CSS file;
-  **Delete** - deletes the currently selected CSS file;
-  **Move Up** - moves the selection to the previous CSS file;
-  **Move Down** - moves the selection to the following CSS file;
- **ignore CSSs from the associated document type** - the CSS files set in the CSS tab are overwritten by the CSS files specified in the document itself;
- **merge them with CSSs from the associated document type** - the CSS files set in the CSS tab are merged with the CSS files specified in the document itself.

### Actions

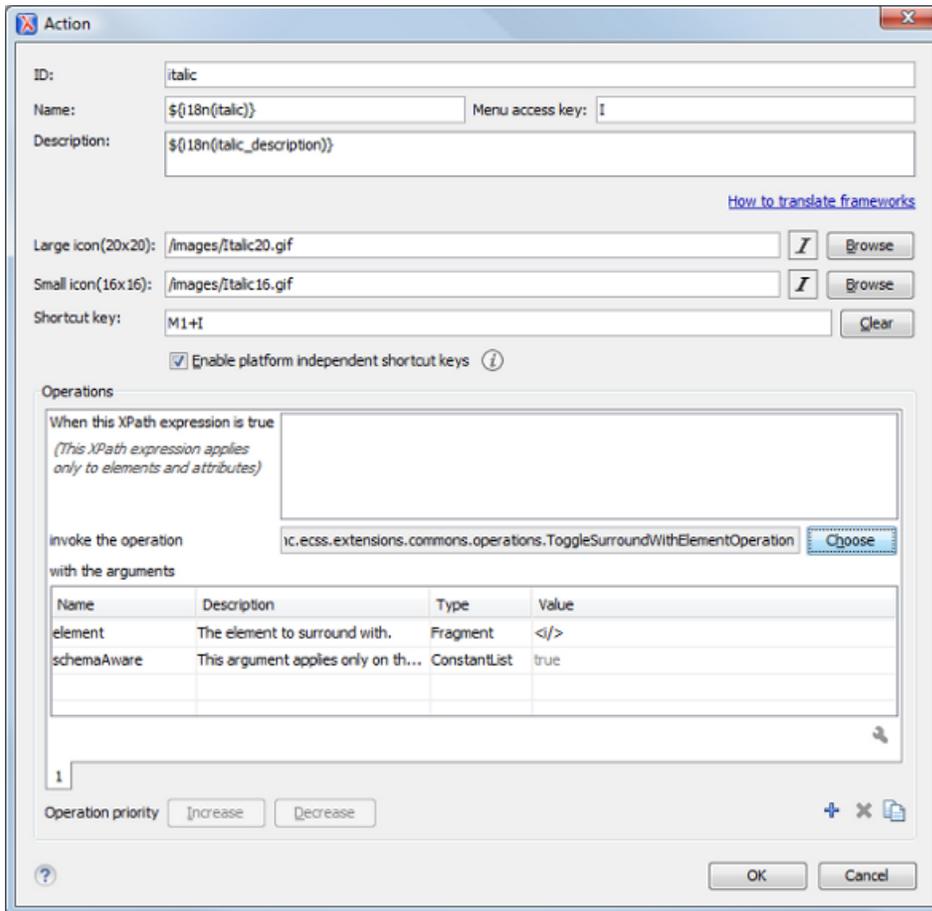
The **Actions** sub-tab holds the framework specific actions. Each action has a unique ID, a name, a description, and a shortcut key.

The following actions are available in this sub-tab:

-  **New** - opens *the Action dialog* that allows you to add an action;
-  **Duplicate** - duplicates the currently selected action.
-  **Edit** - opens a dialog that allows you to edit an existing action;
-  **Delete** - deletes the currently selected action;

### The Action Dialog

The **Action** dialog allows you to edit an existing document type action or create one. To open this dialog, go to **Option > Preferences > Document Type Association**, select a document type, and click **Edit** or **New**. The **Document type** dialog is presented. In this dialog go to the **Author** tab, click **Actions**, select an action, and click  **Edit** or  **New**.



**Figure 392: The Action Dialog**

The following options are available:

- **ID** - specifies a unique action identifier;
- **Name** - specifies the name of the action. This name is displayed as a tooltip or as a menu item;
- **Menu access key** - on Windows, the menu items are accessed using the **ALT + "letter"** shortcut, when the menu is visible. The letter is visually represented by underlining the first letter from the menu item name having the same value;
- **Description** - a description of the action;
- **Large icon** - select an image that Oxygen XML Editor uses for the toolbar action.

 **Note:** A good practice is to store the image files inside the framework directory and use the `${frameworks}editor` variable to make the image relative to the framework location. In case the images are bundled in a *jar* archive, together with some Java operations implementation for instance, it is convenient to refer the images by their relative path location in the *class-path*.

- **Small icon** - select an image that Oxygen XML Editor uses for the contextual menu icon;
- **Shortcut key** - this field allows you to configure a shortcut key for the action you are editing. The + character separates the keys. The shortcut you are specifying in this field is platform-independent. The following modifiers are used:
  - M1 represents the COMMAND key on MacOS X, and the CTRL key on other platforms;
  - M2 represents the SHIFT key;
  - M3 represents the Option key on MacOS X, and the ALT key on other platforms;
  - M4 represents the CTRL key on MacOS X, and is undefined on other platforms.

- **Operations**

In this section of the **Action** dialog you are configuring the functionality of the action you are editing. An action has one or more operation modes. The evaluation of an XPath expression activates an operation mode. The first enabled operation mode is enabled when you trigger the action. The scope of the XPath expression must consist only of element nodes and attribute nodes of the edited document. Otherwise, the XPath expression does not return a match and does not fire the action.

The following options are available in this section:

- **When this XPath expression is true** - an XPath expression that applies to elements and attributes;
- **invoke the operation** - specifies the invoked operation;
- **with the arguments** - specifies the arguments of the invoked operation;
- **Edit** - allows you to edit the arguments of the operation.
- **Operation priority** - increases or decreases the priority of an operation. The operations are invoked in the order of their priority. In case more than one XPath expression is true, the operation with the highest priority is invoked;
- **Add** - adds an operation;
- **Remove** - removes an operation;
- **Duplicate** - duplicates an operation.

### Menu

In the **Menu** sub-tab you configure what *framework* specific actions appear in the Oxygen XML Editor menu. The sub-tab is divided in two sections: **Available actions** and **Current actions**.

The **Available actions** section presents a table that displays the actions defined in the **Actions** sub-tab, along with their icon, ID, and name. The **Current actions** section holds the actions that are displayed in the Oxygen XML Editor menu. To add an action in this section as a sibling of the currently selected action, use the  **Add as sibling** button. To add an image in this section as a child of the currently selected action use the  **Add as child** button.

The following actions are available in the **Current actions** section:

-  **Edit** - edits an item;
-  **Remove** - removes an item;
-  **Move Up** - moves an item up;
-  **Move Down** - moves an item down.

### Contextual menu

In the **Contextual menu** sub-tab you configure what framework-specific action the Content Completion Assistant proposes. The sub-tab is divided in two sections: **Available actions** and **Current actions**.

The **Available actions** section presents a table that displays the actions defined in the **Actions** sub-tab, along with their icon, ID, and name. The **Current actions** section holds the actions that are displayed in the contextual menu of a document belonging to the edited framework. To add an action in this section as a sibling of the currently selected action, use the  **Add as sibling** button. To add an action in this section as a child of the currently selected action use the  **Add as child** button.

The following actions are available in the **Current actions** section:

-  **Edit** - edits an item;
-  **Remove** - removes an item;
-  **Move Up** - moves an item up;
-  **Move Down** - moves an item down.

### Toolbar

In the **Toolbar** sub-tab you configure what framework-specific action the Oxygen XML Editor toolbar holds. The sub-tab is divided in two sections: **Available actions** and **Current actions**.

The **Available actions** section presents a table that displays the actions defined in the **Actions** sub-tab, along with their icon, ID, and name. The **Current actions** section holds the actions that are displayed in the Oxygen XML Editor toolbar when you work with a document belonging to the edited framework. To add an action in this section as a sibling of the currently selected action, use the  **Add as sibling** button. To add an action in this section as a child of the currently selected action use the  **Add as child** button.

The following actions are available in the **Current actions** section:

-  **Edit** - edits an item;
-  **Remove** - removes an item;
-  **Move Up** - moves an item up;
-  **Move Down** - moves an item down.

### Content Completion

In the **Content Completion** sub-tab you configure what framework-specific the Content Completion Assistant proposes. The sub-tab is divided in two sections: **Available actions** and **Current actions**.

The **Available actions** section presents a table that displays the actions defined in the **Actions** sub-tab, along with their icon, ID, and name. The **Current actions** section holds the actions that the Content Completion Assistant proposes when you work with a document belonging to the edited framework. To add an action in this section as a sibling of the currently selected action, use the  **Add as sibling** button. To add an action in this section as a child of the currently selected action use the  **Add as child** button.

The following actions are available in the **Current actions** section:

-  **Edit** - edits an item;
-  **Remove** - removes an item;
-  **Move Up** - moves an item up;
-  **Move Down** - moves an item down.

### The Templates Tab

The **Templates** tab specifies a list of directories in which new file templates are located. These file templates are gathered from all the document types and presented in the **New** dialog wizard.

### The Catalogs Tab

The **Catalogs** tab specifies a list of *XML catalogs* which are added to all the catalogs that Oxygen XML Editor uses to resolve resources.

### The Transformation Tab

In the **Transformation** tab you configure the transformation scenarios associated with the framework you are editing. These are the transformation scenarios that are presented in the **Configure Transformation Scenarios** dialog as associated with the type of the edited document.

You can set one or more of the scenarios from the **Transformation** tab as default. The scenarios set here as default are rendered bold in the **Configure Transformation Scenarios** dialog and are also displayed on the tooltip of the **Apply transformation Scenario(s)**.

The **Transformation** offers the following options:

-  **New** - opens the **document type rule** dialog allowing you to create *association rules*;
-  **Edit** - opens the **document type rule** dialog allowing you to edit the properties of the currently selected *association rule*;
-  **Delete** - deletes the currently selected *association rules*;
-  **Import scenarios** - imports transformation scenarios;
-  **Export selected scenarios** - export transformation scenarios;
-  **Move Up** - moves the selection to the previous *association rule*;

-  **Move Down** - moves the selection to the following *association rule*.

## The Validation Tab

In the **Validation** tab you configure the validation scenarios associated with the framework you are editing. These are the validation scenarios that are presented in the **Configure Validation Scenarios** dialog as associated with the type of the edited document.

You can set one or more of the scenarios from the **Validation** tab as default. The scenarios set here as default are rendered bold in the **Configure Transformation Scenarios** dialog and are also displayed on the tooltip of the **Apply transformation Scenario(s)** button.

The **Validation** tab offers the following options:

-  **New** - opens the **document type rule** dialog allowing you to create *association rules*;
-  **Edit** - opens the **document type rule** dialog allowing you to edit the properties of the currently selected *association rule*;
-  **Delete** - deletes the currently selected *association rules*;
-  **Import scenarios** - imports transformation scenarios;
-  **Export selected scenarios** - export transformation scenarios;
-  **Move Up** - moves the selection to the previous *association rule*;
-  **Move Down** - moves the selection to the following *association rule*.

## The Extensions Tab

The **Extension** tab specifies implementations of Java interfaces used to provide advanced functionality to the document type.

Libraries containing the implementations must be present in the *classpath* of your document type. The Javadoc available at <http://www.oxygenxml.com/InstData/Editor/SDK/javadoc/> contains details about how each API implementation functions.

## Document Type Sharing

Oxygen has support for allowing you to share the customizations for a specific XML type by creating your own *Document Type* in the **Document Type Association** preferences page.

A document type can be shared between authors in two ways:

- Save it externally in a separate framework folder in the `OXYGEN_INSTALL_DIR/frameworks` directory.



**Important:** In order for this approach to work you will need to have the application installed to a folder with full write access.

Please follow the following steps:

1. Create a new directory in the `OXYGEN_INSTALL_DIR/frameworks` for your new framework. This directory will contain resources for your framework (CSS files, new file templates, schemas used for validation, catalogs). See the **Docbook** framework structure from the `OXYGEN_INSTALL_DIR/frameworks/docbook` as an example.
2. Create your new custom document type and save it external in the newly created framework directory (with a name like `custom.framework`).
3. Configure the custom document type according to your needs, take special care to make all file references relative to the `OXYGEN_INSTALL_DIR/frameworks` directory by using the `${frameworks}` editor variable. The *Author Developer Guide* contains all details necessary for creating and configuring a new document type.
4. If everything went fine then you should have a new configuration file saved in: `OXYGEN_INSTALL_DIR/frameworks/your_framework_dir/custom.framework` after the Preferences are saved.

5. You can then share the new framework directory with other users (have them copy it to their OXYGEN\_INSTALL\_DIR/frameworks directory) and the new document type will be available in the list of Document Types when the application is started.
- Save the document type at project level in the **Document Type Association** preferences page.

Please see the following steps:

1. Create a new directory with full write access somewhere on your local drive which will contain the Oxygen project file and associated document type resources (CSS files, new file templates, schemas used for validation, catalogs).
2. From the Oxygen [Project view](#) create a new project and save it in the newly created directory.
3. In the **Document Type Association** preferences page switch the radio button at the bottom of the page to **Project Options**.
4. Create your new custom document type using the default **internal** storage for it. It will actually be saved in the previously chosen Oxygen XML Editor project .xpr file.
5. Configure the custom document type according to your needs, take special care to make all file references relative to the project directory by using the  $\{\text{pd}\}$  editor variable. The [Author Developer Guide](#) contains all details necessary for creating and configuring a new document type.
6. You can then share the new project directory with other users and if they open in the [Project view](#) the customized project then the new document type will be available in the list of Document Types.

## Localizing Frameworks

Oxygen XML Editor supports framework localization (translating framework actions, buttons, and menu entries to different languages). Thus you can develop and distribute a framework to users that speak different languages without changing the distributed framework. Changing the language used in Oxygen (in **Options > Preferences > Global > Language** Global preferences page) is enough to set the right language for each framework.

To localize the content of a framework, create a `translation.xml` file which contains all the translation (key, value) mappings. The `translation.xml` has the following format:

```
<translation>
  <languageList>
    <language description="English" lang="en_US"/>
    <language description="German" lang="de_DE"/>
    <language description="French" lang="fr_FR"/>
  </languageList>
  <key value="list">
    <comment>List menu item name.</comment>
    <val lang="en_US">List</val>
    <val lang="de_DE">Liste</val>
    <val lang="fr_FR">Liste</val>
  </key>
  .....
</translation>
```

Oxygen XML Editor matches the GUI language with the language set in the `translation.xml` file. In case this language is not found, the first available language declared in the `languageList` tag for the corresponding framework is used.

Add the directory where this file is located to the **Classpath** list corresponding to the edited document type.

After you create this file, you are able to use the keys defined in it to customize the name and description of:

- framework actions;
- menu entries;
- contextual menus;
- toolbar.

For example, if you want to localize the bold action go to **Options > Preferences > Document Type Association**.

Open the **Document type** dialog, go to **Author > Actions**, and rename the bold action to  $\{\text{i18n}(\text{translation\_key})\}$ . Actions with a name format different than  $\{\text{i18n}(\text{translation\_key})\}$  are not localized. `translation_key` corresponds to the key from the `translation.xml` file.

Now open the `translation.xml` file and edit the translation entry if it exists or create one if it does not exist. This example presents an entry in the `translation.xml` file:

```
<key value="translation_key">
  <comment>Bold action name.</comment>
  <val lang="en_US">Bold</val>
  <val lang="de_DE">Bold</val>
  <val lang="fr_FR">Bold</val>
</key>
```

To use a description from the `translation.xml` file in the Java code used by your custom framework, use the new `ro.sync.ecss.extensions.api.AuthorAccess.getAuthorResourceBundle()` API method to request for a certain key the associated value. In this way all the dialogs that you present from your custom operations can have labels translated in different languages.

 **Note:** You can enter any language you want in the `languageList` tag and any number of keys.

The `translation.xml` file for the DocBook framework is located here: `[OXYGEN_INSTALL_DIR]/frameworks/docbook/i18n/translation.xml`. In the **Classpath** list corresponding to the Docbook document type the following entry was added: `${framework}/i18n/`.

In **Options > Preferences > Document Type Association > Author > Actions**, you can see how the DocBook actions are defined to use these keys for their name and description. If you look in the Java class `ro.sync.ecss.extensions.docbook.table.SADocbookTableCustomizerDialog` available in the Author SDK, you can see how the new `ro.sync.ecss.extensions.api.AuthorResourceBundle` API is used to retrieve localized descriptions for different keys.

## Perspectives Layout

The **Perspectives Layout** preferences panel is opened from menu **Options > Preferences > Perspectives Layout**.

Oxygen XML Editor has many helper views that can be arranged in different layouts. Use this preferences panel to configure your preferred layout.

The following options are available:

- **Use default layout** - selected by default. It indicates that Oxygen XML Editor uses the default layout for all its perspectives. Any modification of this layout (for instance closing / showing views or a new view arrangement) is saved when the application exits and it is reloaded at the next start-up;
- **Use fixed layout** - check this option when you want the editor to always start with a certain preconfigured layout. Modifications of the selected layout are lost when the program exits. There are two kinds of fixed layout:
  - **Predefined** - Oxygen XML Editor has several predefined layouts to choose from, depending on the type of work you intend to do:
    - **Advanced** - all views are visible;
    - **Author** - authoring-oriented layout, displaying the **Project**, **Archive Browser**, **DITA Maps Manager**, **Outline**, **Attributes**, **Model**, and **Elements** views;
    - **Basic** - only the **Project** view and the **Outline** view are visible. Recommended when you edit XML content and you need maximum screen space;
    - **Intermediate** - the **Project**, **Outline**, **Attributes**, **Model**, **Elements**, **Entities**, and **Transformation Scenarios** views are visible;
    - **Schema development** - the **Project**, **Component Dependencies**, **Resource Hierarchy/Dependencies**, **Outline**, **Palette**, and **Attributes** views are visible;
    - **XQuery development** - the **Project**, **Outline**, **Transformation Scenarios**, **XSLT/XQuery input** views are visible;

- **XSLT development** - the **Project**, **Component Dependencies**, **Resource Hierarchy/Dependencies**, **Outline**, **Attributes**, **Model**, **XSLT/XQuery input**, **XPath Builder**, and **Transformation Scenarios** views are visible.
- **Specified** - allows you to choose a previously saved layout file;
  - 👉 **Note:** In order to create a layout file, you can arrange the views in the desired order and then save the layout by invoking the **Window > Save layout ...** action.
- **Allow detaching editors from main window** - this option allows you to drag and drop an editor window outside of the main screen. This is useful especially when you are using two monitors and you want to view files in parallel.
  - 👉 **Note:** In case the main screen is maximized, you can not drag and drop an editor outside of it.
- **View tab placement** - specifies whether the View tab is presented at the top or bottom of the window;
- **Editor tab placement** - specifies whether the Editor tab is presented at the top or bottom of the window.

## Encoding

The **Encoding** preferences panel is opened from menu **Options > Preferences > Encoding**

The encoding preferences are the following:

- **Encoding for non XML files** - The default encoding used when the application opens non XML documents. This is necessary because non XML files have a large variety of formats and there is no standard mechanism for declaring the encoding that should be used for opening and saving the file. In case of XML files, the encoding is declared at the beginning of the file in a special declaration element or it is assumed to be the default value, which is UTF-8.
- **UTF-8 BOM handling** - Specifies how to handle the *Byte Order Mark* (BOM) when Oxygen XML Editor saves an UTF-8 XML document:
  - **Don't Write** - Do not save the BOM bytes. Loaded BOM bytes are ignored;
  - **Write** - Save the BOM bytes;
  - **Keep** - Do not alter the BOM declaration of the currently open file. This is the default option.
  - 👉 **Note:** The UTF-16 BOM is always preserved. UTF-32 documents have a *big-endian* byte order.
- **Encoding errors handling** - This option defines how to handle characters that cannot be represented in the specified encoding of the document when the document is opened. The available options are:
  - **REPORT** - Shows an error dialog box with the character that cannot be represented in the specified encoding. Unrecognized characters are rendered as an empty box. This is the default option.
  - **IGNORE** - The character is ignored and it is not included in the document displayed in the editor panel.
    - ⚠️ **Attention:** If you edit and save the document, the characters that cannot be represented in the specified encoding are dropped.
  - **REPLACE** - Replace the character with a standard replacement character. For example, if the encoding is UTF-8, the replacement character has the Unicode code `FFFD`, and if the encoding is ASCII, the replacement character code is `63`.

👉 **Note:** The default encoding for RNC files is considered UTF-8.

## Editor

The **Editor** preferences panel is opened from menu **Options > Preferences > Editor**.

Use these options to configure the visual aspect of the text editor.

The following options are available:

- **Selection background color** - Background color of selected text.

- **Selection foreground color** - Text color of selected text.
- **Completion proposal background** - Background color of the content completion assistant window.
- **Completion proposal foreground** - Foreground color of the content completion assistant window.
- **Documentation window background** - Background color of the window containing documentation for the elements suggested by the content completion assistant.
- **Documentation window foreground** - Foreground color for the window containing documentation for the elements suggested by the content completion assistant.
- **Find highlight color** - Color of the highlights generated by the **Find** and **Find all** actions.
- **XPath highlight color** - Color of the highlights generated when you run an XPath expression.
- **Declaration highlight color** - Color of the highlights generated by the **Find declaration** action.
- **Reference highlight color** - Color of the highlights generated by the **Find reference** action.
- **Maximum number of highlights** - The maximum number of highlights that Oxygen XML Editor displays.
- **Show TAB/NBSP/EOL/EOF marks** - Marks the *TAB/NBSP/EOL/EOF* characters using small icons, for a better visualization of the document. Also sets the marks color.
  - **Show SPACE marks** - marks each space with a light grey dot.



**Note:** You can change the color of the dots from the colors palette of the **Show TAB/NBSP/EOL/EOF marks** option.

- **Can edit read only files** - Read-only files are marked in Oxygen XML Editor using a lock icon on the file tab. If this option is checked, you are able to modify a read-only file, but you cannot overwrite it when trying to save the file. If unchecked, any modification to the content is prohibited.
- **Indent with tabs** - When checked, sets the indent size to a *tab* unit. When unchecked, the application uses space characters to form an indent. The number of space characters that form a *tab* is defined by the **Indent size** option.
- **Undo history size** - Sets the maximum amount of undo operations you can perform in either of the editor modes (Text, Author, Design, Grid).

## Print

To open the **Print** preferences page, go to **Options > Preferences > Editor > Print**. This page allows you to customize the information printed on the header and footer of a page. These settings do not apply to the **Grid** and **Schema Diagram** modes.

You can customize the information printed in the one-row header and footer of a page. The following options are available:

- **Left, Middle** and **Right** area of the header and footer. Here you can write a pattern of the text printed in the header and footer of the page. You can use the following editor variables to write the text pattern:
  - **`\${currentFileURL}** - Current file as URL, that is the absolute file path of the current edited document represented as URL.
  - **`\${cfne}** - Current file name with extension.
  - **`\${cp}** - Current page number.
  - **`\${tp}** - Total number of pages in the document.
  - **`\${env(VAR\_NAME)}** - Value of the *VAR\_NAME* environment variable. The environment variables are managed by the operating system. If you are looking for Java System Properties, use the **`\${system(var.name)}** editor variable.
  - **`\${system(var.name)}** - Value of the *var.name* Java system property. The Java system properties can be specified in the command line arguments of the Java runtime as `-Dvar.name=value`. If you are looking for operating system environment variables, use the **`\${env(VAR\_NAME)}** editor variable instead.
  - **`\${date(pattern)}** - Current date. Follows the given pattern. Example: yyyy-MM-dd.



**Note:** As an example, to show the current page number against the total number of pages in the top right corner of the page, write the following pattern in the **Right** text area of the **Header** section: ``${cp} from `${tp}`.

- **Color** - Text color.
- **Font** - Font type. Default is `SansSerif`.

To edit this fields use the **Choose** and **Reset** buttons. The **Choose** button opens a dialog that allows you to configure the **Font family**, the **Font size** and whether the text is rendered bold. A preview window is also available. The **Reset** button restores the setting to their default values.

- **Underline/Overline** - When selected, a separator line is drawn between the header/footer and the page content.

## Edit modes

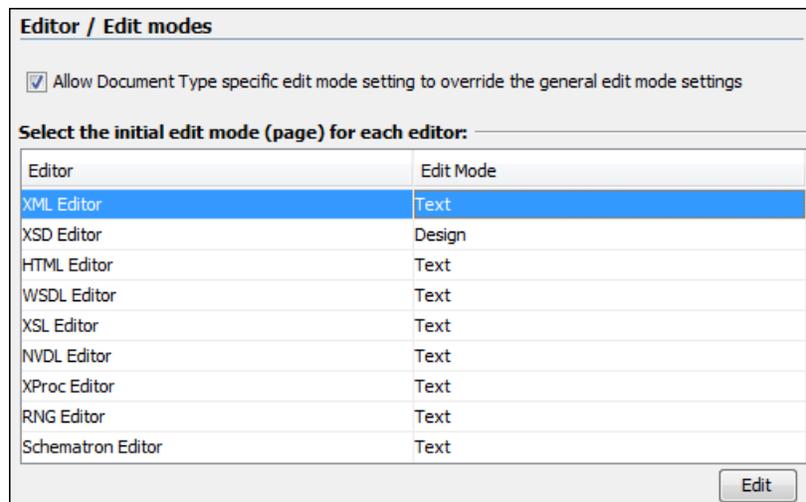
The **Edit modes** preferences panel is opened from menu **Options > Preferences > Editor > Edit modes** and allows you to select the initial edit mode for an editor. The mode in which a file was edited in the previous session is saved and is used when the application is restarted and the file reopened.

If the checkbox **Allow Document Type specific edit mode setting to override the general mode setting** is checked, the initial edit mode setting from *the Document Type dialog* overrides the general edit mode setting from the table below.

The initial edit mode of each editor type has one of the following values:

- Text
- Author
- Grid
- Design (available only for the W3C XML Schema editor)

The Oxygen XML Editor Edit modes Preferences Panel



## Text

To open the Text preferences page, go to **Options > Preferences > Editor > Edit modes > Text** .

The following preferences are available:

- **Editor background color** - Background color of the **Text** editing mode, **Diff Files** editors and **Outline** view.
- **Editor caret color** - Customize the caret color.
- **Highlight current line** - Foreground color of the line numbers displayed in the editor panels.
- **Show line numbers** - Enables the line numbers stripe in the editor panels and in the **Results** view of the Debugger perspective.
- **Show print margin** - In conjunction with the **Print margin column** option, allows you to set a safe print limit in the form of a vertical line displayed in the right side of the editor pane. You can also customize the print margin line color.
  - **Print margin column** - Safe print limit width measured in characters.

- **Line wrap** - Enables *soft wrap* of long lines, that is automatically wrap lines in edited documents. The document content is unaltered as the application does not use newline characters to break long lines.

 **Note:** When you enable the **Line wrap** option, Oxygen XML Editor disables the **Highlight current line** option.

- **Cut / Copy whole line when nothing is selected** - Enables the *Cut* and *Copy* actions when nothing is selected in the editor. In this case the *Cut* and *Copy* actions operate on the entire current line.
- **Enable folding** - Displays the vertical stripe that holds the *folding markers*.
- **Display quick assist notification icon** - Displays the *Quick Assist* yellow bulb icon in the editor line number stripe.
- **Highlight matching tag** - If you place the cursor on a start or end tag, Oxygen XML Editor highlights the corresponding member of the pair. You can also customize the highlight color.
- **Lock the XML tags** - Default tag locking state of the opened editors. For more information, see the [Locking and Unlocking XML markup](#) section.

### Text Diagram

The following options are available:

- **Show Full Model XML Schema diagram** - If this option is enabled the *old synchronized version* of the schema diagram is available in the Text mode for XML Schemas. For editing in the schema diagram, you can use the *new schema diagram* editor mode.

 **Note:** When handling very large schemas, the Schema Diagram might affect the performance of your system. In such cases, disabling the schema diagram view improves the speed of navigation through the edited schema.

 **Note:** This option is unchecked by default.

- **Enable Relax NG diagram and related views** - This option enables the Relax NG schema diagram and synchronization with the related views (**Attributes, Model, Elements, Outline**).
- **Show Relax NG diagram** - Displays the Relax NG schema diagram in **Full Model View** and **Logical Model View**.
- **Enable NVDL diagram and related views** - This option enables the NVDL schema diagram and synchronization with the related views (**Attributes, Model, Elements, Outline**).
- **Show NVDL diagram** - Displays the NVDL schema diagram in **Full Model View** and **Logical Model View**.
- **Location relative to editor** - Sets the location of the schema diagram panel in the editing relative to the diagram **Text** editor.

### Grid

The **Grid** preferences panel is opened from menu **Options > Preferences > Editor > Edit modes > Grid**.

The following preferences are available:

- **Compact representation** - If checked, a more *compact representation* of the grid is used: a child element is displayed at the same height level with the parent element.

 **Note:** In the *non-compact representation*, a child element is presented nested with one level in the parent container, one row lower than the parent.

- **Format and indent when passing from grid to text or on save** - The content of the document is formatted by applying the *Format and Indent* action on every switch from the **Grid** editor to the **Text** editor of the same document.
- **Default column width (characters)** - The default width in characters of a table column of the grid. A column can hold:
  - element names;
  - element text content;
  - attribute names;
  - attribute values.

If the total width of the grid structure is too large you can resize any column by dragging the column margins with the mouse pointer, but the change is not persistent. To make it persistent, set the new column width with this option.

- **Active cell color** - Background color for the active cell of the grid. There is only one active cell at a time. The keyboard input always goes to the active cell and the selection always contains it.
- **Selection color** - Background color for the selected cells of the grid except the active cell.
- **Border color** - The color used for the lines that separate the grid cells.
- **Background color** - The background color of grid cells that are not selected.
- **Foreground color** - The text color of the information displayed in the grid cells.
- **Row header colors - Background color** - The background color of row headers that are not selected.
- **Row header colors - Active cell color** - The background color of the row header cell that is currently active.
- **Row header colors - Selection color** - The background color of the header cells corresponding to the currently selected rows.
- **Column header colors - Background color** - The background color of column headers that are not selected.
- **Column header colors - Active cell color** - The background color of the column header cell that is currently active.
- **Column header colors - Selection color** - The background color of the header cells corresponding to the currently selected columns.

The column headers are painted with two color gradients, one for the upper 1/3 part of the header and the other for the lower 2/3 part. The start and end colors of the first gradient are set with the first two color buttons. The start and end colors of the second gradient are set with the last two color buttons.

## Author

To open the **Author** preferences page, go to **Options > Preferences > Editor > Edit modes > Author**.

The following options are available:

- **Author default background color** - default background color of the Author editing mode. The `background-color` CSS property set in the CSS file associated with the current edited document overwrites this option.
- **Author default foreground color** - default foreground color of the Author editing mode. The `color` CSS property set in the CSS file associated with the current edited document overwrites this option.
- **Highlight elements near caret** - defines the background color of the element or elements at caret position.
- **Show caret position tooltip** - if enabled, the caret position information tooltip is displayed. More information about the position information tooltip can be found in the section [Position information tooltip](#). The documentation tooltip can be disabled from the [Annotations preferences panel](#).
- **Show placeholders for empty elements** - when enabled, placeholders are displayed for empty elements to make them clearly visible. A placeholder is rendered as a light grey box displaying the element name.
- **Show Author layout messages** - if enabled, all errors reported during layout creation are presented in the **Errors** view.
- **Show block range** - if enabled, a *block range indicator* is shown in a stripe located in the left side of the editor. The block range indicator is displayed as a heavy line that spans from the first line to the last line of the block.
- **Show comments** - shows comments of the documents you edit in **Author** mode.
- **Show processing instructions** - shows processing instructions of the documents you edit in **Author** mode.
- **Show doctype** - shows *doctype* sections of the documents you edit in **Author** mode.
- **Show very large images** - enables the very large (bigger than 6 megapixels) images support in Author mode. Disabled by default.



**Important:** If you enable this option and your document contains many such images, Oxygen XML Editor may consume all available memory, throwing an *OutOfMemory error*. This means that you need to restart the application after you increase the [available memory limit](#).

- **Display referred content (e.g.: entities, XInclude, DITA conref, etc.)** - when enabled, the references (like entities, XInclude, DITA conref) also display the content of the resources they refer. If you toggle this option while editing, reload the file for the modification to take effect. Enabled by default.
- **Format and indent** - here you can set the format and indent method that is applied when a document is saved in Author mode, or when switching the editing mode (from Text to Author or vice versa):

- **Only the modified content** - the **Save** operation only formats the nodes that were modified in Author mode.

The rest of the document preserves its original formatting. Selected by default.

- **The entire document** - the **Save** operation applies formatting to the entire document regardless of the nodes that were modified in Author mode.

If the **Apply also 'Format and Indent' action as in 'Text' edit mode** option is enabled, the content of the document is formatted by applying the **Format and Indent** rules from the [Editor/Format/XML](#) option page. In this case, the result of the **Format and indent** operation will be the same as when it is applied in **Text** editing mode.

- **Quick up/down navigation** - speeds up navigation when using up / down keys. The cursor jumps from line to line, without stopping at intermediate positions between element tags.
- **Tags display mode** - default display mode for element tags presented in **Author** mode. You can choose between:
  - **Full Tags with Attributes** - this mode reveals the entire XML markup, easing the transition from a Text based editing to an Author mode editing. Tags contain element names, attribute names, and attribute values.
  - **Full Tags** - displays name tags that enclose block and inline elements.
  - **Block Tags** - displays a mix of element name tags that enclose block elements and compact tags that enclose the inline elements.
  - **Inline Tags** - displays only name tags that enclose the inline elements.
  - **Partial Tags** - displays compact tags that enclose the inline elements.
  - **No Tags** - no tags are displayed. This representation is as close as possible to the document published content.
- **Tags background color** - allows you to configure the Author tags background color.
- **Tags foreground color** - allows you to configure the Author tags foreground color.

#### *Schema Aware*

To open the **Schema Aware** preferences page, go to **Options > Preferences > Editor > Edit modes > Author > Schema aware**.

- **Schema aware normalization, format, and indent**

When opening a document in Author, white spaces can be normalized or removed in order to obtain a more compact display. The reverse process takes place when saving the document in the Author. By default this algorithm is controlled by the CSS `display` property.

If this option is checked, then this process will be schema aware so the algorithm will take into account if the element is declared as element-only or mixed. It will also take into account options **Preserve space elements**, **Default space elements**, **Mixed content elements** from option page [Options > Preferences > Editor > Format > XML](#)

- **Indent blocks-only content**

If checked, even if an element is declared in the schema as being mixed but it has a blocks-only content (as specified by the CSS property `display` of its children), it will be treated as being element-only.

- **Schema Aware Editing**

Editing in Author is schema driven.

- **On** - Enables all schema aware editing options.
- **Off** - Disables all schema aware editing options.
- **Custom** -
  - **Delete element tags with backspace and delete**

Controls the behavior for deleting element tags using delete or backspace keys. Available options:

- **Smart delete**

If the result of the delete action is invalid, different strategies will be applied in order to keep the document valid. If backspace / delete is pressed at the beginning / end of an element the action that should take place

is unwrap (the element will be deleted and its content will be put in its place). If its content is not accepted by the schema in that position, you can keep a valid document by applying different strategies like:

- Search for a preceding (backspace case)/following (delete case) element in which you can append that content.
- If the tag markers of the element to unwrap are not visible a caret move action in the delete action direction will be performed.

- **Reject action when its result is invalid**

If checked and the result of the delete action is invalid, the action will not be performed.

- **Paste and Drag and Drop**

Controls the behavior for paste and drag and drop actions. Available options:

- **Smart paste and drag and drop**

If the content inserted by a paste or drop action is not valid at the caret position, according to the schema, different strategies are applied to find an appropriate insert position, like:

- If the sibling element can accept the content, then a new element with the same name as the sibling is created in which the content will be inserted.
- You will iterate to the left or to the right of the insertion position, without leaving the current context, and try to insert the fragment in one of the encountered elements (that accepts the content to be inserted).

- **Reject action when its result is invalid**

If checked and the result of the paste or drop action is invalid, the action will not be performed.

- **Typing**

Controls the behavior that takes place when typing. Available options:

- **Smart typing**

If the typed character cannot be inserted at element from the caret position then a sibling element that can accept it will be searched for. If the sibling element can accept the content, then a new element with the same name as the sibling is created in which the content will be inserted.

- **Reject action when its result is invalid**

If checked and the result of the typing action is invalid, the action will not be performed.

- **Content Completion**

Controls the behavior that takes place when inserting elements using content completion. Available options:

- **Allow only insertion of valid elements and attributes**

If checked, only elements or attributes from the content completion proposals list can be inserted in the document through content completion.

- **Warn on invalid content when performing action**

A warning message will be displayed when performing an action that will result in invalid content. Available options:

- **Delete Element Tags**

If checked, when the *Delete Element Tags* action will result in an invalid content, a warning message will be displayed in which the user is asked if the operation should continue.

- **Join Elements**

If checked, when the *Join Elements* action will result in an invalid content, a warning message will be displayed in which the user is asked if the operation should continue.

- **Convert external content on paste**

If checked, Oxygen XML Editor preserves the formatting style when you paste content copied from external applications (like web browsers or Office-like applications). This option is enabled by default and applies only to the major document type frameworks (DocBook, DITA, TEI, XHTML) and to those customized to support the *content conversion on paste*.

If the Schema Aware Editing is **On** or **Custom** all actions that can generate invalid content will be forwarded first toward *AuthorSchemaAwareEditingHandler*.

### Review

To open the Author **Review** preferences page, go to **Options > Preferences > Editor > Edit modes > Author > Review**.

The available preferences are:

- **Author** - The name of the user who performs the changes when **Track Changes** is active for a given editor. This information is associated with each performed change;
- **Track Changes (applies for all authors):**
- **Initial State** - Controls the initial **Track Changes** state;
  - **Stored in document** - Recommended when multiple editors work on the same set of documents because the state of **Track Changes** (enabled/disabled) is kept in the edited document. When you open such a document and the **Store in document** option is active, if the `<?oxy_options track_changes="on"?>` processing instruction was saved in the document, the **Track Changes** is enabled. When this option is enabled and you open a document in the Author mode, the **Track Changes** state is restored from the previous use of the document. This means that if another user edited the document with **Track Changes** turned on before sending it to you, you will also have **Track Changes** switched on when you open it in the Author mode;
  - **Always On** - The **Track Changes** feature is active when you open a document;
  - **Always Off** - The **Track Changes** feature is inactive when you open a document;
-  **Note: Initial Track Changes State** options do not affect documents already open in the Author mode.
- **Inserted content color** - Sets the color used for marking the inserted content. This includes the font foreground and background, and the underline that decorates all inserted text:
  - **Auto** - Automatically assigns colors for the insert changes for each author name. Enabled by default;
  - **Custom** - Uses a custom color for all insert changes, regardless of the author name;
  - **Use same color for text foreground** - Uses the same color to paint the inserted text foreground
  - **Use same color for background** - Uses the same color for the insert text background. Use the slider to adjust the transparency level;
- **Deleted content color** - Sets the color used for marking the deleted content. This includes the font foreground and background, and the strike-through that decorates all deleted text:
  - **Auto** - Automatically assigns colors for the delete changes for each author name. Enabled by default;
  - **Custom** - Uses a custom color for all delete changes, regardless of the author name;
  - **Use same color for text foreground** - Uses the same color to paint the deleted text foreground;
  - **Use same color for background** - Uses the same color for the deleted text background. Use the slider to adjust the transparency level;
- **Commented color (applies for all authors)** - Sets the background color of the annotated text:
  - **Auto** - Automatically assigns colors for the annotated content for each author name. Enabled by default;
  - **Custom** - Use a custom color for all annotated content, regardless of the author name. Use the slider to control the transparency level.

## Callouts

To open the *Callouts* preferences page, go to **Options > Preferences > Editor > Edit modes > Author > Review > Callouts**. You can also open this preferences page from the contextual menu of a callout. To open the preferences page from the contextual menu, right click the callout and select **Callouts Options**.

This preferences page is divided in two sections. In the first section, you can choose what type of callouts Oxygen XML Editor displays. In the second section, you can customize the parameters of the callouts layout.

The options of the first section are:

- **Comments** - displays author review comment callouts and track changes comment callouts. This option is enabled by default;
- **Track Changes deletion** - enable this option to display deletion callouts;
  - **Show deleted content in callout** - enable this option to display the actual deleted content in the displayed callouts;
- **Track Changes insertion** - enable this option to display insertion callouts.
  - **Show inserted content in callout** - enable this option to display the actual inserted content in the displayed callouts;

The following options of the second section control the amount of information shown in each callout:

- **Show review time** - enable this option to display the date and time of an insertion, deletion, or comment insertion;
- **Show all connecting lines** - enable this option to display the connecting lines between targets and their corresponding callouts;
- **Callouts pane width (px)** - this drop-box specifies the width of a callout. The default value of the **Callouts pane width (px)** field is 200 pixels. Click the drop-box to modify its value.
- **Callouts text limit (characters)** - this drop-box specifies how many characters Oxygen XML Editor displays inside a callout. The default value of the **Callouts text limit (characters)** field is 160. Click the drop-box to modify its value.

### *Profiling / Conditional Text*

To open the Author **Profiling/Conditional Text** preferences page, go to **Options > Preferences > Editor > Edit modes > Author > Profiling/Conditional Text**.

This preferences page contains two sections that present the **profiling attributes** and the **profiling condition sets** defined for the supported document types. You can customize your *profiling attributes* and *condition sets*, or use the ones that Oxygen XML Editor comes predefined with.

In case you have two or more identically named entries that match the same document type, Oxygen XML Editor uses the one that is positioned highest in the table. Use the **Up / Down** buttons to change the priority of the entries.

The **Import from DITAVAL** button allows you to import profiling attributes from `.ditaval` files. You can merge these new profiling attributes with the existing ones, or replace them completely. The **Import from DITAVAL** dialog box contains two tables. The first one displays the attributes and values extracted from the `.ditaval` files and the second one the displays the already defined profiling attributes.

### *MathML*

To configure the *MathML* editor of the **Author** mode, go to **Options > Preferences > Editor > Edit modes > Author > MathML**. You can configure the following parameters:

- **Equation minimum font size** - the minimum size of the font used for rendering mathematical symbols;
- **MathFlow installation directory** - the installation folder where Oxygen XML Editor looks for *MathFlow* Components (the *MathFlow* SDK);
- **MathFlow license file** - the license for *MathFlow* Components (the *MathFlow* SDK);
- **MathFlow preferred editor** - a *MathML* formula can be edited in one of three editors of the *MathFlow* Components (*MathFlow* SDK): structure editor, style editor, and simple editor. More documentation is available on the [MathFlow SDK](#) website.

## Messages

The following options are available:

- **When opening a map** - Specifies the default behavior when trying to open a DITA Map file. You can choose between:
  - **Always open in the DITA Maps Manager** - A DITA Map file is always opened in the DITA Maps Manager view without asking for user confirmation.
  - **Always open as XML** - A DITA Map file is always opened in the XML editor panel without asking for user confirmation.
  - **Always ask** - You are prompted to choose between XML editor panel and DITA Maps Manager every time you try to open a DITA Map file. Selected by default.

## Schema Design

To open the **Schema Design** preferences page, go to **Options > Preferences > Editor > Edit modes > Schema Design**

The following options are available in the **Schema Design** preferences page:

- **Show annotation in the diagram** - displays the content of `xs:documentation` elements in the XML Schema **Design** view;
- **When trying to edit components from another schema** - specifies the default behavior when you try to edit a component from an imported schema. You can choose between:
  - **Always go to its definition** - edits the component definition in the imported file;
  - **Never go to its definition** - edits the component definition in the current file;
  - **Always ask** - you are always prompted to choose where you want to edit the component definition;
- **Zoom** - zoom factor of the XML Schema **Design** view. Choose between 25% and 300%, either as predefined steps or as custom values. Default value is 100%.

## Properties

You can decide to show additional properties for XML Schema components in the XML Schema **Design** view and customize the properties displayed for each schema component. For each component properties, you can decide if you want to display them only when having a specified value or all the time.

## Format

The **Format** preferences panel is opened from menu **Options > Preferences > Editor > Format**.

The following options are available:

- **Detect indent on open** - The editor detects the indent settings of the open XML document. This way you can correctly format (pretty-print) files that were created with different settings, without changing your options every time you edit such a file. Besides, you can activate the option for detecting the maximum line width used by the formatting and hard wrap mechanism. These features were designed to minimize the differences created by the **Format and Indent** operation when working with a versioning system, like CVS for example.



**Note:** If the document contains different-size indents, the application computes a weighted average value.

- **Indent with tabs** - When checked, sets the indent size to a *tab* unit. When unchecked, the application uses space characters to form an indent. The number of space characters that form a *tab* is defined by the **Indent size** option.
- **Indent size** - Sets the number of space characters or the tab size that equals a single indent. An *indent* can be a number of spaces or a tab, selectable using the **Indent With Tabs** option. For example, if set to 4, one tab equals:
  - either 4 space characters, if the **Indent With Tabs** option is unchecked;
  - or one tab that spans 4 characters, if the **Indent With Tabs** option is checked.
- **Hard line wrap** - When enabled, Oxygen XML Editor breaks the edited line automatically when its length exceeds the maximum set line width. This feature allows you to neatly edit a document.
- **Indent on Enter** - If enabled, Oxygen XML Editor indents the new line introduced when pressing the Enter key.

- **Enable Smart Enter** - If you press the Enter key between a start and an end tag, Oxygen XML Editor places the cursor in an indented position on the empty line formed between the start and end tag.
- **Detect line width on open** - Detects the line width automatically when the document is opened.
- **Format and indent the document on open** - When enabled, an XML document is formatted and indented before opening it in the editor panel. This option applies only to documents associated with the XML editor. This option does not apply to *read-only* documents when the *Can edit read only files* option is disabled.
- **Line width - Format and Indent** - Defines the point at which the **Format and Indent** (pretty-print) function performs hard line wrapping. For example, if set to 100, after a **Format and Indent** action, the longest line will have at most 100 characters.
- **Clear undo buffer before Format and Indent** - If checked, you cannot undo anymore editing actions that preceded the **Format and Indent** operation. Only modifications performed after you have performed the operation can be undone. Check this option if you encounter out of memory problems (**OutOfMemoryError**) when performing the **Format and Indent** operation.

## XML

The XML Format preferences panel is opened from menu **Options > Preferences > Editor > Format > XML**.

The following options are available:

- **Preserve empty lines** - The **Format and Indent** operation preserves all empty lines found in the document. Enabled by default.
- **Preserve text as it is** - The **Format and Indent** operation preserves text content as it is, without removing or adding any whitespace.
- **Preserve line breaks in attributes** - Line breaks found in attribute values are preserved. Enabled by default.



**Note:** When this option is enabled, **Break long lines** option is automatically disabled.

- **Break long attributes** - The **Format and Indent** operation breaks long attribute values.
- **Indent inline elements** - The *inline elements* are indented on separate lines if they are preceded by whitespaces and they follow another element start or end tag. Enabled by default. Example:

Original XML:

```
<root>
  text <parent> <child></child> </parent>
</root>
```

Indent inline elements enabled:

```
<root> text <parent>
  <child/>
</parent>
</root>
```

Indent inline elements disabled:

```
<root> text <parent> <child/> </parent> </root>
```

- **Expand empty elements** - The **Format and Indent** operation outputs empty elements with a separate closing tag, ex. `<a attr1="v1"></a>`. When not checked, the same operation represents an empty element in a more compact form: `<a attr1="v1"/>`.
- **Sort attributes** - The **Format and Indent** operation alphabetically sorts the attributes of an element.
- **Add space before slash in empty elements** - Inserts a space character before the trailing / and > of empty elements.
- **Break line before attribute's name** - **Format and Indent** operation breaks the line before the attribute name.
- **Element spacing** Here you can control how the application handles whitespaces found in XML content.
  - **Preserve space** - List of elements for which the **Format and Indent** operation preserves the whitespaces (like blanks, tabs, and newlines). The elements can be specified by name or by XPath expressions:
    - elementName
    - //elementName

- /elementName1/elementName2/elementName3
- //xs:localName

The namespace prefixes like `xs` are treated as part of the element name without taking into account its binding to a namespace.

- **Default space** - This list contains the names of the elements for which contiguous whitespaces are merged by the **Format and Indent** operation into one blank character.
- **Mixed content** - The elements from this list are treated as mixed when applying the **Format and Indent** operation. The lines are split only when whitespaces are encountered.
- **Schema aware format and indent** - The **Format and Indent** operation takes into account the schema information regarding the *space preserve*, *mixed*, or *element only* properties of an element. Enabled by default.
- **Indent (when typing) in preserve space elements** - *Preserve space* elements (identified by the `xml:space` attribute set to `preserve` or by their presence in the **Preserve space** elements list) are normally ignored by the **Format and Indent** operation. When this option is enabled and you are editing one of these elements, its content is formatted.
- **Indent on paste - sections with number of lines less than 300** - When you paste a chunk of text that has less than 300 lines, the inserted content is indented. If you want to keep the indent style of the document you are copying content from, disable this option.

### Whitespaces

This panel displays the special whitespace characters of Unicode. Any character that is checked in this panel is considered whitespace that can be normalized in an XML document. The whitespaces are normalized in any of the following cases:

- when the **Format and Indent** action is applied on an XML document;
- when you switch from **Text** mode to **Author** mode;
- when you switch from **Author** mode to **Text** mode;

The characters with the codes 9 (TAB), 10 (LF), 13 (CR) and 32 (SPACE) are always in the group of whitespace characters that must be normalized so they are always enabled in this panel.

### CSS

The CSS Format preferences panel is opened from menu **Options > Preferences > Editor > Format > CSS**.

The following options control the behavior of the **Format and Indent** operation:

- **Indent class content** - The *class* content is indented. Enabled by default.
- **Class body on new line** - The *class* body (including the curly brackets) is placed on a new line.
- **Add new line between classes** - An empty line is added between two classes.
- **Preserve empty lines** - The empty lines from the CSS content are preserved. Enabled by default.
- **Allow formatting embedded CSS** - The CSS content embedded in XML is formatted when the XML content is formatted. Enabled by default.

### JavaScript

To open the **JavaScript** format preferences panel, go to **Options > Preferences > Editor > Format > JavaScript**.

The following options control the behavior of the **Format and Indent** action:

- **Start curly brace on new line** - opening curly braces start on a new line;
- **Preserve empty lines** - empty lines in the JavaScript code are preserved. This option is enabled by default;
- **Allow formatting embedded JavaScript** - applied only to XHTML documents, this option allows Oxygen XML Editor to format embedded JavaScript code, taking precedence over the *Schema aware format and indent* option. This option is enabled by default.

### Content Completion

The *content completion feature* enables inline syntax lookup and auto completion of mark-up elements and attributes to streamline mark-up and reduce errors while editing. These settings define the operating mode of the content assistant.

The **Content Completion** preferences panel is opened from menu **Options > Preferences > Editor > Content Completion**.

The following options are available:

- **Auto close the last opened tag** - Oxygen XML Editor closes the last open tag when you type `</`.
- **Automatically rename/delete matching tag** - Oxygen XML Editor automatically mirrors the matching end tag when you modify or delete the name of the start tag.
- **Use content completion** - Activates the content completion assistant. Enabled by default.
- **Close the inserted element** - When you choose an entry from the content completion assistant list of proposals, Oxygen XML Editor inserts both start and end tags.
  - **If it has no matching tag** - The end tag of the inserted element is automatically added only if it is not already present in the document.
  - **Add element content** - Oxygen XML Editor inserts the required elements specified in the DTD, XML Schema, or RELAX NG schema that is *associated with the edited XML document*. This option is applied also in the **Author** mode of the XML editor.
    - **Add optional content** - Oxygen XML Editor inserts the optional elements specified in the DTD, XML Schema, or RELAX NG schema. This option is applied also in the **Author** mode of the XML editor.
    - **Add first Choice particle** - Oxygen XML Editor inserts the first **choice** particle specified in the DTD, XML Schema, or RELAX NG schema. This option is applied also in the **Author** mode of the XML editor.
- **Case sensitive search** - The search in the content completion assistant window when you type a character is case-sensitive ('a' and 'A' are different characters). This option is applied also in the **Author** mode of the XML editor.
- **Cursor position between tags** - When enabled, Oxygen XML Editor sets the cursor automatically between start and end tag for:
  - elements with only optional attributes or no attributes at all;
  - elements with required attributes, but only when the **Insert the required attributes** option is disabled.
- **Show all entities** - Oxygen XML Editor displays a list with all the internal and external entities declared in the current document when the user types the start character of an entity reference (i.e. `&`).
- **Insert the required attributes** - Oxygen XML Editor inserts automatically the required attributes taken from the DTD or XML Schema. This option is applied also in the **Author** mode of the XML editor.
- **Insert the fixed attributes** - Oxygen XML Editor automatically inserts any `FIXED` attributes from the DTD or XML Schema for an element inserted with the help of the content completion assistant. This option is applied also in the **Author** mode of the XML editor.
- **Show recently used items** - When checked, Oxygen XML Editor remembers the last inserted items from the content completion assistant window. The number of items to be remembered is limited by the **Maximum number of recent items shown** list box. These most frequently used items are displayed on the top of the content completion window and are separated from the rest of the suggestions by a thin grey line. This option is applied also in the **Author** mode of the XML editor.
- **Maximum number of recent items shown** - Limits the number of recently used items presented at the top of the content completion assistant window. This option is applied also in the **Author** mode of the XML editor.
- **Learn attributes values** - Oxygen XML Editor learns the attribute values used in a document. This option is applied also in the **Author** mode of the XML editor.
- **Learn on open document** - Oxygen XML Editor automatically learns the document structure when the document is opened. This option is applied also in the **Author** mode of the XML editor.
- **Learn words (Dynamic Abbreviations, available on CTRL+SPACE)** - When checked, Oxygen XML Editor learns the typed words and makes them available in a content completion fashion by pressing **(CTRL+SPACE)**.
  -  **Note:** In order to be learned, the words need to be separated by space characters.
- **Activation delay of the proposals window (ms)** - Delay in milliseconds from last key press until the content completion assistant window is displayed.

## Annotations

The **Annotations** preferences panel is opened from menu **Options > Preferences > Editor > Content Completion > Annotations**.

The following preferences can be configured for the annotations of the elements and attributes displayed by the content completion assistant:

- **Show annotations** - Oxygen XML Editor displays the schema annotations of an element, attribute, or attribute value currently selected in the content completion assistant proposals list. This option is applied also in the **Author** mode of the XML editor.
- **Show annotations as tooltip** - Oxygen XML Editor shows the annotation of elements and attributes as a tooltip when the mouse pointer hovers over that element or attribute in the XML editor panel or in the **Elements** view (both *the Text editing mode one* and *the Author editing mode one*). This option is applied also in the **Author** mode of the XML editor.
- **Use DTD comments as annotation** - When enabled, Oxygen XML Editor uses all DTD comments as annotations. If this option is disabled, Oxygen XML Editor displays only special Oxygen XML Editor `doc:` comments, or if they are missing, it displays any other comment found in the DTD.
- **Use all Relax NG annotations as documentation** - When enabled, any element outside the Relax NG namespace, that is `http://relaxng.org/ns/structure/1.0`, is considered annotation and is displayed in the annotation window next to the content completion assistant window and in the **Model** view. When disabled, only elements from the Relax NG annotations namespace, that is `http://relaxng.org/ns/compatibility/annotations/1.0` are considered annotations.

## XSL

The XSL preferences panel defines what elements are suggested by the content completion assistant of the XSL editor in addition to the XSL elements. It is opened from menu **Options > Preferences > Editor > Content Completion > XSL**.

The following options are available:

- **Automatically detect XHTML transitional or Formatting objects** - Detects if the XSL uses the XHTML or FO schemas to drive the content completion assistant. Oxygen XML Editor analyzes the namespaces declared in the root element to find an appropriate schema.

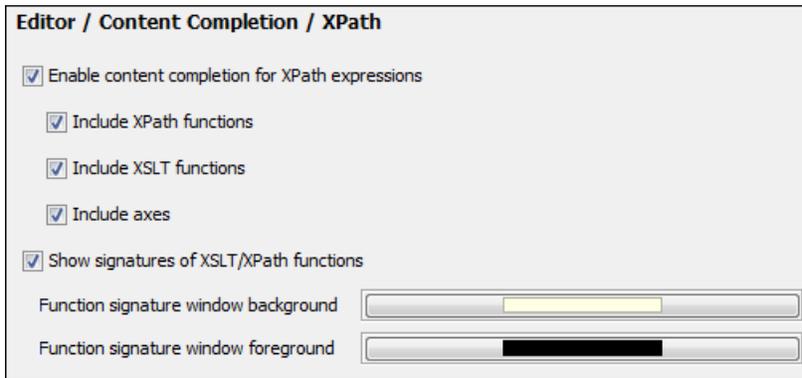
If the detection fails, Oxygen XML Editor uses one of the following options, depending on your choice:

- **None** - the content completion assistant offers only the XSL elements;
- **XHTML transitional** - the content completion assistant includes XHTML Transitional elements as substitutes for `xsl:element`;
- **Formatting objects** - the content completion assistant includes Formatting Objects (FO) elements as substitutes for `xsl:element`;
- **Custom schema** - the content completion assistant includes elements from a DTD, XML Schema, RNG schema, or NVDL schema for inserting elements from the target language of the stylesheet.

You can choose an additional schema which will be used for documenting XSL stylesheets. Either select the built-in schema or choose a custom one. Supported schema types are: XSD, RNG, RNC, DTD, and NDVL.

## XPath

The XPath preferences panel is opened from menu **Options > Preferences > Editor > Content Completion > XPath**.



**Figure 393: The Content Completion XPath Preferences Panel**

The following options are available:

- **Enable content completion for XPath expressions** - Enables *the content completion assistant in XPath expressions* entered in the XSL attributes `match`, `select`, and `test` and also in the XPath toolbar. Options are available to control if the XPath functions, XSLT functions and XSLT axes are presented in the content completion proposals list when editing XPath expressions.
- **Show signatures of XSLT / XPath functions** - If checked, the editor indicates in a tooltip helper the signature of the XPath function located at the caret position. See the *XPath Tooltip Helper* section for more information.
- **Function signature window background** - The background color of the tooltip window.
- **Function signature window foreground** - The foreground color of the tooltip window.

## XSD

These options define what elements are suggested by the content completion assistant, in addition to the ones from the XML Schema (defined by the `xs:annotation/xs:appinfo` elements).

The XSD preferences panel is opened from menu **Options > Preferences > Editor > Content Completion > XSD**.

The following options are available:

- **None** - The content completion assistant offers only the XML Schema schema information.
- **ISO Schematron** - The content completion assistant includes ISO Schematron elements in `xs:appinfo`.
- **Schematron 1.5** - The content completion assistant includes Schematron 1.5 elements in `xs:appinfo`.
- **Other** - The content completion assistant includes in `xs:appinfo` elements from an XML Schema identified by an URL.

## JavaScript

Oxygen XML Editor allows you to specify additional JavaScript files for the content completion assistant to take into account. To specify the additional JavaScript files, go to **Options > Preferences > Editor > Content Completion > JavaScript**. In this preferences page, you are able to configure the following options:

- **Enable content completion** - enables the content completion support for JavaScript files;
- **Use built-in libraries** - allows Oxygen XML Editor to include components (object names, properties, functions, and variables) collected from the built-in JavaScript library files;
- **Use defined libraries** - the libraries table allows you to define additional paths (URIs) to JavaScript files. Oxygen XML Editor scans these files for components.

 **Note:** The paths can contain editor variables such as `${pdu}`, or `${oxygenHome}`. You can make these paths relative to the project directory or installation directory.

## Colors

Oxygen XML Editor supports syntax highlight for XML, DTD, Relax NG (XML and Compact Syntax), Java, JavaScript / JSON, PHP, CSS, XQuery, C++, C, Perl, Properties, SQL, Shell and Batch documents. While Oxygen XML Editor

provides a default color configuration for highlighting the tokens, you can choose to customize it, using the Colors options panel.

The Colors options panel is opened from menu **Options > Preferences > Editor > Colors**.

Each document type has an associated set of tokens. When a document type node is expanded, the associated tokens are listed. For each token, you can customize the color and the font style. These properties are used in **Text** mode of the editor panel. The tokens for XML documents are used also in XSD, XSL, RNG documents.

 **Note:** The **Preview** area contains 4 tabs that allow you to preview XML, XSD, XSL, RNG sample files as they are rendered in Oxygen XML Editor.

When you do not know the name of the token that you want to configure, select a token by clicking directly on that type of token in the **Preview** area.

You can edit the following color properties of the selected token:

- **Foreground color** - The **Foreground** button opens a color dialog that allows setting the color properties for the selected token with one of the following color models: Swatches, HSB, or RGB.
  - **Swatches** - Displays a color palette containing a variety of colors from across the color spectrum and shades thereof. Select a color.
  - **HSB** - Hue, Saturation and Brightness (HSB) enables you to specify a color by describing it using hue, saturation, and brightness.
  - **RGB** - Red, Green and Blue (RGB) enables you to specify a color using triplets of red, green, and blue numbers.

 **Note:** You can also open the dialog for changing the foreground color of a token by double-clicking (or pressing *Enter*) on the tree node that corresponds to that token.

- **Background color** - The **Background** button opens the same color dialog as the **Foreground** button.
- **Bold style** - This checkbox enables the bold variant of the font for the selected token. This property is not applied to a bidirectional document.
- **Italic style** - This checkbox enables the italic variant of the font for the selected token. This property is not applied to a bidirectional document.

The **Enable nested syntax highlight** option controls if different content types mixed in the same file (like PHP, JS and CSS scripts inside an HTML file) are highlighted according with the color schemes defined for each content type.

### Elements / Attributes by Prefix

The **Elements / Attributes by Prefix** preferences panel is opened from menu **Options > Preferences > Editor > Colors > Elements / Attributes by Prefix**.

One row of the table contains the association between a namespace prefix and the properties to mark start tags and end tags, or attribute names in that prefix. Note that the marking mechanism does not look at the namespace bound to that prefix. If the prefix is bound to different namespaces in different XML elements of the same file, all the tags and attribute names with that prefix are marked with the same color.

You can edit the following color properties of the selected token:

- **Foreground color** - The **Foreground** button opens a color dialog that allows setting the color properties for the selected token with one of the following color models: Swatches, HSB, or RGB.
  - **Swatches** - Displays a color palette containing a variety of colors from across the color spectrum and shades thereof. Select a color.
  - **HSB** - Hue, Saturation and Brightness (HSB) enables you to specify a color by describing it using hue, saturation, and brightness.
  - **RGB** - Red, Green and Blue (RGB) enables you to specify a color using triplets of red, green, and blue numbers.

 **Note:** You can also open the dialog for changing the foreground color of a token by double-clicking (or pressing *Enter*) on the tree node that corresponds to that token.

- **Background color** - The **Background** button opens the same color dialog as the **Foreground** button.

You can choose that only the prefix is displayed with the selected color by enabling the **Draw only the prefix with a separate color** option.

## Open / Save

The **Open / Save** preferences panel is opened from menu **Options > Preferences > Editor > Open / Save**.

The following options are available:

- **When text from BIDI Unicode range is detected** - Allows you to choose the application behavior when you try to open a file that contains BIDI Unicode characters. You can choose between **Enable bidirectional editing mode**, **Disable bidirectional editing mode** and **Prompt for each document**.
- **Disable bidirectional support for documents larger than (Characters)** - When you try to open a document that exceeds the specified limit, the bidirectional editing mode is turned off, even if the **When text from BIDI Unicode range is detected** option is set to **Enable bidirectional editing mode**.
- **Safe save (only for local files)** - Option that provides an increased degree of protection in the unlikely event of a failure of the **Save** action. This mechanism creates a temporary file that holds the edited content until it is safely saved in the original file. If the **Save** action fails, the temporary file is kept in the system temporary folder, **OxygenXMLTemp** subfolder.
- **Make backup copy on save (only for local files)** - If enabled, a backup copy is made when saving the edited document. This option is available only for local files (files that are stored on the local file system). The default backup file extension is `.bak`, but you can change it as you prefer.
- **Enable automatic save** - When enabled, your document are saved automatically after a preset time interval.
- **Automatic save interval (minutes)** - Selects the interval in minutes between two automatic save actions.
- **Save all files before transformation or validation** - Saves all open files before validating or transforming an XML document. This way the dependencies are resolved, for example when modifying both the XML document and its XML Schema.
- **Check errors on save** - If enabled, Oxygen XML Editor checks your document for errors before saving it.
- **Save all files before calling external tools** - If enabled, all files are saved before executing an *external tool*.
- **Optimize loading in the Text edit mode for files over (MB)** - File loading is optimized for reduced memory usage for any file with a size larger than this value. This optimization is useful for being able to load and edit very large files, but it comes with *several restrictions* for memory-intensive operations.
- **Show warning when loading large documents** - A warning dialog is displayed when you try to load a very large file.
- **Optimize loading for documents with lines longer than (Characters)** - Line wrap is turned on for a document containing lines that exceed the length specified with this option. For a list of the restrictions applied to a document with long lines, see *the Editing Documents with Long Lines section*.
- **Show warning when loading documents with long lines** - If enabled, a warning dialog is displayed when you try to open a file that contains at least one line that exceeds the maximum line length specified in the previous option. The warning dialog informs you that line wrapping is turned on and some of the editing features are disabled. Another option is to *format and indent the document* after it is opened in the editor panel. For a list of the restrictions applied to a document with long lines, see the section about *formatting documents with long lines*.
- **Clear undo buffer on save** - If enabled, Oxygen XML Editor erases its undo stack when you save a document. Only modifications made after you have saved the document can be undone. Check this option if you encounter frequent *out of memory* problems (**OutOfMemoryError**) when editing very large documents.
- **Consider application bundles to be directories when browsing** - This option is available only on the Mac OS X platform. When checked, the file browser dialog allows browsing inside an application bundle as in a regular folder. When unchecked, the file browser dialog does not allow browsing inside an application bundle, as the Finder application does on Mac OS X. The same effect can be obtained by setting the property `apple.awt.use-file-dialog-packages` to `true` or `false` in the `Info.plist` descriptor file of the Oxygen XML Editor application:

```
<key>apple.awt.use-file-dialog-packages</key>
<string>>false</string>
```

## Templates

This panel groups the preferences that are related with code templates and document templates:

- [Code Templates](#)
- [Document Templates](#)

### Code Templates

Code templates are small document fragments that can be inserted quickly at the editing position and can be reused in other editing sessions. Oxygen XML Editor comes with a large set of ready-to use templates for XSL, XQuery, and XML Schema. You can even share your code templates with your colleagues using the template export and import functions.

To obtain the template list, use:

- The shortcut key that activates content completion assistant on request: **(Ctrl+Space)** on Windows and Linux, **(Cmd+Space)** on Mac OS X. It displays the code templates names in *the content completion assistant list* together with proposed element names.
- The shortcut key that activates code templates assistant on request: **(Ctrl+Shift+Space)** on Windows and Linux, **(Cmd+Shift+Space)** on Mac OS X. It displays only the code templates in the proposals list.

The **Code Templates** preferences panel is opened from menu **Options > Preferences > Editor > Templates > Code Templates**. It contains a list with all available code templates (both built-in and custom created ones) and a code preview area. You can disable any code template by unchecking its corresponding option box.

- **New** - Defines a new code template. You can choose to set the newly defined code template for a specific type of editor or for all editor types.
- **Edit** - Edits the selected code template.
- **Duplicate** - Creates a duplicate of the currently selected code template.
- **Delete** - Deletes the currently selected code template. This action is disabled for the built-in code templates.
- **Import** - Imports a file with code templates that was created by the **Export** action.
- **Export** - Exports a file with code templates.

### Document Templates

The list of document templates that are displayed in *the New dialog* can be extended with custom templates that are specified in the **Document Templates** preferences panel. Add the template files in a folder that is specified in this panel or in the `templates` folder of the Oxygen XML Editor install directory.

The **Document Templates** preferences panel is opened from menu **Options > Preferences > Editor > Templates > Document Templates**.

You can add new document template location folders and manage existing ones. You can also alter the order in which Oxygen XML Editor looks into these location folders by using the **Up** and **Down** buttons on a selected table row.

### Spell Check

The **Spell Check** preferences panel is opened from menu **Options > Preferences > Editor > Spell Check**.

The following options are available:

- **Spell checking engine** - The application ships with two spell check engines, *Hunspell* and *Java spell checker*. Each engine has a specific format of spelling dictionaries. The languages of the built-in dictionaries of the selected engine are listed in the **Default language** options list.



**Note:** In case you configured an additional location for the dictionaries that Oxygen XML Editor uses, the **Default language** option collects the languages both from the default and additional locations.

- **Automatic Spell Check** - When enabled, the spell checker highlights the errors as you modify the document.
- **Select editors** - Allows you to select the file types for which the automatic spell check takes effect. File types in which automatic spell check is generally not useful, like CSS and DTD, are excluded by default.

- **Spell check highlight color** - Use this option to set the color used by the spell check engine to highlight spelling errors.
- **Default language** - The default language list allows you to choose the language used by the spell check engine.
  - 👉 **Note:** You can *add more spelling dictionaries* to the spell check engines.
- **Use "lang" and "xml:lang" attributes** - If enabled, the contents of any element with one of the `lang` or `xml:lang` attributes is checked using a dictionary suitable for the language specified in the attribute value, if this dictionary is available. When these attributes are missing, the language used is controlled by the two radio buttons: **Use the default language** or **Do not check**.
- **XML spell checking in** - These options allow you to specify if the spell checker will be enabled inside XML comments, attribute values, text, and CDATA sections.
- **Case sensitive** - When enabled, spell checking reports capitalization errors, for example a word that starts with lowercase after *etc.* or *i.e.*.
- **Ignore mixed case words** - When enabled, operations do not check words containing mixed case characters (e.g. *SpellChecker*).
- **Ignore words with digits** - When enabled, the spell checker does not check words containing digits (e.g. *b2b*).
- **Ignore Duplicates** - When enabled, the spell checker does not signal two successive identical words as an error.
- **Ignore URL** - When enabled, ignores words looking like URL or file names (e.g. *www.oxygenxml.com* or *c:\boot.ini*).
- **Check punctuation** - When enabled, punctuation checking is enabled: misplaced white space and wrong sequences, like a dot following a comma, are highlighted as errors.
- **Allow compounds words** - When enabled, all words formed by concatenating two legal words with a hyphen (hyphenated compounds) are accepted. If the language allows it, two words concatenated without hyphen (closed compounds) are also accepted.
- **Allow general prefixes** - When enabled, a word formed by concatenating a registered prefix and a legal word is accepted. For example if *mini-* is a registered prefix, the spell check engine accepts the word *mini-computer*.
- **Allow file extensions** - When enabled, accepts any word ending with registered file extensions (e.g. *myfile.txt*, *index.html*, etc.).
- **Ignore acronyms** - When enabled, the acronyms are not reported as errors.
- **Ignore elements** - A list of XPath expressions for the elements that will be ignored by the spell check engine. The following restricted set of XPath expressions are supported:
  - '/' and '/' separators;
  - '\*' wildcard.

An example of allowed XPath expression: `/a/*b`.

## Dictionaries

To open the dictionaries preferences page, go to **Options > Preferences > Editor > Spell Check > Dictionaries**. This page allows you to configure the dictionaries that Oxygen XML Editor uses and to choose where to save new learned words.

The following options are available:

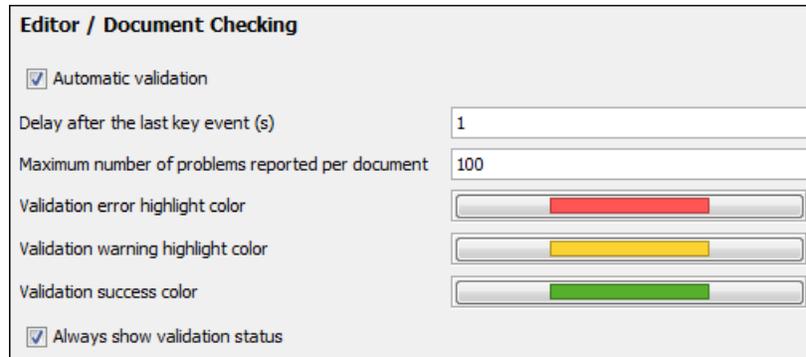
- **Dictionaries and term lists default folder** - specifies the default location where the dictionaries and term lists that Oxygen XML Editor uses are stored;
- **Include dictionaries and term list from** - specifies a location where you can store dictionaries and term lists, different from the default one;
  - 👉 **Note:** In case the additional location contains a file with the same name as one from the default location, the additional file is proffered.
  - 👉 **Note:** The spell checker takes into account term lists, collected both from the default and additional locations.
- **Save learned words in the following location** - specifies the target in which new learned words are saved;

- **Default** - the default location where the dictionaries and term lists are stored;
- **Custom** - a custom location where you can store dictionaries and term lists;
- **Delete learned words** - opens the list of learned words, allowing you to select the items you want to remove, without deleting the dictionaries and term lists.

 **Note:** These options are valid when Oxygen XML Editor uses the Hunspell spell checking engine.

## Document Checking

To open the **Document Checking** preferences page, go to **Options > Preferences > Editor > Document Checking**. This preferences page contains preferences for configuring how a document is checked for both well-formedness errors and validation errors.



**Figure 394: Document Checking Preferences Panel**

The error checking preferences are the following:

- **Maximum number of validation highlights** - If validation generates more errors than the number from this option only the first errors up to this number are highlighted in editor panel and on stripe that is displayed at right side of editor panel. This option is applied both for *automatic validation* and *manual validation*.
- **Validation error highlight color** - The color used to highlight validation errors in the document.
- **Validation warning highlight color** - The color used to highlight validation warnings in the document.
- **Validation success color** - The color used to highlight in the vertical ruler bar the success of the validation operation.
- **Always show validation status** - If this option is selected the line at the bottom of the editor panel which presents the current validation error or warning is always visible. This is useful to avoid scrolling problems when **Automatic validation** is enabled and the vertical scroll bar may change position due to displaying an error message while the document is edited.
- **Enable automatic validation** - Validation of edited document is executed in background as the document is modified by editing in Oxygen XML Editor.
- **Delay after the last key event (s)** - The period of keyboard inactivity which starts a new validation (in seconds).

## Mark Occurrences

The **Mark Occurrences** preferences panel is opened from menu **Options > Preferences > Editor > Mark Occurrences**:

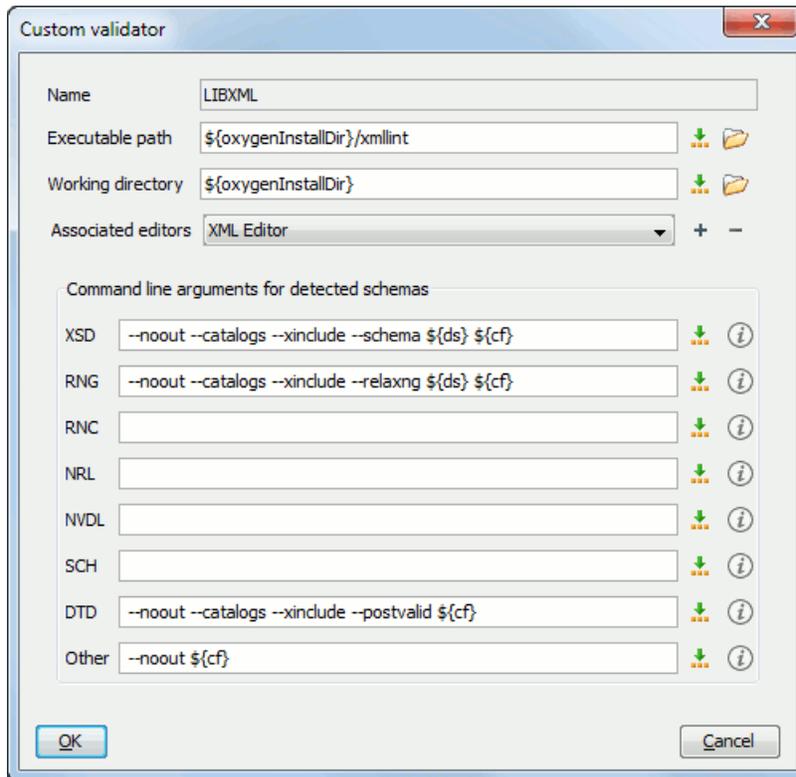
The following preferences can be set:

- **XSLT files** - activates the *Highlight Component Occurrences* in XSLT files;
- **XML Schema files** - activates the *Highlight Component Occurrences* in XSD files;
- **Declaration highlight color** - color used to highlight the component declaration;
- **Reference highlight color** - color used to highlight component references.

## Custom Validation Engines

The **Custom Validation Engines** preferences panel is opened from menu **Options > Preferences > Editor > Custom Validations**.

If you want to add a new custom validation tool or edit the properties of an existing one you can use the **Custom Validator** dialog displayed by pressing the **New** button or the **Edit** button.



**Figure 395: Edit a Custom Validator**

The configurable parameters of a custom validator are the following:

- **Name** - Name of the custom validation tool displayed in the **Custom Validation Engines** toolbar.
- **Executable path** - Path to the executable file of the custom validation tool. You can insert here *editor variables* like *\${home}*, *\${pd}*, *{\$oxygenInstallDir}*, etc.
- **Working directory** - The working directory of the custom validation tool.
- **Associated editors** - The editors which can perform validation with the external tool: the XML editor, the XSL editor, the XSD editor, etc.
- **Command line arguments for detected schemas** - Command line arguments used in the commands that validate the current edited file against different types of schema: W3C XML Schema, Relax NG full syntax, Relax NG compact syntax, NVDL, Schematron, DTD, etc.. The arguments can include any custom switch (like *-rng*) and the following editor variables:
  - **\${cf}** - Current file as file path, that is the absolute file path of the current edited document.
  - **\${cfu}** - The path of the current file as a URL.
  - **\${ds}** - The path of the detected schema as a local file path.
  - **\${dsu}** - The path of the detected schema as a URL.

### Increasing the stack size for validation engines

To prevent the appearance of a *StackOverflowException*, use one of the following methods:

- use the **com.oxygenxml.stack.size.validation.threads** property to increase the size of the stack for validation engines. The value of this property is specified in bytes. For example, to set a value of one megabyte specify  $1 \times 1024 \times 1024 = 1048576$ ;
- increase the value of the **-Xss** parameter.



**Note:** Increasing the value of the `-Xss` parameter affects all the threads of the application.

## CSS Validator

To open the **CSS Validator** preferences page, go to **Options > Preferences > CSS Validator**.

You can configure the following options for the built-in CSS validator of Oxygen XML Editor:

- **Profile** - Selects one of the available validation profiles: **CSS 1, CSS 2, CSS 2.1, CSS 3, CSS 3 with Oxygen extensions, SVG, SVG Basic, SVG Tiny, Mobile, TV Profile, ATSC TV Profile**. The profile **CSS 3 with Oxygen extensions** includes all the CSS 3 standard properties and the *CSS extensions specific for Oxygen* that can be used in *Author mode*. That means all Oxygen specific extensions are accepted in a CSS stylesheet by *the built-in CSS validator* when this profile is selected.
- **Media type** - Selects one of the available mediums: **all, aural, braille, embossed, handheld, print, projection, screen, tty, tv, presentation, oxygen**.
- **Warning level** - Sets the minimum severity level for reported validation warnings. Can be one of: **All, Normal, Most Important, No Warnings**.
- **Ignore properties** - Here you can type comma separated patterns that match the names of CSS properties that will be ignored at validation. As wildcards you can use:
  - \* to match any string;
  - ? to match any character.
- **Recognize browser CSS extensions (applies also to content completion)** - If checked, Oxygen XML Editor recognizes (no validation is performed) browser-specific CSS properties. The content completion assistant lists these properties at the end of its list, prefixed with the following particles:
  - `-moz-` for Mozilla;
  - `-ms-` for Internet Explorer;
  - `-o-` for Opera;
  - `-webkit-` for Safari/Webkit.

## XML

This section describes the panels that contain the user preferences related with XML.

### XML Catalog

To open the **XML Catalog** preferences page, go to **Options > Preferences > XML > XML Catalog**.

The following options are available:

- **Prefer** is used for specifying if Oxygen XML Editor tries to resolve first the PUBLIC or SYSTEM reference from the DOCTYPE declaration of the XML document. If PUBLIC is preferred and a PUBLIC reference is not mapped in any of the XML catalogs then a SYSTEM reference is looked up.
- When using catalogs it is sometimes useful to see what catalog files are parsed, if they are valid or not, and what identifiers are resolved by the catalogs. The **Verbosity** option selects the detail level of such logging messages of the XML catalog resolver that will be displayed in the **Catalogs** view at the bottom of the window:
  - **None** - No message is displayed by the catalog resolver when it tries to resolve a URI reference, a SYSTEM one or a PUBLIC one with the XML catalogs specified in this panel.
  - **Unresolved entities** - Only the logging messages that track the failed attempts to resolve references are displayed.
  - **All messages** - The messages of both failed attempts and successful ones are displayed.
- If **Resolve schema locations also through system mappings** is enabled, Oxygen XML Editor analyzes both *uri* and *system* mappings in order to resolve the location of schema.

- If **Process namespaces through URI mappings for XML Schema** is selected then the target namespace of the imported XML Schemas is resolved through the *uri* mappings. The namespace is taken into account only when the schema specified in the *schemaLocation* attribute was not resolved successfully.
- If the **Use default catalog** option is checked the first XML catalog which Oxygen XML Editor will use to resolve references at document validation and transformation will be a default built-in catalog. This catalog maps such references to the built-in local copies of the schemas of the Oxygen XML Editor frameworks: DocBook, DITA, TEI, XHTML, SVG, etc.

You can also add or configure catalogs at framework level in the *Document Type Association* preferences page.

When you add, delete or edit an XML catalog to / from the list, reopen the currently edited files which use the modified catalog or run *the Validate action* so that the XML catalog changes take full effect.

## XML Parser

To open the **XML Parser** preferences page, go to **Options > Preferences > XML > XML Parser**.

The configurable options of the built-in XML parser are the following:

- **Enable parser caching (validation and content completion)** - enables re-use of internal models when validating and provides content completion in opened XML files which reference the same schemas (grammars) like DTD, XML Schema, RelaxNG.
- **Ignore the DTD for validation if a schema is specified** - Forces validation against a referred schema (W3C XML Schema, Relax NG schema) even if the document includes also a DTD DOCTYPE declaration. This option is useful when the DTD declaration is used only to declare DTD entities and the schema reference is used for validation against a W3C XML Schema or a Relax NG schema.



**Note:** Schematron schemas are treated as additional schemas. The validation of a document associated with a DTD and referring a Schematron schema is executed against both the DTD and the Schematron schema, regardless of the value of the **Ignore the DTD for validation if a schema is specified** option.

- **Enable XInclude processing** - Enables XInclude processing. If checked, the XInclude support in Oxygen XML Editor is turned on for validation, rendering in Author mode and transformation of XML documents.
- **Base URI fix-up** - According to the specification for XInclude, processors must add an `xml:base` attribute to elements included from locations with a different base URI. Without these attributes, the resulting infoset information would be incorrect.

Unfortunately, these attributes make XInclude processing not transparent to Schema validation. One solution to this is to modify your schema to allow `xml:base` attributes to appear on elements that might be included from different base URIs.

If the addition of `xml:base` and / or `xml:lang` is undesired by your application, you can disable base URI fix-up.

- **Language fix-up** - The processor will preserve language information on a top-level included element by adding an `xml:lang` attribute if its include parent has a different [language] property. If the addition of `xml:lang` is undesired by your application, you can disable the language fix-up.

## XML Schema

To open the **XML Schema** preferences page, go to **Options > Preferences > XML > XML Parser > XML Schema**.

This preferences page allows you to configure the following options:

### Xerces validation features

- **Default XML Schema version** - allows you to select the version of W3C XML Schema: XML Schema 1.0 or XML Schema 1.1;
- **Default XML Schema validation engine** - allows you to set the default XML Schema validation engine either to Xerces, or to Saxon EE;

- **Enable full schema constraint checking** (<http://apache.org/xml/features/validation/schema-full-checking>) - sets the *schema-full-checking* feature to true. This enables a validation of the parsed XML document against a schema (W3C XML Schema or DTD) while the document is parsed;
- **Enable honour all schema location feature** (<http://apache.org/xml/features/honour-all-schema-location>) - sets the *honour-all-schema-location* feature to true. All the files that declare W3C XML Schema components from the same namespace are used to compose the validation model. In case this option is disabled, only the first W3C XML Schema file that is encountered in the XML Schema import tree is taken into account;
- **Enable XSD 1.1 CTA full XPath 2.0 checking** (<http://apache.org/xml/features/validation/cta-full-xpath-checking>) - controls whether full XPath or an XPath subset is used to evaluate CTA instructions for XSD 1.1;
- **Enable comments and PIs in XDM model, for XSD 1.1 assertion processing** (<http://apache.org/xml/features/validation/assert-comments-and-pi-checking>) - controls whether comments and processing instructions are visible to the XPath expression used to define an assertion for XSD 1.1;

### Saxon validation features

- **Multiple schema imports** - forces `xs:import` to fetch the referenced schema document. By default, the `xs:import` fetches the document only if no schema document for the given namespace has already been loaded. With this option in effect, the referenced schema document is loaded unless the absolute URI is the same as a schema document already loaded;
- **Assertions can see comments and processing instructions** - controls whether comments and processing instructions are visible to the XPath expression used to define an assertion. By default (unlike Saxon 9.3), they are not made visible.

### Relax NG

To open the **Relax NG** preferences page, go to **Options > Preferences > XML > XML Parser > Relax NG**.

The following options are available in this page:

- **Check feasibly valid** - checks whether Relax NG documents can be transformed into valid documents by inserting any number of attributes and child elements anywhere in the tree;



**Note:** Enabling this option disables the **Check ID/IDREF** option.

- **Check ID/IDREF** - checks the ID/IDREF matches when a Relax NG document is validated;
- **Add default attribute values** - default values are given to the attributes of documents validated using Relax NG. These values are defined in the Relax NG schema.

### Schematron

To open the **Relax NG** preferences page, go to **Options > Preferences > XML > XML Parser > Relax NG**.

The following options are available in this preferences page:

- **Schematron XPath Version** - selects the version of XPath for the expressions that are allowed in Schematron assertion tests: 1.0 or 2.0. This option is applied both in standalone Schematron schemas and in embedded Schematron rules, both in Schematron 1.5 and in ISO Schematron;
- **Optimize (visit-no-attributes)** - in case your ISO Schematron assertion tests do not contain the attributes axis you should check this option for faster ISO Schematron validation;
- **Allow foreign elements (allow-foreign)** - enables support for `allow-foreign` on ISO Schematron. This option is used to pass non-Schematron elements to the generated stylesheet;
- **Use Saxon EE (schema aware) for xslt2 query binding** - when enabled, Saxon EE is used for `xslt2` query binding. In case this option is disabled, Saxon PE is used.

### XML Instances Generator

The **XML Instances Generator** preferences panel is opened from menu **Options > Preferences > XML > XML Instances Generator**. It sets the default parameters of the **Generate Sample XML Files** tool that is available on the **Tools** menu.

The options of the tool that generates XML instance documents based on a W3C XML Schema are the following:

- **Generate optional elements** - If checked, the elements declared optional in the schema will be generated in the XML instance.
- **Generate optional attributes** - If checked, the attributes declared optional in the schema will be generated in the XML instance.
- **Values of elements and attributes** - Specifies what values are generated in elements and attributes of the XML instance. It can have one of the values:
  - **None** - no values for the generated elements and attributes
  - **Default** - the value is the element name or attribute name
  - **Random** - a random value
- **Preferred number of repetitions** - The number of repetitions for an element that has a big value of the `maxOccurs` attribute.
- **Maximum recursivity level** - For recursive type definitions this parameter specifies the number of levels of recursive elements inserted in the parent element with the same name.
- **Type alternative strategy** - specifies how the element type alternatives are generated in the XML instance:
  - **First** - the first element type alternative whose XPath condition is true is used;
  - **Random** - a random element type alternative whose XPath condition is true is used;

 **Note:** In case no XPath condition is true, the default element type alternative is used.

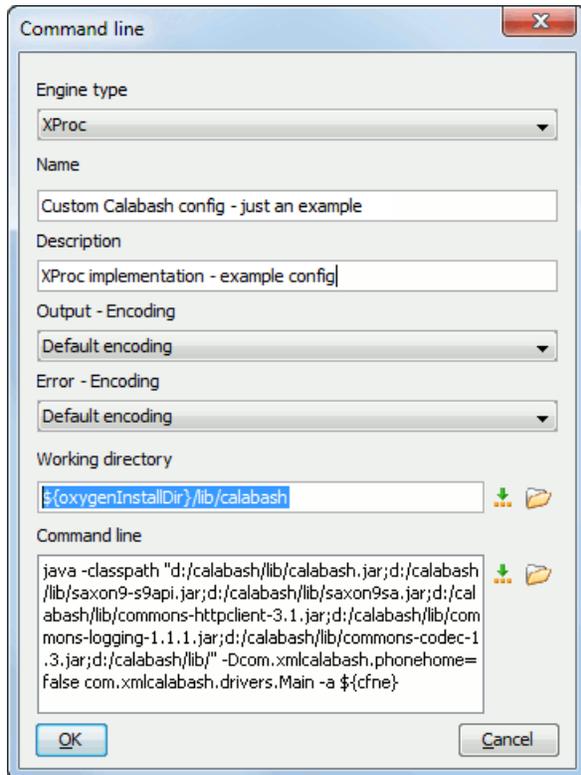
  -  **Note:** To evaluate an XPath expression, either the values of the attributes defined in the **Options** tab of the **XML Instance Generator** dialog, or the attributes values defined in the XML Schema are used.
- **Choice strategy** - For choice element models specifies what choice will be generated in the XML instance:
  - **First** - the first choice is selected from the choice definition and an instance of that choice is generated in the XML instance document.
  - **Random** - a random choice is selected from the choice definition and an instance of that will be generated.
- **Generate the other options as comments** - If checked, the other options of the choice element model (the options which are not selected) will be generated inside an XML comment in the XML instance.
- **Use incremental attribute / element names as default** - If checked, the value of an element or attribute starts with the name of that element or attribute. For example, for an `a` element the generated values are: `a1`, `a2`, `a3`, etc. If not checked, the value is the name of the type of that element / attribute, for example: `string`, `decimal`, etc.
- **Maximum length** - The maximum length of string values generated for elements and attributes.
- **Discard optional elements after nested level** - The optional elements that exceed the specified nested level are discarded. This option is useful for limiting deeply nested element definitions that can quickly result in very large XML documents.

## XProc Engines

Oxygen XML Editor comes with a built-in XProc engine called *Calabash*. An external XProc engine can be configured in this panel.

When **Show XProc messages** is selected all messages emitted by the XProc processor during a transformation will be presented in the results view.

For an external engine the value of the **Name** field will be displayed in the XProc transformation scenario and in the command line that will start it.



**Figure 396: Creating an XProc external engine**

Other parameters that can be set for an XProc external engine are the following: , and the error stream of the engine, the working directory of the command that will start the engine. The encodings will be used for reading and displaying the output of the engine. The working directory and

- a textual description that will appear as tooltip where the XProc engine will be used;
- the encoding for the output stream of the XProc engine, used for reading and displaying the output messages;
- the encoding for the error stream of the XProc engine, used for reading and displaying the messages from the error stream;
- the working directory for resolving relative paths;
- the command line that will run the XProc engine as an external process; the command line can use *built-in editor variables* and *custom editor variables* for parameterizing a file path.

 **Note:** You can configure the Saxon processor using the `saxon.config` file. For further details about configuring this file go to <http://www.saxonica.com/documentation/configuration/configuration-file.xml>.

 **Note:** You can configure Calabash using the `calabash.config` file.

## XSLT-FO-XQuery

The **XSLT/FO/XQuery** preferences panel is opened from menu **Options > Preferences > XML > XSLT/FO/XQuery**. This panel contains only the most generic options for working with XSLT / XSL-FO / XQuery processors. The more specific options are grouped in other panels linked as child nodes of this panel in the tree of the **Preferences** dialog.

There is only one generic option available:

**Create transformation temporary files in system temporary directory** - It should be selected only when the temporary files necessary for performing transformations are created in the same folder as the source of the transformation (the default behavior, when this option is not selected) and this breaks the transformation. An example of breaking the transformation is when the transformation processes all the files located in the same folder as the source of the transformation, which will include the temporary files, and the result is incorrect or the transformation fails due to this fact.

## XSLT

To open the **XSLT** preferences panel, go to **Options > Preferences > XML > XSLT/FO/XQuery > XSLT**.

Oxygen XML Editor gives you the possibility to use an XSLT transformer implemented in Java (other than the XSLT transformers that come bundled with Oxygen XML Editor). To use a different XSLT transformer, specify the name of the transformer factory class. Oxygen XML Editor sets this transformer factory class as the value of the Java property `javax.xml.transform.TransformerFactory`.

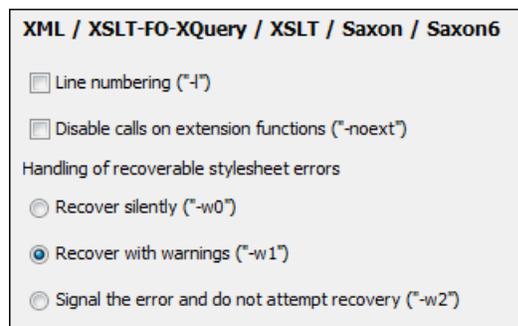
You can customize the following XSLT preferences:

- **Value** - Allows the user to enter the name of the transformer factory Java class.
- **XSLT 1.0 Validate with** - allows you to set the XSLT engine used for validation of XSLT 1.0 documents;
- **XSLT 2.0 Validate with** - allows you to set the XSLT Engine used for validation of XSLT 2.0 documents;
- **XSLT 3.0 Validate with** - allows you to set the XSLT Engine used for validation of XSLT 3.0 documents.

 **Note:** Saxon-HE does not implement any XSLT 3.0 features. Saxon-PE implements a selection of XSLT 3.0 (and XPath 3.0) features, with the exception of schema-awareness and streaming. Saxon-EE implements additional features relating to streaming (processing of a source document without constructing a tree in memory). For further details about XSLT 3.0 conformance, go to <http://www.saxonica.com/documentation/conformance/xslt30.xml>.

## Saxon6

The **Saxon 6** preferences panel is opened from menu **Options > Preferences > XML > XSLT/FO/XQuery > XSLT > Saxon > Saxon 6**.



**Figure 397: The Saxon 6 XSLT Preferences Panel**

The built-in Saxon 6 XSLT processor can be configured with the following options:

- **Line numbering** - If checked, line numbers are maintained and reported in error messages for the XML source document.
- **Disable calls on extension functions** - If checked, external functions called is disallowed. Checking this is recommended in an environment where untrusted stylesheets may be executed. Also disables user-defined extension elements, together with the writing of multiple output files, all of which carry similar security risks.
- **Handling of recoverable stylesheet errors** - Allows the user to choose how dynamic errors will be handled. Either one of the following options can be selected:
  - **recover silently** - continue processing without reporting the error,
  - **recover with warnings** - issue a warning but continue processing,
  - **signal the error and do not attempt recovery** - issue an error and stop processing.

## Saxon-HE/PE/EE

To open the **Saxon HE/PE/EE** preferences panel go to **Options > Preferences > XML > XSLT/FO/XQuery > XSLT > Saxon > Saxon HE/PE/EE**.

Oxygen XML Editor allows you to configure the following XSLT options for the Saxon 9.4.0.4 transformer (editions: Home Edition, Professional, and Enterprise):

- **Use a configuration file ("config")** - sets a Saxon 9 configuration file that is executed for XSLT transformation and validation processes;
- **Version warnings ("versmsg")** - warns you when the transformation is applied to an XSLT 1.0 stylesheet;
- **Line numbering ("-l")** - error line number is included in the output messages;
- **Debugger trace into XPath expressions (applies to debugging sessions)** - instructs the *XSLT Debugger* to step into XPath expressions;
- **Expand attributes defaults ("-expand")** - specifies whether the attributes defined in the associated DTD or XML Schema that have default values are expanded in output of the transformation you are executing;
- **DTD validation of the source ("-dtd")** - the following options are available:
  - **On** - requests *DTD-based* validation of the source file and of any files read using the `document()` function;
  - **Off** - (default setting) suppresses DTD validation;
  - **Recover** - performs DTD validation but treats the errors as non-fatal.



**Note:** Any external DTD is likely to be read even if not used for validation, because DTDs can contain definitions of entities.

- **Recoverable errors ("-warnings")** - policy for handling recoverable errors in the stylesheet: Allows you to choose how dynamic errors are handled. One of the following options can be selected:
  - **Recover silently ("silent")**;
  - **Recover with warnings ("recover")** - default setting;
  - **Signal the error and do not attempt recovery ("fatal")**.
- **Strip whitespaces ("-strip")** - strip whitespaces feature can be one of the following three options:
  - **All ("all")** - strips all whitespace text nodes from source documents before any further processing, regardless of any `xsl:strip-space` declarations in the stylesheet, or any `xml:space` attributes in the source document;
  - **Ignorable ("ignorable")** - strips all ignorable whitespace text nodes from source documents before any further processing, regardless of any `xsl:strip-space` declarations in the stylesheet, or any `xml:space` attributes in the source document. Whitespace text nodes are ignorable if they appear in elements defined in the DTD or schema as having element-only content;
  - **None ("none")** - default setting. No whitespaces are stripped before further processing. However, whitespace are stripped if this is specified in the stylesheet using `xsl:strip-space`.
- **Optimization level ("-opt")** - set optimization level. The value is an integer in the range 0 (no optimization) to 10 (full optimization); currently all values other than 0 result in full optimization but this is likely to change in the future. The default is full optimization; this feature allows optimization to be suppressed in cases where reducing compile time is important, or where optimization gets in the way of debugging, or causes extension functions with side-effects to behave unpredictably. (Note however, that even with no optimization, the lazy evaluation may still cause the evaluation order to be not as expected.)

The advanced options available only in Saxon PE / EE are:

- **Allow calls on extension functions ("-ext")** - If checked, the stylesheet is allowed to call external Java functions. This does not affect calls on integrated extension functions, including Saxon and EXSLT extension functions. This option is useful when loading an untrusted stylesheet, perhaps from a remote site using an `http://` URL; it ensures that the stylesheet cannot call arbitrary Java methods and thus gain privileged access to resources on your machine.

The advanced options available only in Saxon EE are:

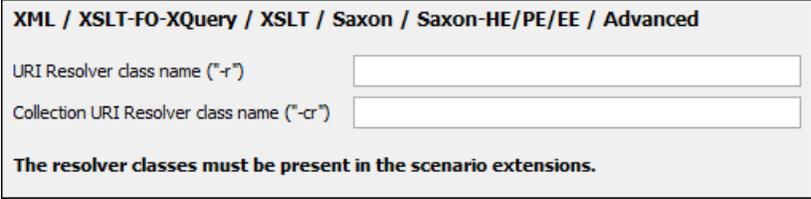
- **Validation of the source file ("-val")** - Requests schema-based validation of the source file and of any files read using the `document()` or similar functions. Validation is available only with Saxon-EE, and this flag automatically switches on the `-sa` option. Available options:
  - **Schema validation ("strict")** - This mode requires an XML Schema and specifies that the source documents should be parsed with schema-validation enabled.

- **Lax schema validation ("lax")** - This mode specifies if the source documents should be parsed with schema-validation enabled if an XML Schema is provided.
- **Disable schema validation** - This specifies that the source documents should be parsed with schema-validation disabled.
- **Validation errors in the results tree treated as warnings ("-outval")** - Normally, if validation of result documents is requested, a validation error is fatal. Enabling this option causes such validation failures to be treated as warnings.
- **Write comments for non-fatal validation errors of the result document** - The validation messages are written (where possible) as a comment in the result document itself.
- **Generate bytecode ("--generateByteCode:(on/off)")** - When you enable this option, Saxon-EE attempts to generate Java bytecode for evaluation of parts of a query or stylesheet that are amenable to such treatment. For further details regarding this option, go to [http://www.saxonica.com/documentation/javadoc/net/sf/saxon/lib/FeatureKeys.html#GENERATE\\_BYTE\\_CODE](http://www.saxonica.com/documentation/javadoc/net/sf/saxon/lib/FeatureKeys.html#GENERATE_BYTE_CODE).
- **Initializer class** - Equivalent with the `-init` Saxon command-line argument. The value is the name of a user-supplied class that implements the interface `net.sf.saxon.lib.Initializer`; this initializer is called during the initialization process, and may be used to set any options required on the [Configuration](#) programmatically. It is particularly useful for tasks such as registering extension functions, collations, or external object models, especially in Saxon-HE where the option cannot be set via a configuration file. Saxon only calls the initializer when running from the command line, but the same code may be invoked to perform initialization when running user application code.

 **Important:** The [advanced Saxon-HE/PE/EE options configured in a transformation scenario](#) overwrite the Saxon-HE/PE/EE options defined globally.

### Saxon HE/PE/EE Advanced

The **Saxon HE/PE/EE Advanced** preferences panel is opened from menu **Options > Preferences > XML > XSLT/FO/XQuery > XSLT > Saxon > Saxon HE/PE/EE > Advanced**.



**Figure 398: The Saxon HE/PE/EE XSLT Advanced Preferences Panel**

There are some advanced XSLT options which can be configured for the Saxon 9.4.0.4 transformer (all three editions: Home Edition, Professional Edition, Enterprise Edition):

- **URI Resolver class name ("-r")** - Allows the user to specify a custom implementation for the URI resolver used by the XSLT Saxon 9.4.0.4 transformer (the `-r` option when run from the command line). The class name must be fully specified and the corresponding jar or class extension must be configured from [the dialog for configuring the XSLT extension](#) for the particular transformation scenario.
- **Collection URI Resolver class name ("-cr")** - Allows the user to specify a custom implementation for the Collection URI resolver used by the XSLT Saxon 9.4.0.4 transformer (the `-cr` option when run from the command line). The class name must be fully specified and the corresponding jar or class extension must be configured from [the dialog for configuring the XSLT extension](#) for the particular transformation scenario.

### XSLTProc

The **XSLTProc** preferences panel is opened from menu **Options > Preferences > XML > XSLT/FO/XQuery > XSLT > XSLTProc**.

The options of the XSLTProc processor are the same as the ones available in the command line:

- **Enable XInclude processing** - If checked, XInclude references will be resolved when XSLTProc is used as transformer in [XSLT transformation scenarios](#).

- **Skip loading the document's DTD** - If checked, the DTD specified in the DOCTYPE declaration will not be loaded.
- **Do not apply default attributes from document's DTD** - If checked, the default attributes declared in the DTD and not specified in the document are not included in the transformed document.
- **Do not use Internet to fetch DTD's, entities or docs** - If checked, the remote references to DTD's and entities are not followed.
- **Maximum depth in templates stack** - If this limit of maximum templates depth is reached the transformation ends with an error.
- **Verbosity** - If checked, the transformation will output detailed status messages about the transformation process in the **Warnings** view.
- **Show version of libxml and libxslt used** - If checked, Oxygen XML Editor will display in the **Warnings** view the version of the **libxml** and **libxslt** libraries invoked by XSLTProc.
- **Show time information** - If checked, the **Warnings** view will display the time necessary for running the transformation.
- **Show debug information** - If checked, the **Warnings** view will display debug information about what templates are matched, parameter values, etc.
- **Show all documents loaded during processing** - If checked, Oxygen XML Editor will display in the **Warnings** view the URL of all the files loaded during transformation.
- **Show profile information** - If checked, Oxygen XML Editor will display in the **Warnings** view a table with all the matched templates, and for each template will display: the match XPath expression, the template name, the number of template modes, the number of calls, the execution time.
- **Show the list of registered extensions** - If checked, Oxygen XML Editor will display in the **Warnings** view a list with all the registered extension functions, extension elements and extension modules.
- **Refuses to write to any file or resource** - If checked, the XSLTProc processor will not write any part of the transformation result to an external file on disk. If such an operation is requested by the processed XSLT stylesheet the transformation ends with a runtime error.
- **Refuses to create directories** - If checked, the XSLTProc processor will not create any directory during the transformation process. If such an operation is requested by the processed XSLT stylesheet the transformation ends with a runtime error.

## MSXML

The MSXML preferences panel is opened from menu **Options > Preferences > XML > XSLT/FO/XQuery > XSLT > MSXML**.

The options of the MSXML 3.0 and 4.0 processors are the same as [the ones available in the command line for the MSXML processors](#):

- **Validate documents during parse phase** - If checked and either the source or stylesheet document has a DTD or schema against which its content can be checked, validation is performed.
- **Do not resolve external definitions during parse phase** - By default, MSXSL instructs the parser to resolve external definitions such as document type definition (DTD), external subsets or external entity references when parsing the source and style sheet documents. If this option is checked the resolution is disabled.
- **Strip non-significant whitespaces** - If checked, strips non-significant white space from the input XML document during the load phase. Enabling this option can lower memory usage and improve transformation performance while, in most cases, creating equivalent output.
- **Show time information** - If checked, the relative speed of various transformation steps can be measured:
  - the time to load, parse, and build the input document
  - the time to load, parse, and build the stylesheet document
  - the time to compile the stylesheet in preparation for the transformation
  - the time to execute the stylesheet
- **Start transformation in this mode** - Although stylesheet execution usually begins in the empty mode, this default may be changed by specifying another mode. Changing the start mode allows execution to jump directly to an alternate group of templates.

## MSXML.NET

The **MSXML.NET** preferences panel is opened from menu **Options > Preferences > XML > XSLT/FO/XQuery > XSLT > MSXML.NET**.

The options of the MSXML.NET processor are:

- **Enable XInclude processing** - If checked, XInclude references will be resolved when MSXML.NET is used as transformer in the *XSLT transformation scenario*.
- **Validate documents during parse phase** - If checked and either the source or stylesheet document has a DTD or schema against which its content can be checked, validation is performed.
- **Do not resolve external definitions during parse phase** - By default MSXML.NET resolves external definitions such as DTD external subsets or external entity references when parsing source XML document and stylesheet document. Using this option you can disable this behaviour. Note, that it may affect also the validation process for the XML document.
- **Strip non-significant whitespaces** - If checked, strips non-significant white space from the input XML document during the load phase. Enabling this option can lower memory usage and improve transformation performance while, in most cases, creating equivalent output.
- **Show time information** - If checked, the relative speed of various transformation steps can be measured:
  - the time to load, parse, and build the input document
  - the time to load, parse, and build the stylesheet document
  - the time to compile the stylesheet in preparation for the transformation
  - the time to execute the stylesheet
- **Forces ASCII output encoding** - There is a known problem with .NET 1.X XSLT processor (`System.Xml.Xsl.XslTransform` class): it doesn't support escaping of characters as XML character references when they cannot be represented in the output encoding. That means that when you output a character that cannot be represented in output encoding, it will be outputted as '?'. Usually this happens when output encoding is set to ASCII. With this option checked the output is forced to be ASCII encoded and all non-ASCII characters get escaped as XML character references (`&#nnnn`; form).
- **Allow multiple output documents** - This option allows to create multiple result documents using *the `exsl:document extension element`*.
- **Use named URI resolver class** - This option allows to specify a custom URI resolver class to resolve URI references in `xsl:import` and `xsl:include` instructions (during XSLT stylesheet loading phase) and in `document()` function (during XSL transformation phase).
- **Assembly file name for URI resolver class** - The previous option specifies partially or fully qualified URI resolver class name, e.g. `Acme.Resolvers.CacheResolver`. Such name requires additional assembly specification using this option or the next option, but fully qualified class name (which always includes an assembly specifier) is all-sufficient. See MSDN for more info about *fully qualified class names*. This option specifies a file name of the assembly, where the specified resolver class can be found.
- **Assembly GAC name for URI resolver class** - This option specifies partially or fully qualified name of the assembly in the *global assembly cache* (GAC), where the specified resolver class can be found. See MSDN for more info about *partial assembly names*. Also see the previous option.
- **List of extension object class names** - This option allows to specify *extension object* classes, whose public methods then can be used as extension functions in an XSLT stylesheet. It is a comma-separated list of namespace-qualified extension object class names. Each class name must be bound to a namespace URI using prefixes, similar to providing XSLT parameters.
- **Use specified EXSLT assembly** - MSXML.NET supports a rich library of the *EXSLT* and *EXSLT.NET extension functions* embedded or in a plugged in EXSLT.NET library. EXSLT support is enabled by default and cannot be disabled in this version. If you want to use an external EXSLT.NET implementation instead of a built-in one use this option.
- **Credential loading source xml** - This option allows to specify user credentials to be used when loading XML source documents. The credentials should be provided in the `username:password@domain` format (all parts are optional).
- **Credential loading stylesheet** - This option allows to specify user credentials to be used when loading XSLT stylesheet documents. The credentials should be provided in the `username:password@domain` format (all parts are optional).

## XQuery

The **XQuery** preferences panel is opened from menu **Options > Preferences > XML > XSLT/FO/XQuery > XQuery**.

The generic XQuery preferences are the following:

- **XQuery validate with** - Allows you to select the processor to validate the XQuery. In case you are validating an XQuery file that has an associated validation scenario, Oxygen XML Editor uses the processor specified in the scenario. If no validation scenario is associated, but the file has an associated transformation scenario, the processor specified in the scenario will be used. If the processor does not support validation or if no scenario is associated, then the value from this combo box will be used as validation processor
- **Size limit of Sequence view (MB)** - When the result of an XQuery transformation is *set in the transformation scenario as sequence* the size of one chunk of the result that is fetched from the database in lazy mode in one step is set in this option. If this limit is exceeded you can extract more data from the database by a click on the **More result available** node from the **Sequence** view.
- **Format transformer output** - When checked the transformer's output is formatted and indented (pretty printed). The option is ignored if in the transformation scenario you choose **Sequence** (lazy extract data from a database).
- **Create structure indicating the type nodes** - If checked, Oxygen XML Editor takes the results of a query and creates an XML document containing copies of all items in the sequence, suitably wrapped. The option is ignored if in the transformation scenario you choose **Sequence** (lazy extract data from a database).

### Saxon HE/PE/EE

The **Saxon HE/PE/EE** preferences panel is opened from menu **Options > Preferences > XML > XSLT/FO/XQuery > XQuery > Saxon HE/PE/EE**.

The XQuery preferences for the Saxon 9.4.0.4 are the following:

- **Use a configuration file ("-config")** - Sets a Saxon 9 configuration file that will be used for XQuery transformation and validation.
- **Handling of recoverable stylesheet errors** - Allows the user to choose how dynamic errors will be handled. Either one of the following options can be selected:
  - **recover silently** - continue processing without reporting the error,
  - **recover with warnings** - issue a warning but continue processing,
  - **signal the error and do not attempt recovery** - issue an error and stop processing.
- **Strip whitespaces** - Can have one of the following three values:
  - **All** - Strips all whitespace text nodes from source documents before any further processing, regardless of any `xml:space` attributes in the source document.
  - **Ignore** - Strips all ignorable whitespace text nodes from source documents before any further processing, regardless of any `xml:space` attributes in the source document. Whitespace text nodes are ignorable if they appear in elements defined in the DTD or schema as having element-only content.
  - **None** - Strips no whitespace before further processing.
- **Optimization level** - This option allows optimization to be suppressed in cases where reducing compile time is important, or where optimization gets in the way of debugging, or causes extension functions with side-effects to behave unpredictably.

The Saxon 9.4.0.4 Professional Edition options are the following:

- **Disable calls on extension functions** - If unchecked, external functions calls is allowed. Checking this is recommended in an environment where untrusted stylesheets may be executed. Also disables user-defined extension elements, together with the writing of multiple output files, all of which carry similar security risks.

The Saxon 9.4.0.4 Enterprise Edition specific options are the following:

- **Validation of the source** - This determines whether XML source documents should be parsed with schema-validation enabled.
- **Validation errors in the results tree treated as warnings** - Available only for Saxon EE. If checked, all validation errors are treated as warnings, otherwise they are treated as fatal.

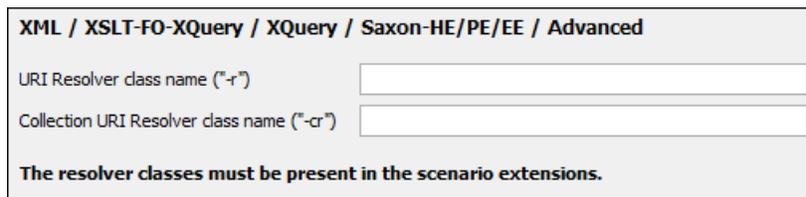
- **Generate bytecode** ("--generateByteCode:(on|off)") - When you enable this option, Saxon-EE attempts to generate Java bytecode for evaluation of parts of a query or stylesheet that are amenable to such treatment. For further details regarding this option, go to [http://www.saxonica.com/documentation/javadoc/net/sf/saxon/lib/FeatureKeys.html#GENERATE\\_BYTE\\_CODE](http://www.saxonica.com/documentation/javadoc/net/sf/saxon/lib/FeatureKeys.html#GENERATE_BYTE_CODE).
- **Enable XQuery 3.0 support** ("-qversion:(1.0|3.0)") - If checked, Saxon EE runs the XQuery transformation with the XQuery 3.0 support.

 **Note:** In case the XQuery 3.0 support is active, the XQuery Update support is no longer available.

- **Backup files updated by XQuery** ("-backup:(on|off)") - If checked, backup versions for any XML files updated with XQuery Update are generated.

#### Saxon HE/PE/EE Advanced

The **Saxon HE/PE/EE Advanced** preferences panel is opened from menu **Options > Preferences > XML > XSLT/FO/XQuery > XQuery > Saxon HE/PE/EE > Advanced**.



**Figure 399: The Saxon HE/PE/EE XQuery Advanced Preferences Panel**

The advanced XQuery options which can be configured for the Saxon 9.4.0.4 XQuery transformer (all editions: Home Edition, Professional Edition, Enterprise Edition) are the following:

- **URI Resolver class name** - Allows the user to specify a custom implementation for the URI resolver used by the XQuery Saxon 9.4.0.4 transformer (the -r option when run from the command line). The class name must be fully specified and the corresponding jar or class extension must be configured from [the dialog for configuring the XQuery extension](#) for the particular transformation scenario.
- **Collection URI Resolver class name** - Allows the user to specify a custom implementation for the Collection URI resolver used by the XQuery Saxon 9.4.0.4 transformer (the -cr option when run from the command line). The class name must be fully specified and the corresponding jar or class extension must be configured from [the dialog for configuring the XQuery extension](#) for the particular transformation scenario.

#### Debugger

This section explains the settings available for the Debugger perspective. The settings are available from menu **Options > Preferences > XML > XSLT/FO/XQuery > Debugger**.

The debugger preferences are the following:

- **Show xsl:result-document output** - If checked, the debugger presents the output of `xsl:result-document` instructions into the debugger output view.
- **Infinite loop detection** - Set this option to receive notifications when an infinite loop occurs during transformation.
- **Maximum depth in templates stack** - Sets how many `xsl:template` instructions can appear on the current stack. This setting is used by the infinite loop detection.
- **Debugger layout** - A horizontal layout means that the stack of XML editors takes the left half of the editing area and the stack of XSL editors takes the right one. A vertical layout means that the stack of XML editors takes the upper half of the editing area and the stack of XSL editors takes the lower one.
- **Debugger current instruction pointer** - Controls the background color of the current execution node, both in the document (XML) and XSLT/XQuery views.
- **Messages** - specifies whether a debugging session is stopped, is continued, or you are asked what to do when you are editing the source document involved in a debugging session.

## Profiler

This section explains the settings available for the XSLT Profiler. To access and modify them please go to menu **Options > Preferences > XML > XSLT/FO/XQuery > Profiler** (see [Debugger](#) on page 831).

The following profiles settings are available:

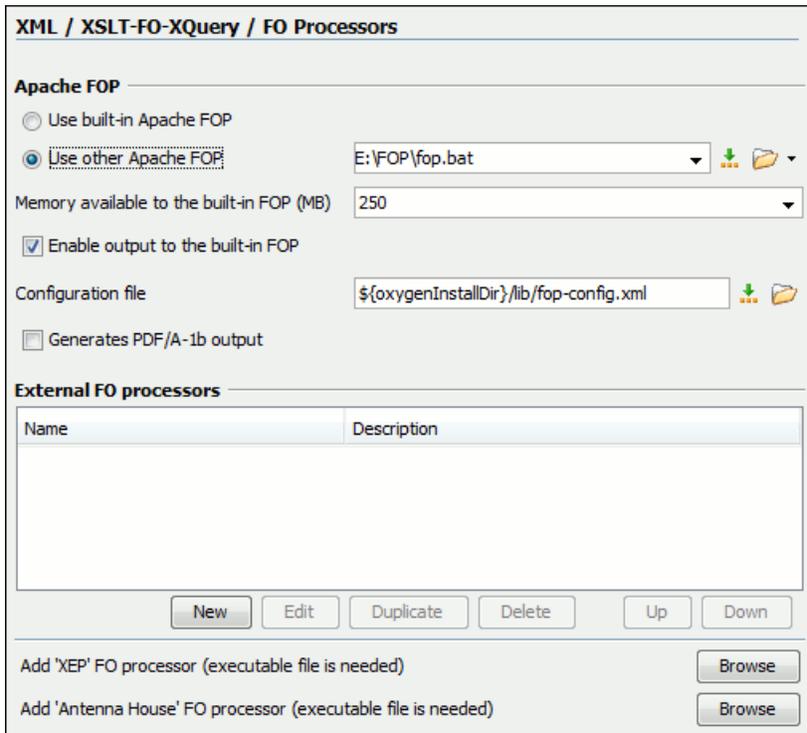
- **Show time** - Shows the total time that was spent in the node.
- **Show inherent time** - Shows the inherent time that was spent in the node. The inherent time is defined as the total time of a node minus the time of its child nodes.
- **Show invocation count** - Shows how many times the node was called in this particular call sequence.
- **Time scale** - The time scale options determine the unit of time measurement, which may be milliseconds or microseconds.
- **Hotspot** threshold - The threshold below which hot spots are ignored (milliseconds).
- **Ignore invocation less than** - The threshold below which invocations are ignored (microseconds).
- **Percentage calculation** - The percentage base determines against what time span percentages are calculated:
  - **Absolute** - Percentage values show the contribution to the total time.
  - **Relative** - Percentage values show the contribution to the calling node.

## FO Processors

Besides Apache FOP, the built-in formatting objects processor, you can configure other external processors and set them in the transformation scenarios for processing XSL-FO documents.

Oxygen XML Editor provides an easy way to add two of the most used commercial FO processors: *RenderX XEP* and *Antenna House XSL Formatter*. You can easily add RenderX XEP as an external FO processor if you have the XEP installed. Also, if you have the Antenna House XSL Formatter v4 or v5, Oxygen XML Editor uses the environmental variables set by the XSL Formatter installation to detect and use it for XSL-FO transformations. If the environmental variables are not set for the XSL Formatter installation, you can browse and choose the executable file just as you would for XEP. You can use these two external FO processors for [DITA OT transformations scenarios](#) and [XML with XSLT transformation scenarios](#).

To open the **FO Processors** preferences panel ,go to **Options > Preferences > XML > XSLT/FO/XQuery > FO Processors**.



**Figure 400: The FO Processors Preferences Panel**

## Apache FOP

The options for FO processors are the following:

- **Use built-in Apache FOP** - instructs Oxygen XML Editor to use its built-in Apache FO processor;
- **Use other Apache FOP** - instructs Oxygen XML Editor to use another Apache FO processor installed on your computer;
- **Enable the output of the built-in FOP** - all Apache FOP output is displayed in a results pane at the bottom of the Oxygen XML Editor window including warning messages about FO instructions not supported by Apache FOP;
- **Memory available to the built-in FOP** - if your Apache FOP transformations fail with an Out of Memory error (**OutOfMemoryError**) select from this combo box a larger value for the amount of memory reserved for FOP transformations;
- **Configuration file for the built-in FOP** - you should specify here the path to an Apache FOP configuration file, necessary for example to render to PDF a document containing Unicode content using a special *true type* font;
- **Generates PDF/A-1b output** - when selected PDF/A-1b output is generated;

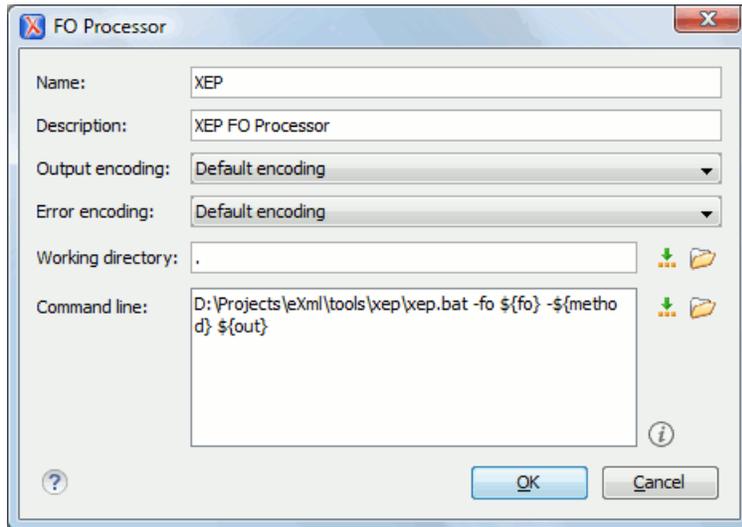
 **Note:** All fonts have to be embedded, even the implicit ones. More information about configuring metrics files for the embedded fonts can be found in [Add a font to the built-in FOP](#).

 **Note:** You cannot use the `<filterList>` key in the configuration file because FOP would generate the following error: *The Filter key is prohibited when PDF/A-1 is active.*

- **Add 'XEP' FO processor (executable file is needed)** - in case *RenderX XEP* is already installed on your computer, you can use this button to choose the XEP executable script (`xep.bat` for Windows, `xep` for Linux);
- **Add 'Antenna House' FO processor (executable file is needed)** - in case *Antenna House XSL Formatter* is already installed on your computer, you can use this button to choose the Antenna House executable script (`AHFCmd.exe`, or `XSLCmd.exe` for Windows, `AHFCmd.sh`, or `XSLCmd.sh` for Linux);

## External FO processors

In this section you can manage the external FO processors you want to use in transformation scenarios. Press the **New** button to add a new external FO processor. The following dialog is displayed:



**Figure 401: The External FO Processor Configuration Dialog**

- **Name** - the name displayed in the list of available FOP processors on the FOP tab of the transformation scenario dialog;
- **Description** - a textual description of the FO processor displayed in the FO processors table and in tooltips of UI components where the processor is selected;
- **Output Encoding** - the encoding of the FO processor output stream displayed in a results panel at the bottom of the Oxygen XML Editor window;
- **Error Encoding** - the encoding of the FO processor error stream displayed in a results panel at the bottom of the Oxygen XML Editor window;
- **Working directory** - the directory where the intermediate and final results of the processing is stored. Here you can use one of the following editor variables:
  - **\${homeDir}** - the path to user home directory;
  - **\${cfd}** - the path of current file directory. If the current file is not a local file, the target is the user's desktop directory;
  - **\${pd}** - the project directory;
  - **\${oxygenInstallDir}** - the Oxygen XML Editor installation directory;
- **Command line** - the command line that starts the FO processor, specific to each processor. Here you can use one of the following editor variables:
  - **\${method}** - the FOP transformation method: **pdf**, **ps** or **txt**;
  - **\${fo}** - the input FO file;
  - **\${out}** - the output file;
  - **\${pd}** - the project directory;
  - **\${frameworksDir}** - the path of the `frameworks` subdirectory of the Oxygen XML Editor install directory;
  - **\${oxygenInstallDir}** - the Oxygen XML Editor installation directory;
  - **\${ps}** - the platform-specific path separator. It is used between the library files specified in the class path of the command line.

## XPath

To open the **XPath** preferences panel go to **Options > Preferences > XML > XSLT/FO/XQuery > XPath**.

Oxygen XML Editor allows you to customize the following options:

- **Unescape XPath expression** - the entities of an XPath expressions that you type in *the XPath toolbar* are unescaped. For example the expression

```
//varlistentry[starts-with(@os, '&#x73;')]
```

is equivalent with:

```
//varlistentry[starts-with(@os, 's')]
```

- **Multiple XPath results** - enable this option to display the results of an XPath in separate tabs in the **Results View***The Results View* on page 50.
- **No namespace** - if you enable this option, Oxygen XML Editor considers unprefixed element names of the XPath 2.0 expressions evaluated in *the XPath toolbar* as belonging to no namespace.
- **Use the default namespace from the root element** - if you enable this option, Oxygen XML Editor considers unprefixed element names of the XPath expressions evaluated in *the XPath toolbar* as belonging to the default namespace declared on the root element of the XML document you are querying.
- **Use the namespace of the root** - if you enable this option, Oxygen XML Editor considers unprefixed element names of the XPath expressions evaluated in *the XPath toolbar* as belonging to the same namespace as the root element of the XML document you are querying.
- **This namespace** - in this field you can enter the namespace of the unprefixed elements used in *the XPath toolbar*.
- **Default prefix-namespace mappings** - in this field you can associate prefixes with namespaces. Use these mappings when you want to define them globally, not for each document.

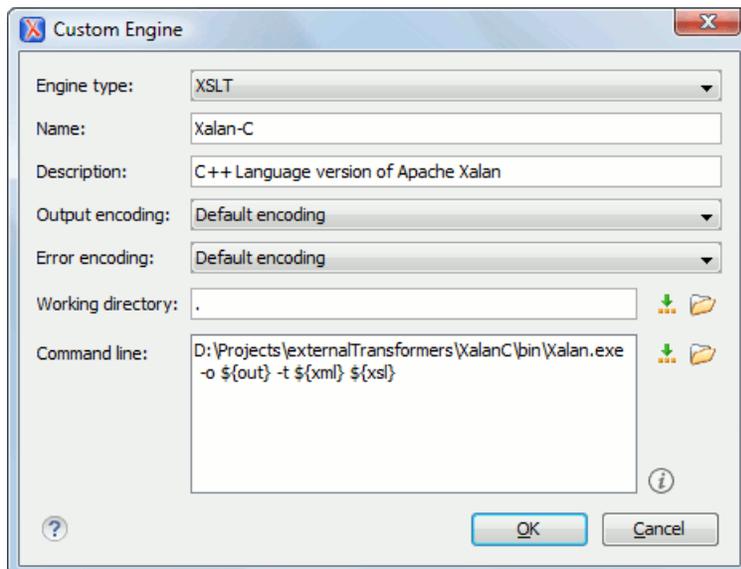
## Custom Engines

You can configure and run XSLT and XQuery transformations with processors other than *the ones which come with the Oxygen XML Editor distribution*.

 **Note:** You can not use these custom engines in *the Debugger perspective*.

The **Custom Engines** preferences panel is opened from menu **Options > Preferences > XML > XSLT/FO/XQuery > Custom Engines**.

The following parameters can be configured for a custom engine:



**Figure 402: Parameters of a Custom Engine**

- **Engine type** - Combo box allowing you to choose the transformer type. There are two options: XSLT engines and XQuery engines.
- **Name** - The name of the transformer displayed in the dialog for editing transformation scenarios

- **Description** - A textual description of the transformer.
- **Output Encoding** - The encoding of the transformer output stream.
- **Error Encoding** - The encoding of the transformer error stream.
- **Working directory** - The start directory of the transformer executable program. The following editor variables are available for making the path to the working directory independent of the location of the input files:
  - **\${homeDir}** - The user home directory in the operating system.
  - **\${cfd}** - The path to the directory of the current file.
  - **\${pd}** - The path to the directory of the current project.
  - **\${oxygenInstallDir}** - The Oxygen XML Editor install directory.
- **Command line** - The command line that must be executed by Oxygen XML Editor to perform a transformation with the engine. The following editor variables are available for making the parameters in the command line (the transformer executable, the input files) independent of the location of the input files:
  - **\${xml}** - The XML input document as a file path.
  - **\${xmlu}** - The XML input document as a URL.
  - **\${xsl}** - The XSL / XQuery input document as a file path.
  - **\${xslu}** - The XSL / XQuery input document as a URL.
  - **\${out}** - The output document as a file path.
  - **\${outu}** - The output document as a URL.
  - **\${ps}** - The platform separator which is used between library file names specified in the class path.

## Import

To open the **Import** preferences page go to **Options > Preferences > XML > Import**. This page allows you to configure how empty values and null values are handled when they are encountered in imported database tables or Excel sheets. Also you can configure the format of date / time values recognized in the imported database tables or Excel sheets.

The following options are available:

- **Create empty elements for empty values** - If checked, an empty value from a database column or from a text file is imported as an empty element.
- **Create empty elements for null values** - If checked, null values from a database column are imported as empty elements.
- **Escape XML content** - Enabled by default, this option instructs Oxygen XML Editor to escape the imported content to an XML-safe form.
- **Add annotations for generated XML Schema** - If checked, the generated XML Schema contains an annotation for each of the imported table columns. The documentation inside the annotation tag contains the remarks of the database columns (if available) and also information about the conversion between the column type and the generated XML Schema type.

The section **Date / Time Format** specifies the format used for importing date and time values from Excel spreadsheets or database tables and in the generated XML schemas. The following format types are available:

- **Unformatted** - If checked, the date and time formats specific to the database are used for import. When importing data from Excel a string representation of date or time values are used. The type used in the generated XML Schema is `xs:string`.
- **XML Schema date format** - If checked, the XML Schema-specific format ISO8601 is used for imported date / time data (`yyyy-MM-dd 'T' HH:mm:ss` for `datetime`, `yyyy-MM-dd` for `date` and `HH:mm:ss` for `time`). The types used in the generated XML Schema are `xs:datetime`, `xs:date` and `xs:time`.
- **Custom format** - If checked, the user can define a custom format for timestamp, date, and time values or choose one of the predefined formats. A preview of the values is presented when a format is used. The type used in the generated XML Schema is `xs:string`.

## Date / Time Patterns

Table 12: Pattern letters

Letter	Date or Time Component	Presentation	Examples
G	Era designator	Text	AD
y	Year	Year	1996; 96
M	Month in year	Month	July; Jul; 07
w	Week in year	Number	27
W	Week in month	Number	2
D	Day in year	Number	189
d	Day in month	Number	10
F	Day of week in month	Number	2
E	Day in week	Text	Tuesday; Tue
a	Am / pm marker	Text	PM
H	Hour in day (0-23)	Number	0
k	Hour in day (1-24)	Number	24
K	Hour in am / pm (0-11)	Number	0
h	Hour in am / pm (1-12)	Number	12
m	Minute in hour	Number	30
s	Second in minute	Number	55
S	Millisecond	Number	978
z	Time zone	General time zone	Pacific Standard Time; PST; GMT-08:00
Z	Time zone	RFC 822 time zone	-0800

Pattern letters are usually repeated, as their number determines the exact presentation:

- *Text* - If the number of pattern letters is 4 or more, the full form is used; otherwise a short or abbreviated form is used if available.
- *Number* - The number of pattern letters is the minimum number of digits, and shorter numbers are zero-padded to this amount.
- *Year* - If the number of pattern letters is 2, the year is truncated to 2 digits; otherwise it is interpreted as a number.
- *Month* - If the number of pattern letters is 3 or more, the month is interpreted as text; otherwise, it is interpreted as a number.
- *General time zone* - Time zones are interpreted as text if they have names. For time zones representing a GMT offset value, the following syntax is used:
  - *GMTOffsetTimeZone* - GMT Sign Hours : Minutes
  - *Sign* - one of + or -
  - *Hours* - one or two digits
  - *Minutes* - two digits
  - *Digit* - one of 0 1 2 3 4 5 6 7 8 9

Hours must be between 0 and 23, and Minutes must be between 00 and 59. The format is locale independent and digits must be taken from the Basic Latin block of the Unicode standard.

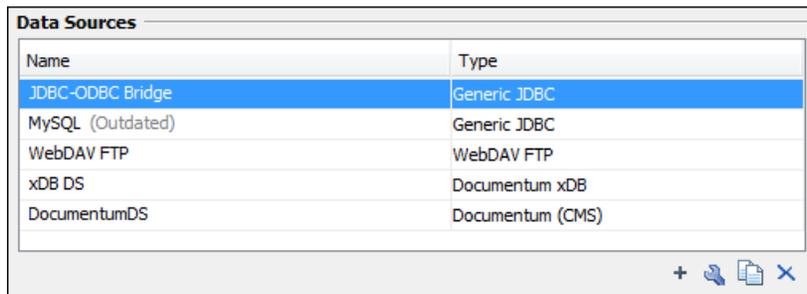
- *RFC 822 time zone*: The RFC 822 4-digit time zone format is used:
  - *RFC822TimeZone* - Sign *TwoDigitHours* Minutes
  - *TwoDigitHours* - a number of two digits
 TwoDigitHours must be between 00 and 23.

## Data Sources

To open the **Data Sources** preferences page, go to **Options > Preferences > Data Sources**.

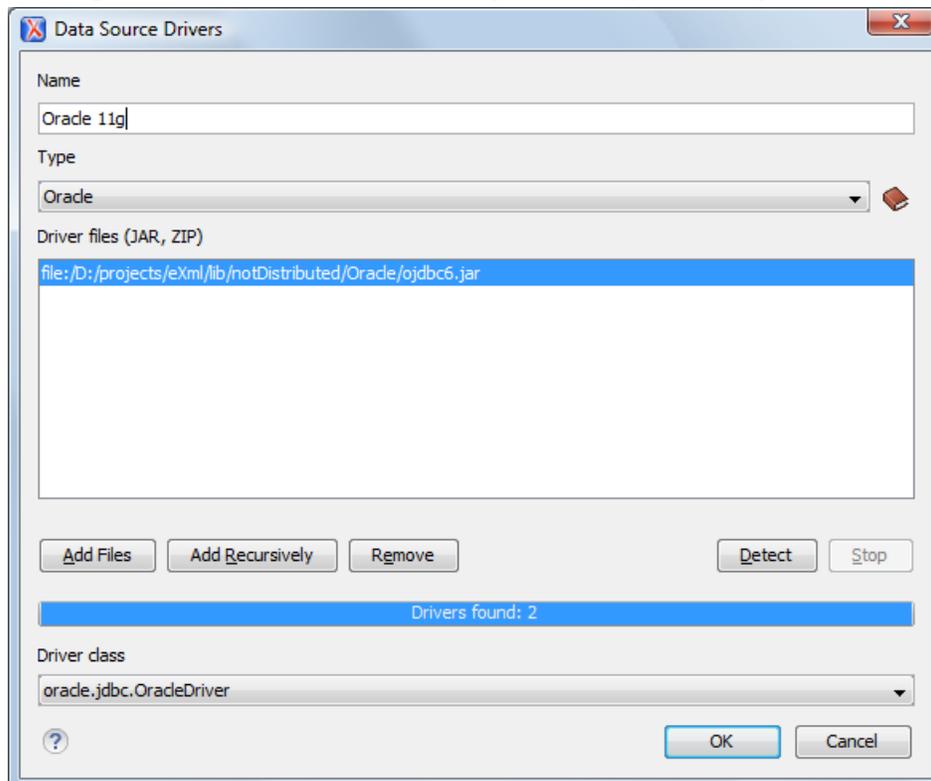
### Configuration of Data Sources

In this preferences page you can configure data sources and connections to relational databases as well as native XML databases. You can check the list of drivers ([http://www.oxygenxml.com/database\\_drivers.html](http://www.oxygenxml.com/database_drivers.html)) available for the major database servers.



**Figure 403: The Data Sources Preferences Panel**

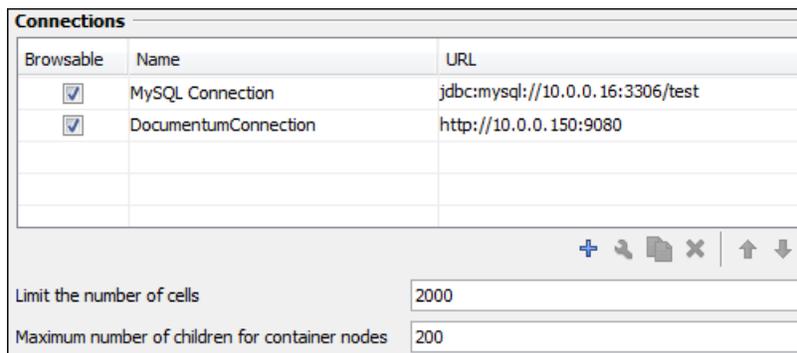
- **New** - opens the **Data Sources Drivers** dialog that allows you to configure a new database driver.



**Figure 404: The Data Sources Drivers Dialog**

The fields of the dialog are the following:

- **Name** - the name of the new data source driver that will be used for creating connections to the database;
  - **Type** - selects the data source type from the supported driver types;
  - **Help** - opens the User Manual at [the list of the sections](#) where the configuration of supported data sources is explained and the URLs for downloading the database drivers are specified;
  - **Driver Class** - specifies the driver class for the data source driver;
  - **Add** - adds the driver class library;
  - **Remove** - removes the selected driver class library from the list;
  - **Detect** - detects driver class candidates;
  - **Stop** - stops the detection of the driver candidates;
- **Edit** - opens the **Data Sources Drivers** dialog for editing the selected driver. See above the specifications for the **Data Sources Drivers** dialog. In order to edit a data source, there must be no connections using that data source driver;
  - **Delete** - deletes the selected driver. In order to delete a data source, there must be no connections using that data source driver;



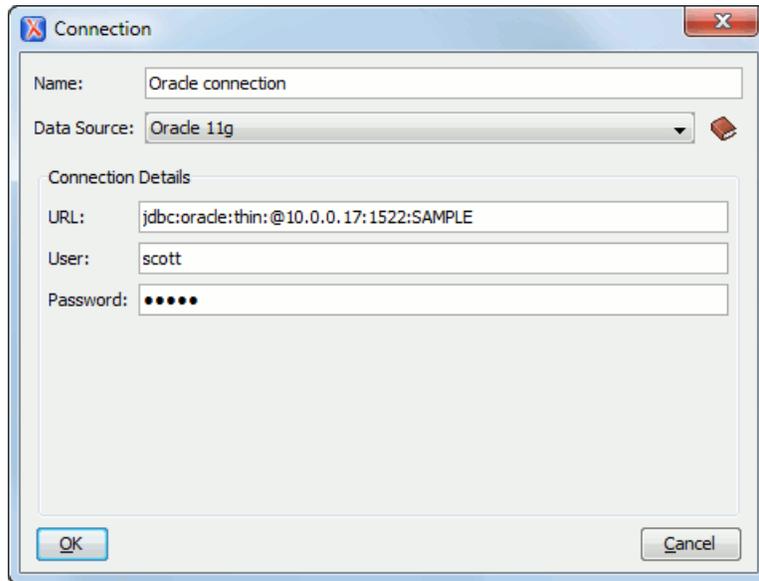
**Figure 405: The Connections Preferences Panel**

For performance issues, you can set the maximum number of cells that will be displayed in the **Table Explorer** view for a database table. Leave the field **Limit the number of cells** empty if you want the entire content of the table to be displayed. By default this field is set to 2,000. If a table having more cells than the value set here is displayed in the **Table Explorer** view, a warning dialog will inform you that the table is only partially shown.

In Oracle XML a container can hold millions of resources. If the node corresponding to such a container in the **Data Source Explorer** view would display all the contained resources at the same time the performance of the view would be very slow. To prevent such a situation only a limited number of the contained resources is displayed as child nodes of the container node. Navigation to other contained resources from the same container is enabled by the *Up* and *Down* buttons in the **Data Source Explorer** view. This limited number is set in the option **Maximum number of children for container nodes**. The default value is 200 nodes.

The actions of the buttons from the **Connections** panel are the following:

- **New** - opens the **Connection** dialog which has the following fields:



**Figure 406: The Connection Dialog**

- **Name** - the name of the new connection that will be used in transformation scenarios and validation scenarios;
- **Data Source** - allows selecting a data source defined in the **Data Source Drivers** dialog.

Depending upon the selected data source, you can set some of the following parameters in the **Connection details** area:

- **URL** - the URL for connecting to the database server;
  - **User** - the user name for connecting to the database server;
  - **Password** - the password of the specified user name;
  - **Host** - the host address of the server;
  - **Port** - the port where the server accepts the connection;
  - **XML DB URI** - the database URI;
  - **Database** - the initial database name;
  - **Collection** - one of the available collections for the specified data source;
  - **Environment home directory** - specifies the home directory (only for a Berkeley database);
  - **Verbosity** - sets the verbosity level for output messages (only for a Berkeley database);
  - **Use a secure HTTPS connection (SSL)** - allows you to establish a secure connection to an eXist database through the SSL protocol.
- **Edit** - opens the **Connection** dialog, allowing you to edit the selected connection. See above the specifications for the **Connection** dialog;
  - **Duplicate** - creates a duplicate of the currently selected connection;
  - **Delete** - deletes the selected connection.

### Download Links for Database Drivers

You can find below the locations where you have to go to get the drivers necessary for accessing databases in Oxygen XML Editor.

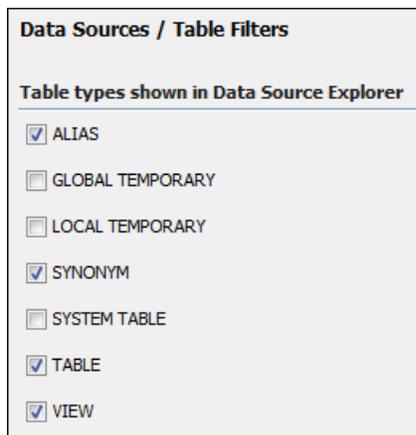
- **Berkeley DB XML database** - Copy the jar files from the Berkeley database install directory to the Oxygen XML Editor install directory as described in [the procedure](#) for configuring a Berkeley DB data source.
- **IBM DB2 Pure XML database** - Go to the [IBM website](#) and in the *DB2 Clients and Development Tools* category select the *DB2 Driver for JDBC and SQLJ* download link. Fill the download form and download the zip file. Unzip the zip file and use the db2jcc.jar and db2jcc\_license\_cu.jar files in Oxygen XML Editor for [configuring a DB2 data source](#).

- **eXist database** - Copy the jar files from the eXist database install directory to the Oxygen XML Editor install directory as described in [the procedure](#) for configuring an eXist data source.
- **MarkLogic database** - Download the MarkLogic driver from [MarkLogic Community site](#).
- **Microsoft SQL Server 2005 / 2008 database** - Both SQL Server 2005 and SQL Server 2008 are supported. For connecting to SQL Server 2005 you have to download the SQL Server 2005 JDBC driver file `sqljdbc.jar` from the [Microsoft website](#) and use it for [configuring an SQL Server data source](#). For connecting to SQL Server 2008 you have to download the SQL Server 2008 JDBC 1.2 driver file `sqljdbc_1.2\enu\sqljdbc.jar` from the [Microsoft website](#) and use it for [configuring an SQL Server data source](#). Please note that the SQL Server driver is compiled with a Java 1.6 compiler so you need to [run Oxygen XML Editor with a Java 1.6 virtual machine](#) in order to use this driver.
- **Oracle 11g database** - Download the Oracle 11g JDBC driver called `ojdbc5.jar` from the [Oracle website](#) and use it for [configuring an Oracle data source](#).
- **PostgreSQL 8.3 database** - Download the PostgreSQL 8.3 JDBC driver called `postgresql-8.3-603.jdbc3.jar` from the [PostgreSQL website](#) and use it for [configuring a PostgreSQL data source](#).
- **Documentum xDb (X-Hive/DB) 10 XML database** - Copy the jar files from the Documentum xDb (X-Hive/DB) 10 database install directory to the Oxygen XML Editor install directory as described in [the procedure](#) for configuring a Documentum xDb (X-Hive/DB) 10 data source.

### Table Filters

The **Table Filters** preferences panel is opened from menu **Options > Preferences > Data Sources > Table Filters**.

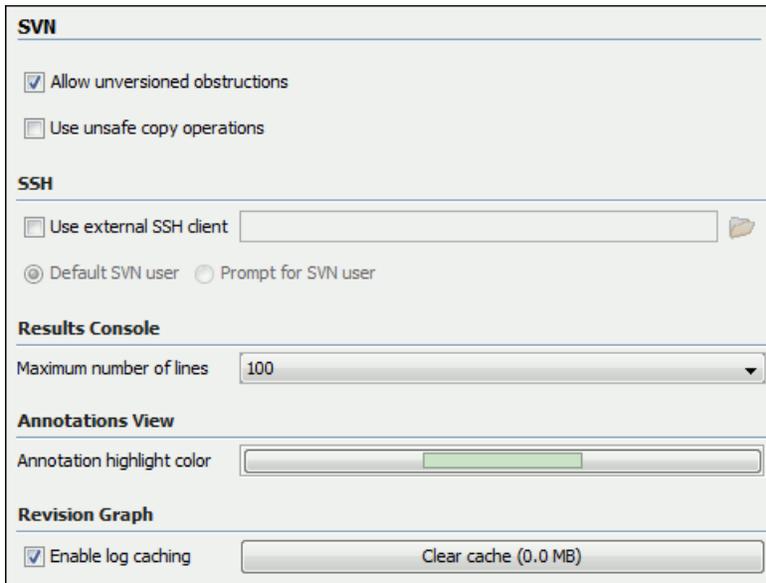
Here you can choose which of the database table types will be displayed in the **Data Source Explorer** view.



**Figure 407: Table Filters Preferences Panel**

### SVN

The **SVN** preferences panel is opened from menu **Options > Preferences > SVN** and it is the place where the user preferences for the embedded SVN client tool are configured. Some other preferences for the embedded SVN client tool can be set in the global files called `config` and `servers`, that is the files with parameters that act as defaults applied to all the SVN client tools that are used by the same user on his login account on the computer. These files can be opened for editing with the two edit actions available in the SVN client tool on the **Global Runtime Configuration** submenu of the **Options** menu.



**Figure 408: The SVN Preferences Panel**

The SVN preferences are the following:

- **Enable symbolic link support** (*available only on Mac OS X and Linux*) - Apache Subversion™ has the ability to put a symbolic link under version control, via the usual SVN add command. The Subversion repository has no internal concept of a symbolic link, it stores a versioned symbolic link as an ordinary file with a `svn:special` property attached. The SVN client (on Unix) sees the property and translates the file into a symbolic link in the working copy.

 **Note:** Windows file systems have no symbolic links, so a Windows client won't do any such translation: the object appears as a normal file.

If the symbolic link support is disabled then the versioned symbolic links, on Linux and OS X, are supported in the same way as on Windows, that is a text file instead of symbolic link is created.

 **Important:** It is recommended to disable symbolic links support if you do not have versioned symbolic links in your repository, because the SVN operations will work faster. However, you should not disable this option when you do have versioned symbolic links in repository. In that case a workaround would be to refer to working copy by its real path, not a path that includes a symbolic link.

- **Allow unversioned obstructions** - This option controls how should be handled working copy resources being ignored / unversioned when performing an update operation and from the repository are incoming files with the same name, in the same location, that intersect with those being ignored / unversioned. If the option is enabled, then the incoming items will become BASE revisions of the ones already present in the working copy, and those present will be made versioned resources and will be marked as modified. Exactly as if the user first made the update operation and after that he / she modified the files. If the option is disabled, the update operation will fail when encountering files in this situation, possibly leaving other files not updated. By default, this option is enabled.
- **Use unsafe copy operations** - Sometimes when the working copy is accessed through Samba and SVN client cannot make a safe copy of the committed file due to a delay in getting write permission the result is that the committed file will be saved with zero length (the content is removed) and an error will be reported. In this case this option should be selected so that SVN client does not try to make the safe copy.
- **HTTPS encryption protocols** - Option available only if you run the application with Java 1.6 or older. Sets a specific encryption protocol to be used when the *application accesses a repository through HTTPS protocol*. You can choose one of the following values:
  - **SSLv3, TLSv1** (default value)
  - **SSLv3 only**

- **TLSv1 only**
- **SSH** - Here you can specify the command line for an external SSH client which will be used when connecting to a SVN+SSH repository. Absolute paths are recommended for the SSH client executable and the file paths given as arguments (if any). Depending on the SSH client used and your SSH server configuration you may need to specify in the command line the user name and / or private key / passphrase. Here you can also choose if the default user name (the same user name as the SSH client user) will be used for SVN repository operations or you should be prompted for a SVN user name whenever SVN authentication is required. For example on Windows the following command line uses the `plink.exe` tool as external SSH client for connecting to the SVN repository with SVN+SSH:

```
C:\plink-install-folder\plink.exe -l username -pw password -ssh -batch
host_name_or_IP_address_of_SVN_server
```

- **Results Console** - Here you can specify the maximum number of lines displayed in the **Console** view. The default value is 1,000.
- **Annotations View** - Here you can set the color used for highlighting in the editor panel all the changes contributed to a resource by the revision selected in *the Annotations view*.
- **Revision Graph** - Here you can enable caching for the action of computing a revision graph. When a new revision graph is requested one of the caches from the previous actions may be used which will avoid running the whole query again on the SVN server. If a cache is used it will finish the action much faster.

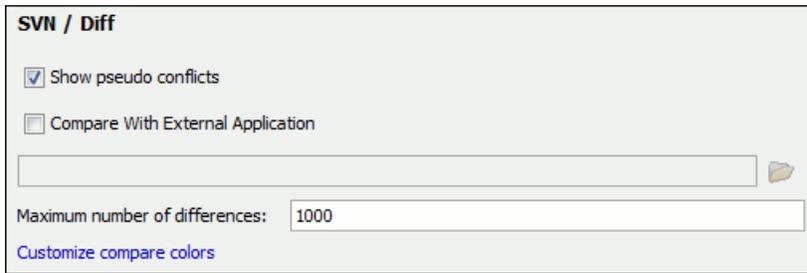
## Working Copy

The **Working Copy** panel is open from menu **Options > Preferences > SVN > Working Copy** and it contains options that are specific to SVN working copies:

- **Working copies location** - Allows you to define a location where you keep your working copies. This location is automatically suggested when you checkout a new working copy.
- **Working copy administrative directory** - Allows you to customize the directory name where the svn entries are kept for each directory in the working copy.
- **When loading an old format working copy** - You can instruct Oxygen XML Editor to do one of the following:
  - **Automatically upgrade** - Older format working copies are upgraded to the newest known format.
  - **Never upgrade** - Older format working copies are left untouched. No attempt to upgrade the format is made.
  - **Always ask** - You are notified when such a working copy is used and you are allowed to choose what action to be taken - to upgrade or not the format of the current working copy.
- **Enable working copy caching** - If checked, the content of the working copies is cached for refresh operations.
- **Automatically refresh the working copy** - If checked, the working copy is refreshed from cache. Only the new changes (modifications with a date/time that follows the last refresh operation) are refreshed from disk. Disabled by default.
- **When synchronizing with repository** - The action that will be executed automatically after the **Synchronize** action. The possible actions are:
  - **Always switch to 'Modified' mode** - The **Synchronize** action is followed automatically by a switch to **Modified** mode of **Working Copy** view, if **All Files** mode is currently selected.
  - **Never switch to 'Modified' mode** - Keeps the currently selected view mode unchanged.
  - **Always ask** - The user is always asked if he wants to switch to **Modified** mode.
- **Application global ignores** - Allows setting file patterns that may include the `*` and `?` wildcards for unversioned files and folders that must be ignored when displaying the working copy resources in *the Working Copy view*. These patterns are case-sensitive. For example, `*.txt` matches `file.txt`, but does not match `file.TXT`.

## Diff

The **Diff** preferences panel is opened from menu **Options > Preferences > SVN > Diff** and it allows you to set the compare options for SVN client.



**Figure 409: The SVN Diff Preferences Panel**

The SVN diff preferences are the following:

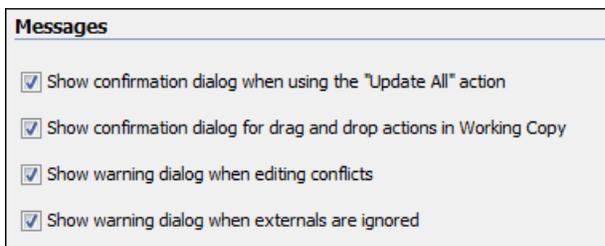
- **Show pseudo conflicts** - It allows you to specify if you want to see pseudo-conflicts in *the Compare view*. A pseudo conflict occurs when two developers make the same change, for example when both add or remove the same line of code.
- **Compare With External Application** - You can specify an external application to be launched for compare operations in the following cases:
  - when two history revisions are compared
  - when the working copy file is compared with a history revision
  - when *a conflict is edited*

The parameters `${firstFile}` and `${secondFile}` specify the positions of the two compared files in the command line for the external diff application. The parameter `${ancestorFile}` specifies the common ancestor (that is, the BASE revision of a file) in a three-way comparison: the working copy version of a file is compared with the repository version, with the BASE revision (the latest revision read from the repository by an Update or Synchronize operation) being the common ancestor of these two compared versions.

- **Maximum number of differences** - You can change the maximum number of differences allowed in the view.

## Messages

The **Messages** preferences panel is opened from menu **Options > Preferences > SVN > Messages** and allows disabling the following warning messages which may appear in the application:

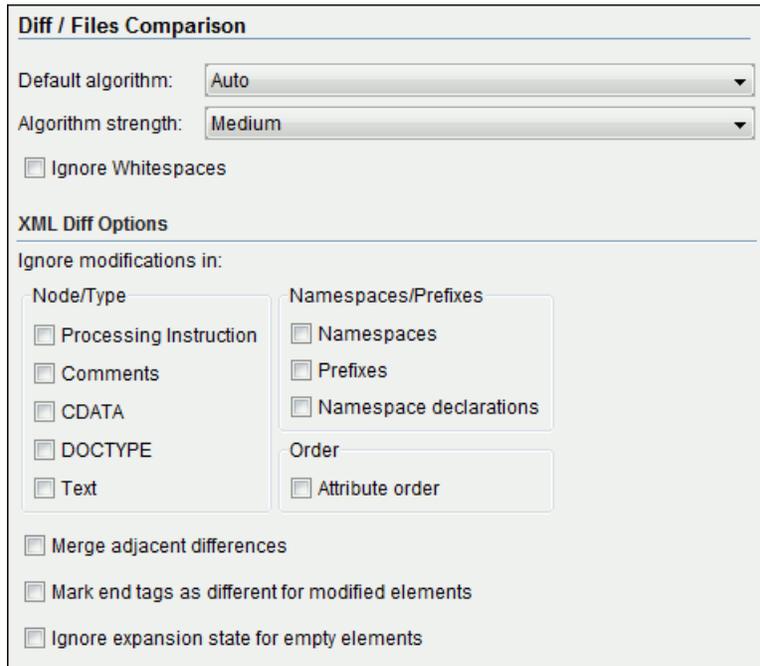


**Figure 410: The Messages Preferences Panel**

- **Show confirmation dialog when using the "Update All" action** - Allows you to avoid performing accidental update operations by requesting you to confirm them before execution.
- **Show confirmation dialog for drag and drop actions in Working Copy** - This option avoids doing a drag and drop when you just want to select multiple files in the Working Copy view.
- **Show warning dialog when editing conflicts** - When the **Edit Conflicts** action is executed, a warning dialog notifies you that the action overwrites the conflicted version of the file created by an update operation. The conflicted file is overwritten with the version of the same file which existed in the working copy before the update operation and then *proceeds with the visual editing of the conflicting file*.
- **Show warning dialog when "svn:externals" definitions are ignored** - A warning dialog is displayed when "svn:externals" definitions are ignored before performing any operation that updates resources of the working copy (like *Update* and *Override and Update*).

## Files Comparison

The **Files Comparison** preferences panel is opened from menu **Options > Preferences > Diff > Files Comparison** and offers the following configurable preferences:



**Figure 411: The Files Comparison Preferences Panel**

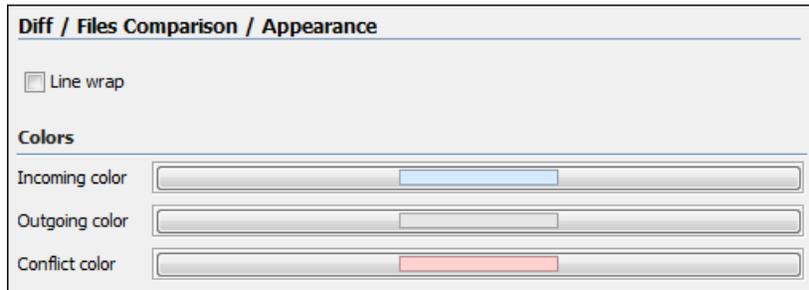
- **Default algorithm** - The default algorithm used for comparing files. The following options are available:
  - **Auto** - Automatic selection of the diff algorithm, based on the file content and its size.
  - **Characters** - Computes the differences at character level.
  - **Words** - Computes the differences at word level.
  - **Lines** - Computes the differences at line level.
  - **Syntax aware** - For the file types known by Oxygen XML Editor, this algorithm computes the differences taking into consideration the syntax (the specific types of tokens) of the documents.
  - **XML Fast** - A diff algorithm well-suited for large XML documents (tens of MB). Sacrifices accuracy in favor of speed.
  - **XML Accurate** - XML-tuned diff algorithm. It favors accuracy over speed.
- **Algorithm strength** - Controls the amount of resources allocated to the application to perform the comparison. The algorithm stops searching more differences when reaches the maximum allowed resources. A dialog is shown when this limit is reached and partial results are displayed. Four settings are available: **Low**, **Medium** (default), **High** and **Very High**.
- **Ignore Whitespaces** - Ignoring whitespaces means that before performing the comparison, the application normalizes the content (collapses any sequence of whitespace characters (space, newline or tab characters) into a single space) and trims its leading and trailing whitespaces.
 

 **Note:** If the **Ignore Whitespaces** check box is selected, comparing the a b sequence with a b, Oxygen XML Editor finds no differences, because after normalization, all whitespaces from the first sequence are collapsed into a single space character. However, when comparing a b with ab (no whitespace between a and b), Oxygen XML Editor signals a difference.
- **XML Diff Options** - This set of options allows you to specify the types of XML nodes for which the differences will be ignored (will not be reported) by the **XML Fast** and **XML Accurate** algorithms.
- **Merge adjacent differences** - If checked, it considers two adjacent differences as one when the differences are painted in the side-by-side editors. If unchecked, every difference is represented separately.

- **Mark end tags as different for modified elements** - If checked, end tags of modified elements are presented as differences too, otherwise only the start tags are presented as differences.
- **Ignore expansion state for empty elements** - If checked, empty elements in both expansion states are considered matched, that is `<element/>` and `<element></element>` are considered equal.

## Appearance

The **Files Comparison / Appearance** preferences panel is opened from menu **Options > Preferences > Diff > Files Comparison > Appearance** and offers the following options:



**Figure 412: Files Comparison Appearance Preferences Panel**

- **Line wrap** - If checked, the lines presented in the two diff panels are wrapped at the right margin of each panel so that no horizontal scrollbar is necessary.
- **Incoming color** - The color used for incoming changes on the vertical bar that shows the differences between the files compared.
- **Outgoing color** - The color used for outgoing changes on the vertical bar that shows the differences between the files compared.
- **Conflict color** - The color used for conflicts on the vertical bar that shows the differences between the files compared.

## Directories Comparison

The **Directories Comparison** preferences panel is opened from menu **Options > Preferences > Diff > Directories Comparison** and offers the following configurable preferences:



**Figure 413: The Diff Preferences Panel**

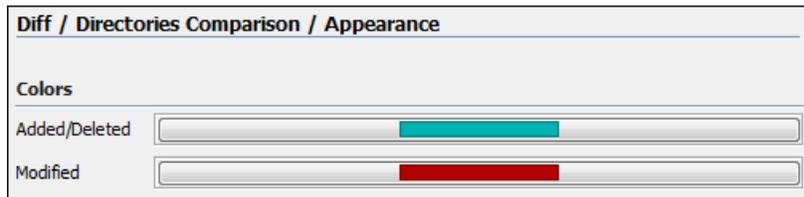
For the directories comparison, you can specify:

- **Compare files by** - Controls the method used for comparing two files:

- **Content** - The file content is compared using the current *diff algorithm*. This option is applied for a pair of files only if that file type is associated with a built-in editor type (either associated by default or associated by the user when the user is prompted to do that on opening a file of that type for the first time).
- **Binary Compare** - The files are compared at byte level.
- **Timestamp (last modified date / time)** - The files are compared only by their last modified timestamp.
- **Look in archives** - If checked, *archives known by Oxygen XML Editor* are considered directories and their content is compared just like regular files.
- **Navigation** - This options control the behaviour of the differences traversal actions (**Go to previous modification**, **Go to next modification**) when the first or last difference in a file is reached:
  - **Ask what to do next** - A dialog is displayed asking you to confirm that you want the application to display modifications from the previous or next file.
  - **Go to the next/previous file** - The application opens the next or previous file without waiting for your confirmation.
  - **Do nothing** - No further action is taken.

## Appearance

The **Directories Comparison / Appearance** preferences panel is opened from menu **Options > Preferences > Diff > Directories Comparison > Appearance**.



**Figure 414: The Diff Appearance Preferences Panel**

- **Added/Deleted** - Color used for marking added or deleted files and folders.
- **Modified** - Color used for marking modified files.

## Archive

The **Archive** preferences panel is opened from menu **Options > Preferences > Archive**.

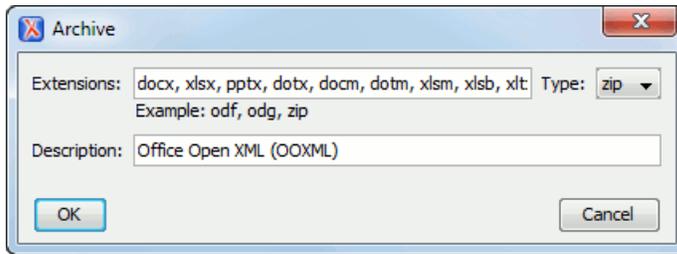
The following options are available in the **Archive** preferences panel:

- **Archive backup options** - Controls if the application makes backup copies of the modified archives. The following options are available:
  - **Always create backup copies of modified archives** - When you modify an archive, its content is backed up.
  - **Never create backup copies of modified archives** - No backup copy is created.
  - **Ask for each archive once per session** - Once per application session for each modified archive, user confirmation is required to create the backup. This is the default setting.



**Note:** Backup files have the name `originalArchiveFileName.bak` and are located in the same folder as the original archive.

- **Archive types** - This table contains all known archive extensions mapped to known archive formats. Each row maps a list of extensions to an archive type supported in Oxygen XML Editor. You can edit an existing mapping or create a new one by associating your own list of extensions to an archive format.



**Figure 415: Edit Archive Extension Mappings**

**Important:** You have to restart Oxygen XML Editor after removing an extension from the table in order for that extension to not be recognised anymore as an archive extension.

- **Store Unicode file names in Zip archives** - Use this option when you archive files that contain international (that is, non-English) characters in file names or file comments. If an archive is modified in any way with this option turned on, UTF-8 characters are used in the names of all files in the archive.

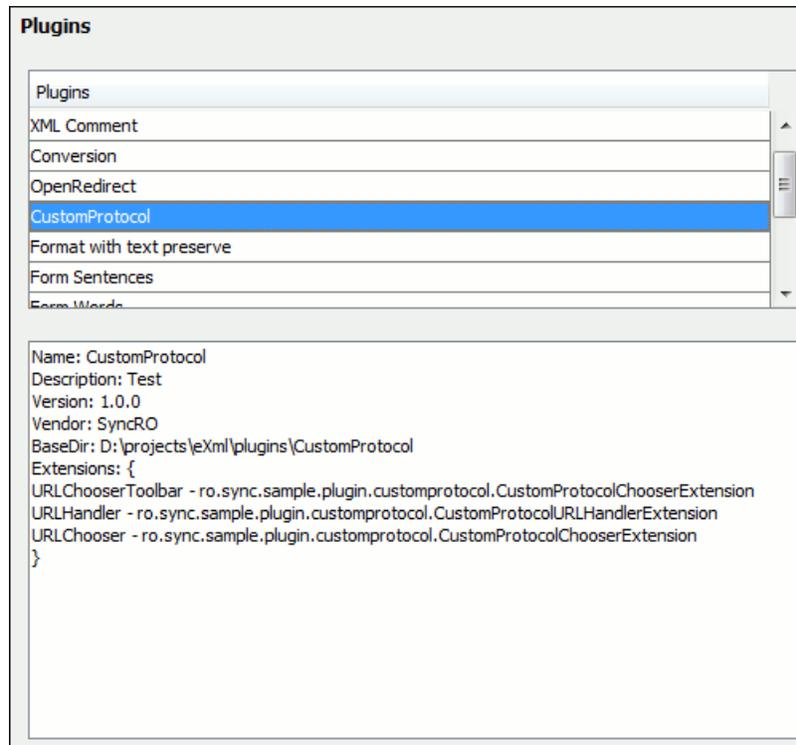
## Plugins

Oxygen XML Editor provides the ability to add plugins that extend the functionality of the application. The plugins are shipped as separate packages. Check for new plugins [on Oxygen XML Editor site](#).

One plugin consists of a separate sub-folder in the `Plugins` folder of the Oxygen XML Editor installation folder. This sub-folder must contain a valid `plugin.xml` file in accordance with the `plugin.dtd` file from the `Plugins` folder.

Oxygen XML Editor automatically detects and loads plugins correctly installed in the `Plugins` folder and displays them in this preferences panel.

The **Plugins** preferences panel is opened from menu **Options > Preferences > Plugins**.



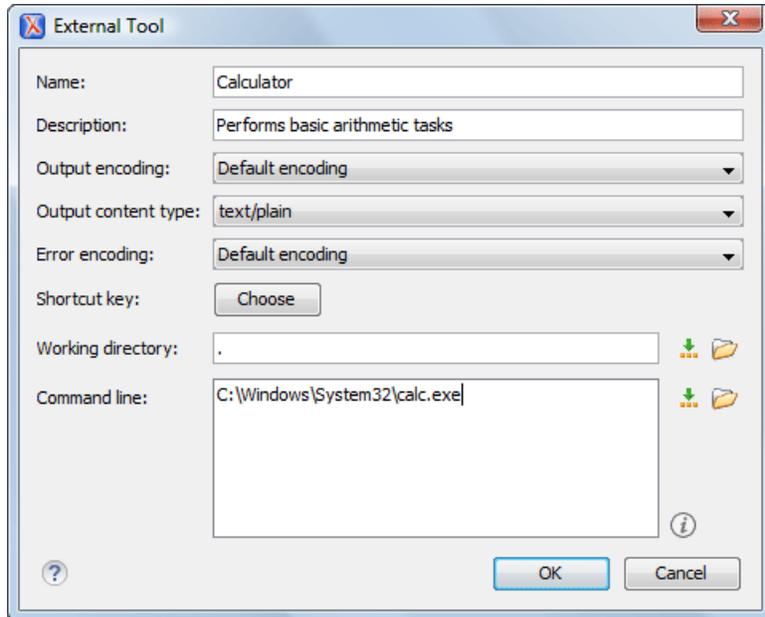
**Figure 416: The Plugins Preferences Panel**

A list of the plugin properties can be obtained with a click on the plugin name.

## External Tools

The **External Tools** preferences panel is opened from menu **Preferences > External Tools**.

A command-line tool can be started from the **External Tools** toolbar in the Oxygen XML Editor user interface as if from the command line of the operating system shell. Such a tool must be configured first in this preferences panel. The parameters of an external tool are set in the following dialog:



**Figure 417: The External Tools Configuration Dialog**

- **Name** - The name of the menu entry corresponding to this tool that will be displayed in the **Tools > External Tools** menu and in the **External Tools** toolbar.
- **Description** - The description of the tool displayed as tooltip where the tool name is used.
- **Output Encoding** - The encoding of the output stream of the external tool that will be used by Oxygen XML Editor to read the output of the tool.
- **Output content type** - A list of predefined content type formats that instruct Oxygen XML Editor how to display the generated output. For example, setting the **Output content type** to `text/xml` enables the syntax coloring of XML output.
- **Error Encoding** - The encoding of the error stream of the external tool that will be used by Oxygen XML Editor to read this error stream.
- **Shortcut key** - The keyboard shortcut that launches the external tool.
- **Working directory** - The directory the external tool will use to store intermediate and final results. Here you can use one of the following editor variables:
  - **`\${homeDir}** - The path (as file path) of the user home folder.
  - **`\${cfd}** - Current file folder as file path, that is the path of the current edited document up to the name of the parent folder.
  - **`\${pd}** - Current project folder as file path.
  - **`\${oxygenInstallDir}** - Oxygen XML Editor installation folder as file path.
- **Command line** - The command line that will start the external tool. Here you can use one of the following editor variables:
  - **`\${dbgXML}** - The path to the current Debugger source selection (for tools started from the XSLT/XQuery Debugger).
  - **`\${dbgXSL}** - The path to the current Debugger stylesheet selection (for tools started from the XSLT/XQuery Debugger).

- **`\${homeDir}`** - The path (as file path) of the user home folder.
- **`\${cfd}`** - Current file folder as file path, that is the path of the current edited document up to the name of the parent folder.
- **`\${cfn}`** - Current file name without extension and without parent folder.
- **`\${cfne}`** - Current file name with extension.
- **`\${cf}`** - Current file as file path, that is the absolute file path of the current edited document.
- **`\${tsf}`** - The transformation result file.
- **`\${pd}`** - Current project folder as file path.
- **`\${oxygenInstallDir}`** - Oxygen XML Editor installation folder as file path.
- **`\${frameworksDir}`** - The path (as file path) of the `frameworks` subfolder of the Oxygen XML Editor installation folder.
- **`\${ps}`** - The path separator which can be used on different operating systems between libraries specified in the class path.
- **`\${timeStamp}`** - Time stamp, that is the current time in Unix format. It can be used for example to save transformation results in different output files on each transform.

## Menu Shortcut Keys

To open the **Menu Shortcut Keys** preferences panel, go to **Options > Preferences > Menu Shortcut Keys**. Alternatively you can go to **Options > Menu Shortcut Keys**. You can use this panel to configure shortcut keys for the actions available in Oxygen XML Editor. The current shortcuts assigned to menu items are displayed in the following table.

Menu Shortcut Keys		
Type filter text <input type="text"/>		
Description	Category	Shortcut key
Find Next	Find	F3
Find Previous	Find	Shift+F3
Find/Replace	Find	Ctrl+F
Find/Replace in Files	Find	Ctrl+Shift+H
Go to	Find	Ctrl+L
Quick Find	Find	Alt+Shift+F
Close Other Folds	Folding	Ctrl+NumPad /
Collapse Child Folds	Folding	Ctrl+NumPad .
Expand All	Folding	Ctrl+NumPad *
Expand Child Folds	Folding	
Toggle Fold	Folding	
Decrease Editor Font	Font Size	Ctrl+NumPad -
Increase Editor Font	Font Size	Ctrl+NumPad +
Normal Editor Font	Font Size	Ctrl+NumPad=
Array	Grid	
Append value as child	Grid Append Child	
Attribute	Grid Append Child	
CDATA	Grid Append Child	
Comment	Grid Append Child	
Doctype	Grid Append Child	
Doctype identifier	Grid Append Child	
Doctype subset	Grid Append Child	
Element	Grid Append Child	

**Figure 418: The Menu Shortcut Keys Preferences Panel**

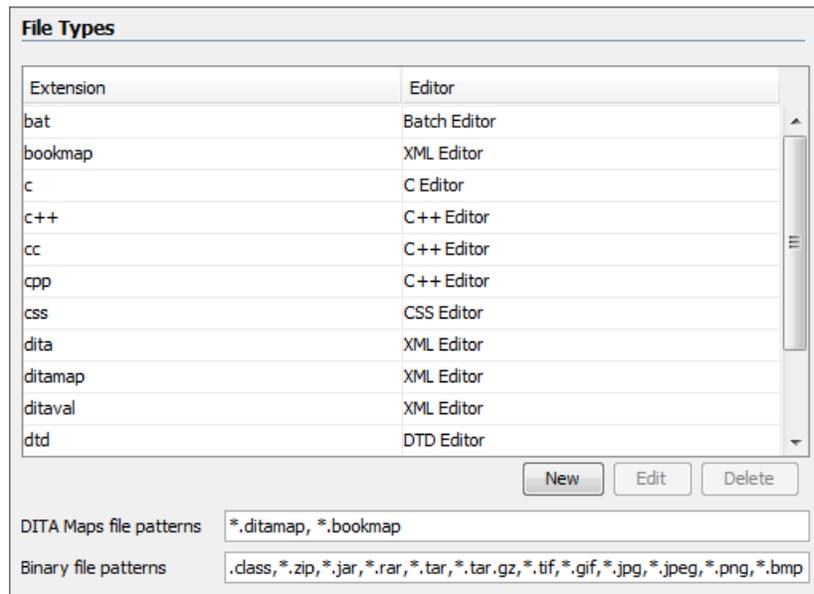
To find a specific action in the Menu Shortcut Keys preferences panel, you can use the filter to search through the **Description**, **Category**, and **Shortcut Key** columns:

- **Description** - this column provides a short description of the action;
- **Category** - this column provides a classification of the actions in categories for easier management. For example, you can distinguish the **Cut** operation available in the **Text** view from the one available in the **Tree** view by assigning them to different categories;
- **Shortcut key** - this column holds the combination of keys on your keyboard that launches the action. You can either double click a row of the **Shortcut key** column or press the **Edit** button to enter a new shortcut.
- **'Home' and 'End' keys are applied at line level** - Option available only on Mac OS X that controls the way the HOME and END keys are interpreted. If enabled, the default behavior of the Mac OS X HOME and END keys is overridden and the caret moves only on the current line.

## File Types

Oxygen XML Editor offers editing support for a wide variety of file types, but users are free to add new file extensions and associate them with the editor type which fits better. The associations set here between a file extension and the type of editor which opens the file for editing have precedence over the default associations available in [the File > New dialog](#).

The **File Types** preferences panel is opened from menu **Options > Preferences > File Types**.



**Figure 419: The File Types Preferences Panel**

The table columns contain the following data:

- **Extension** - The extensions of the files that will be associated with an editor type.
- **Editor** - The type of editor which the extensions will be associated with. Some editors provide easy access to frequent operations via toolbars (e.g. XML editor, XSL editor, DTD editor) while others provide just a syntax highlight scheme (e.g. Java editor, SQL editor, Shell editor, etc.).

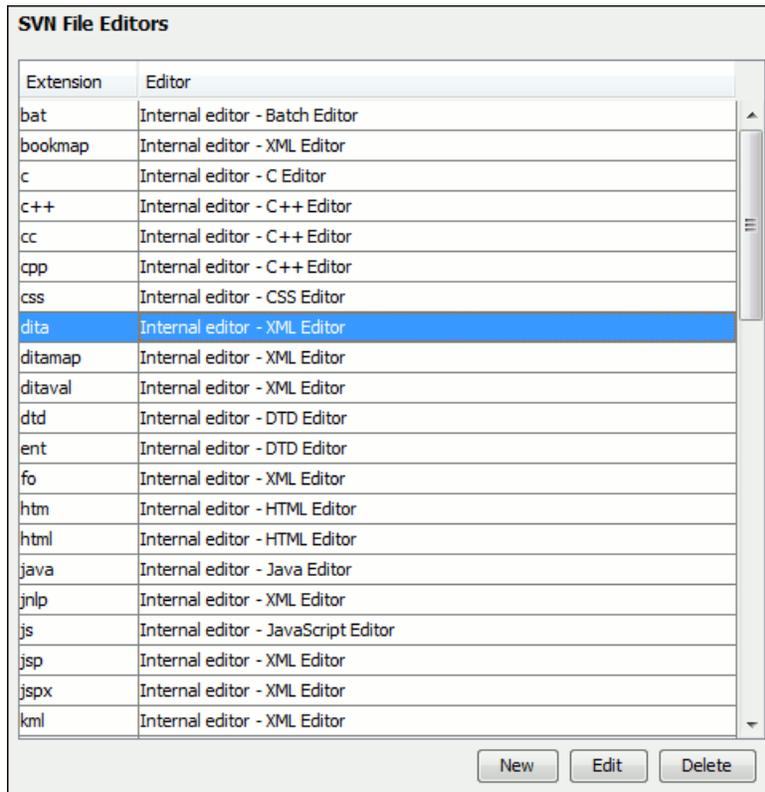
If the editor set here is not one of the XML editors (XML editor, XSL editor, XSD editor, RNG editor, WSDL editor) then the encoding set in [the preference Encoding for non XML files](#) is used for opening and saving a file of this type. This is necessary because in case of XML files the encoding is usually declared at the beginning of the XML file in a special declaration or it assumes the default value UTF-8 but in case of non XML files there is no standard mechanism for declaring the encoding of the file.

You can also decide the files which will be handled as DITA maps when opened in Oxygen XML Editor. If the files match the pattern that is specified in **DITA Maps file patterns** you will be prompted to open them in the **DITA Maps Manager** view.

The files that match the **Binary file patterns** patterns are handled as binary and opened in the associated system application. Also, they are excluded from the following actions available in the **Project view**: **File/Replace in Files**, **Check Spelling in Files**, **Validate**.

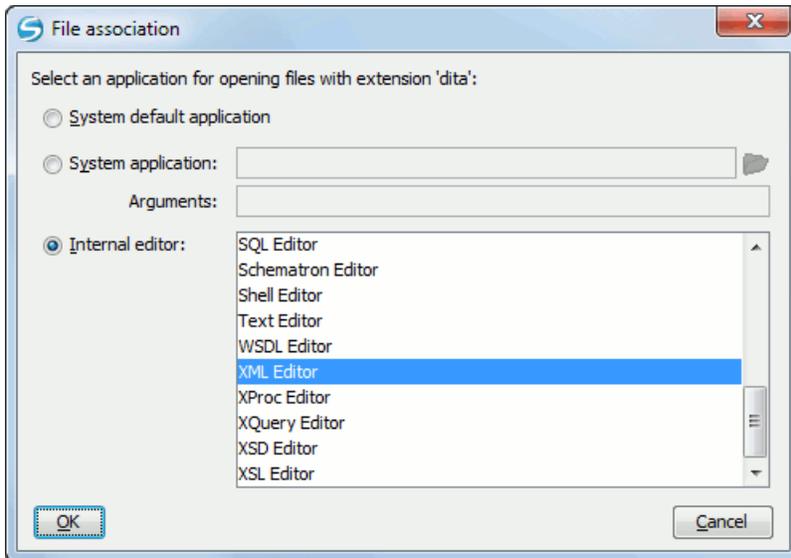
## SVN File Editors

Each type of file is associated with a type of editor which opens the files of that type for editing. The editor can be the built-in one specially provided for the file type (for example the internal XML editor, the internal XSLT editor, the internal XSL-FO editor, etc) or an external application installed on the computer, either the default system application associated with that file type in the operating system or other particular application specified by the path to its executable file. The list of all the associations file type - editor is displayed in the preferences panel **SVN File Editors** which is opened from menu **Options > Preferences > SVN File Editors**.



**Figure 420: The SVN File Editors Preferences Panel**

The **Edit** button or a double click on a table row opens a dialog for specifying the editor associated with the file type. The same dialog is displayed on opening a file from one of the Oxygen XML Editor views.



**Figure 421: The Open With Dialog**

In this dialog are offered three options for opening a file:

- **System default application** - Opens the selected file using the application that is associated with that file extension by default in the operating system.
- **System application** - Opens the selected file using an external application that you have to specify by the path of its executable file. Also, you can specify some arguments for the command line of that application, if they are needed. This option also works for directories, if you wish to choose a file browser other than the system default.
- **Internal editor** - Allows selecting an editor type from the built-in editors that Oxygen XML Editor comes with. By default, this option is disabled when selecting directories.

If a file type is associated with an internal editor other than an XML editor type then the encoding set in [the preference \*Encoding for non XML files\*](#) is used for opening and saving a file of that type. This is necessary because in case of XML files the encoding is usually declared at the beginning of the XML file in a special declaration or it assumes the default value UTF-8 but in case of non XML files there is no standard mechanism for declaring the encoding of the file.

## Custom Editor Variables

An editor variable is useful for making a transformation scenario, a validation scenario or an external tool independent of the file path on which the scenario / command line is applied. An editor variable is specified as a parameter in a transformation scenario, validation scenario or command line of an external tool. Such a variable is defined by a name, a string value and a text description. A custom editor variable is defined by the user and can be used in the same expressions as the built-in ones.

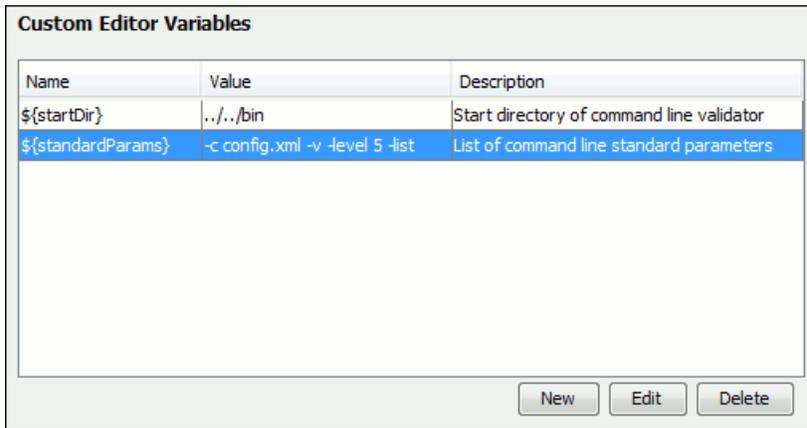


Figure 422: Custom Editor Variables

## The Network Connection Settings Preferences Page

This section presents the options available in the **Network Connection Settings** preferences pages.

### The Proxy Preferences Page

Some networks use proxy servers to provide internet services to LAN clients. Clients behind the proxy may therefore, only connect to the Internet via the proxy service. If you are not sure whether your computer is required to use a proxy server to connect to the Internet or you do not know the proxy parameters, consult your network administrator.

To open the **Proxy** preferences page, go to **Options > Preferences > Connection Settings > Proxy**. The following options are available:

- **Direct connection** - specifies whether the HTTP(S) connections go directly to the target host without going through a proxy server;
- **Use system settings** - specifies whether the HTTP(S) connections go through the proxy server set in the operating system. For example, on Windows the proxy settings are the ones that Internet Explorer uses;



**Attention:** The system settings for the proxy cannot be read correctly from the operating system on some Linux systems. The system settings option should work properly on Gnome based Linux systems, but it does not work on KDE based ones as *the Java virtual machine does not offer the necessary support yet*.

- **Manual proxy configuration** - specifies whether the HTTP(S) connections go through the proxy server specified in the **Address** and **Port** fields;
- **No proxy for** - specifies the hosts to which the connections must not go through a proxy server;
- **User** - specifies the user necessary for authentication with the proxy server;
- **Password** - specifies the password necessary for authentication with the proxy server;
- **SOCKS Proxy** - In this section you set the host and port of a SOCKS proxy through which all the connections pass. If the **Address** field is empty the connections use no SOCKS proxy.

### Using an automatic proxy configuration script (PAC)

If you have set up the path to an automatic proxy configuration script in your system (IE for Windows) Oxygen XML Editor cannot detect this setting out of the box.

You can create a new folder `OXYGEN_INSTALL_DIR\lib\endorsed` in which you should copy two additional Java libraries: `deploy.jar` and `plugin.jar`. These libraries can be found in the folder `OXYGEN_INSTALL_DIR\jre\lib` if the application comes with a bundled Java VM or otherwise in the Java VM installation used to run the application.

### The HTTP(S)/WebDAV Preferences Page

To open the **HTTP(S)/WebDAV** preferences page, go to **Options > Preferences > Connection settings > HTTP(S)/WebDAV**. The following options are available:

- **Internal Apache HttpClient Version** - Oxygen uses the Apache HttpClient to establish connections to HTTP servers. To enable Oxygen to benefit from particular sets of features provided by different versions, you may choose between v3 and v4.

 **Note:** For a full list of features, go to <http://hc.apache.org/httpclient-3.x/> and <http://hc.apache.org/httpcomponents-client-ga/>

- **Maximum number of simultaneous connections per host** - Defines the maximum number of simultaneous connections established by the application with a distinct host. Servers might consider multiple connections opened from the same source to be a **Denial of Service** attack. You can avoid that by lowering the value of this option.

 **Note:** This option accepts a minimum value of 5.

- **Read Timeout (seconds)** - The period in seconds after which the application considers that an HTTP server is unreachable if it does not receive any response to a request sent to that server.
- **Enable HTTP 'Expect: 100-continue' handshake for HTTP/1.1 protocol** - Activates *Expect: 100-Continue* handshake. The purpose of the *Expect: 100-Continue* handshake is to allow a client that is sending a request message with a request body to determine if the origin server is willing to accept the request (based on the request headers) before the client sends the request body. The use of the *Expect: 100-continue* handshake can result in noticeable performance improvement when working with databases. The *Expect: 100-continue* handshake should be used with caution, as it may cause problems with HTTP servers and proxies that do not support the HTTP/1.1 protocol.
- **Use the 'Content-Type' header field to determine the content type** - When checked, Oxygen XML Editor tries to determine a resource type using the **Content-Type** header field. This header indicates the *Internet media type* of the message content, consisting of a type and subtype, for example:

```
Content-Type: text/xml
```

When unchecked, the resource type is determined by analyzing its extension. For example, a file ending in *.xml* is considered to be an XML file.

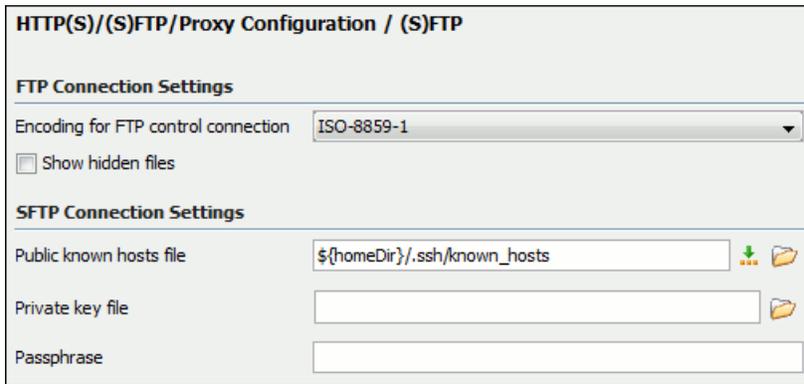
- **Automatic retry on recoverable error** - If enabled, if an HTTP error occurs when Oxygen XML Editor communicates with a server via HTTP, for example sending / receiving a SOAP request / response to / from a Web services server, and the error is recoverable, Oxygen XML Editor tries to send again the request to the server.
- **Automatically accept a security certificate, even if invalid** - When enabled, the HTTPS connections that Oxygen XML Editor attempts to establish will accept all security certificates, even if they are invalid.

 **Important:** By accepting an invalid certificate, you accept at your own risk a potential security threat, since you cannot verify the integrity of the certificate's issuer.

- **Encryption protocols (SVN Client only)** - this option is available only if you run the application with Java 1.6 or older. Sets a specific encryption protocol used when a repository is accessed through HTTPS protocol. You can choose one of the following values:
  - **SSLv3, TLSv1** (default value);
  - **SSLv3 only**;
  - **TLSv1 only**.
- **Lock WebDAV files on open** - If checked, the files opened through WebDAV are locked on the server so that they cannot be edited by other users while the lock placed by the current user still exists on the server.

## The (S)FTP Preferences Page

To open the (S)FTP preferences page, go to **Options > Preferences > HTTP(S) / (S)FTP / Proxy Configuration > (S)FTP**. In this preferences page you can customize the following options:



**Figure 423: The (S)FTP Configuration Preferences Panel**

- **Encoding for FTP control connection** - The encoding used to communicate with FTP servers: either ISO-8859-1 or UTF-8. If the server supports the UTF-8 encoding Oxygen XML Editor will use it for communication. Otherwise it will use ISO-8859-1.
- **Public known hosts file** - File containing the list of all SSH server host keys that you have determined are accurate. The default file location is ``${homeDir}/.ssh/known_hosts`.
- **Private key file** - The path to the file containing the private key used for the private key method of authentication of the secure FTP (SFTP) protocol. The user / password method of authentication has precedence if it is used in [the Open URL dialog](#).
- **Passphrase** - The passphrase used for the private key method of authentication of the secure FTP (SFTP) protocol. The user / password method of authentication has precedence if it is used in [the Open URL dialog](#).

### The SSH Preferences

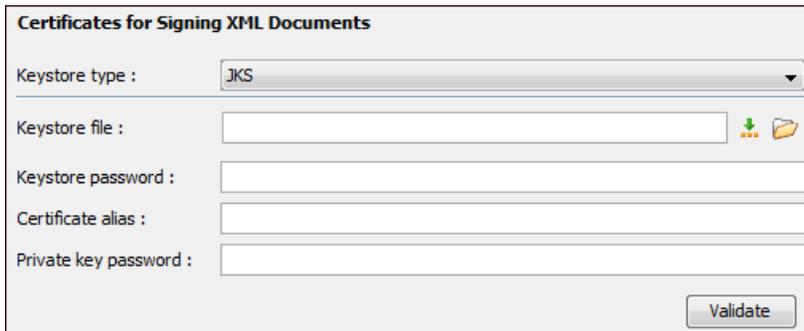
To open the **SSH** preferences page, go to **Options > Preferences > Connection settings > SSH**. The following options are available:

- **Use external SSH client** - allows you to specify the command line for an external SSH client which is used when connecting to a SVN+SSH repository. Absolute paths are recommended for the SSH client executable and the file paths given as arguments (if any). Depending on the SSH client used and your SSH server configuration, specify the user name and / or private key / passphrase in the command line. Here you can also choose if the default user name (the same user name as the SSH client user) will be used for SVN repository operations or you should be prompted for a SVN user name whenever SVN authentication is required. For example, on Windows the following command line uses the `plink.exe` tool as external SSH client for connecting to the SVN repository with SVN+SSH:

```
C:\plink-install-folder\plink.exe -l username -pw password -ssh -batch
host_name_or_IP_address_of_SVN_server
```

## Certificates

Oxygen XML Editor provides two types of keystores for certificates used for digital signatures of XML documents: Java KeyStore (JKS) and Public-Key Cryptography Standards version 12 (PKCS-12). A keystore file is protected by a password. To configure a certificate keystore, go to **Options > Preferences > XML > XML Signing Certificates**. You can customize the following parameters of a keystore:

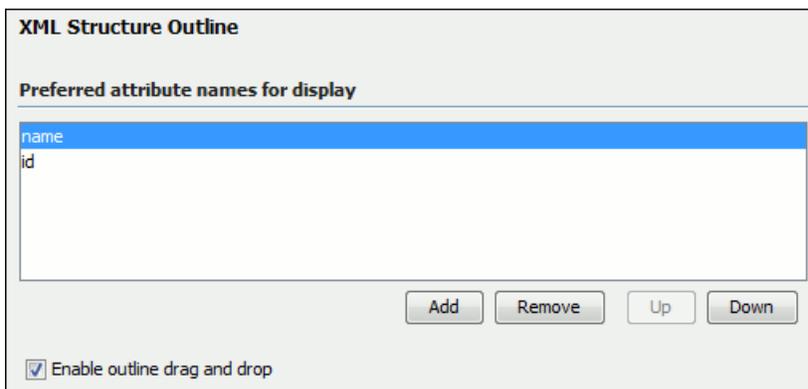


**Figure 424: The Certificates Preferences Panel**

- **Keystore type** - the type of keystore that Oxygen XML Editor uses;
- **Keystore file** - the location of the imported file;
- **Keystore password** - the password that is used for protecting the privacy of the stored keys;
- **Certificate alias** - the alias used for storing the key entry (the certificate and / or the private key) inside the keystore;
- **Private key password** - the private key password of the certificate. Required only for JKS keystores;
- **Validate** - press this button to verify the configured keystore and the validity of the certificate.

## XML Structure Outline

The **XML Structure Outline** preferences panel is opened from menu **Options > Preferences > XML Structure Outline** and contains the following preferences:

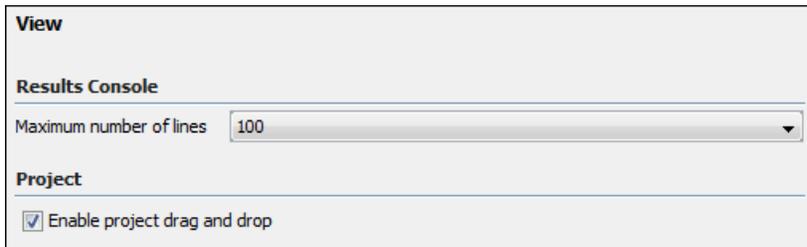


**Figure 425: The XML Structure Outline Preferences Panel**

- **Preferred attribute names for display** - The attribute names which should be preferred when displaying the element's attributes in the **Outline** view. If there is no preferred attribute name specified the first attribute of an element is displayed.
- **Enable outline drag and drop** - Drag and drop should be disabled for the tree displayed in the **Outline** view only if there is a possibility to accidentally change the structure of the document by such drag and drop operations.

## View

The **View** preferences panel is opened from menu **Options > Preferences > View** and contains the following preferences:

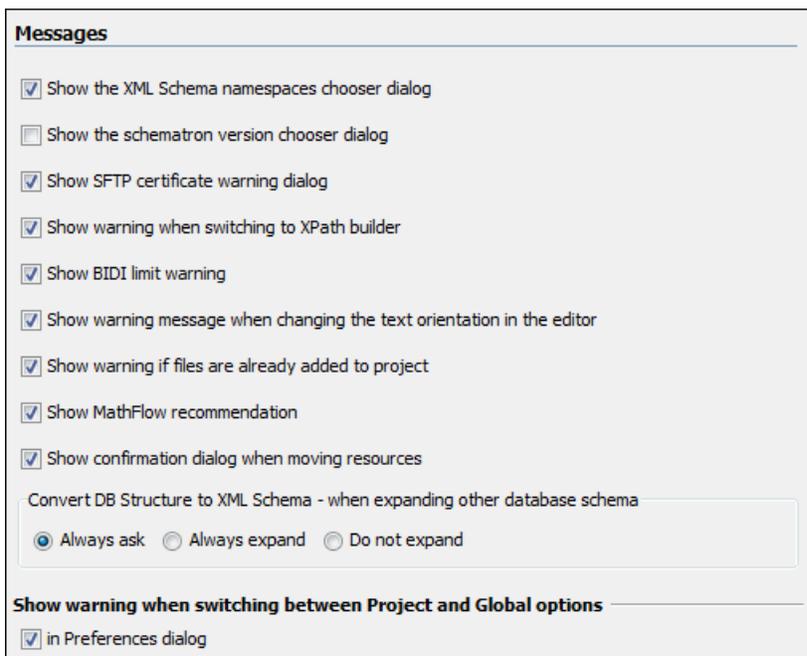


**Figure 426: The View Preferences Panel**

- **Maximum number of lines** - Sets the maximum number of lines of the output console where the output of the external tools is displayed.
- **Enable project drag and drop** - Enables the drag and drop support in **Project** view. It should be disabled only if there is a possibility to accidentally change the structure of the project by such drag and drop actions.

## Messages

The **Messages** preferences panel is opened from menu **Options > Preferences > Messages** and allows disabling the following warning messages which may appear in the application:



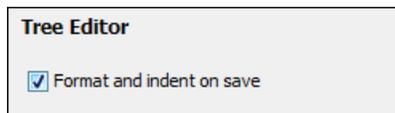
**Figure 427: The Messages Preferences Panel**

- **Show the XML Schema namespaces chooser dialog** - If checked, a namespace dialog appears when creating a new W3C XML Schema file.
- **Show the stylesheet version chooser dialog** - If checked, the XSLT version chooser dialog will be shown when creating a new XSLT stylesheet file.
- **Show the schematron version chooser dialog** - If checked, the Schematron version chooser dialog will be shown when creating a new schematron file.
- **Show SFTP Warning dialog** - If checked, a warning dialog will be shown each time when the authenticity of the SFTP server host cannot be established.
- **Show warning when switching to XPath builder** - If checked, a warning dialog will be shown when the XPath toolbar contains a long expression and the user is advised to use the **XPath Builder** view instead.
- **Show BIDI limit warning** - If checked, a warning dialog will be shown when the opened file which contains bidirectional characters is too large and bidirectional support is disabled.

- **Show warning if files are already added to project** - If checked, a dialog will be shown warning the user if he wants to add to project an already existing file.
- **Show archive backup dialog** - If checked, a dialog will be shown allowing the user different backup options before modifying an archive's content.
- **Show MathFlow recommendation** - If checked, if the MathFlow component is not configured in Oxygen XML Editor and you are trying to edit a MathML equation you will be notified that Oxygen XML Editor can be easily configured to use the MathFlow editor.
- **Convert DB Structure to XML Schema - when expanding other database schema** - When tables from a database schema are selected in the **Select Database Table** dialog, after the **Convert DB Structure to XML Schema** is invoked, and another database schema is expanded, a confirmation is needed because the previous selection will be discarded. This option controls whether the user should always be asked about the next action, the other database schema will always be expanded without asking the user or it will never be expanded.
- **Show confirmation dialog when moving resources** - Displays a confirmation dialog when you move a resource in the Project view, DB Explorer and Archive Browser. In the **Confirm** dialog you are able to choose not to see this dialog in the future.
- **Show warning when switching between Project and Global options in Preferences dialog** - If checked, a warning dialog will be shown about uncommitted changes when switching between Project and Global options in a preferences panel.

## Tree Editor

The **Tree Editor** preferences panel is opened from menu **Options > Preferences > Tree Editor** and contains the following preferences:



**Figure 428: The Tree Editor Preferences Panel**

- **Format and indent on save** - If selected, Oxygen XML Editor will run the action **Format and Indent** (pretty-print) on saving a document edited in the tree editor.

## Reset Global Options

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To reset all global preferences to their default values you have to go to menu **Options > Reset Global Options > Reset Global Options**. The project level preferences are not changed by this action. The list of transformation scenarios will be reset to the default scenarios.

## Scenarios Management

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You can import, export and reset the global scenarios for transformation and validation with the following actions:

- The action **Options > Import Global Transformation Scenarios** loads a set of transformation scenarios from a properties file that was created with the action **Export Global Transformation Scenarios**.
- The action **Options > Export Global Transformation Scenarios** stores all the global (not project-level) transformation scenarios in a properties file that can be used later by the action **Import Global Transformation Scenarios**.
- The action **Options > Import Global Validation Scenarios** loads a set of validation scenarios from a properties file that was created with the action **Export Global Validation Scenarios**.
- The action **Options > Export Global Validation Scenarios** stores all the global (not project-level) validation scenarios in a separate properties file.

The options of **Export Global Transformation Scenarios** and **Export Global Validation Scenarios** is used to store all the scenarios in a separate file which is a properties file. In this file will also be saved the associations between document URLs and scenarios. You can load the saved scenarios using the actions **Import Global Transformation**

**Scenarios** and **Import Global Validation Scenarios**. All the imported scenarios will have added to the name the word **import** to distinguish the existing scenarios and the imported ones.

## Editor Variables

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An editor variable is a shorthand notation for context-dependent information, like a file or folder path, a time-stamp or a date. It is used in the definition of a command (for example the input URL of a transformation, the output file path of a transformation, the command line of an external tool) to make a command or a parameter generic and reusable with other input files. When the same command is applied to different files, the notation is expanded at the execution of the command so that the same command has different effects depending on the actual file.

You can use the following editor variables in Oxygen XML Editor commands of external engines or other external tools, in transformation scenarios, validation scenarios, and Author operations:

- **`\${oxygenHome}`** - Oxygen XML Editor installation folder as URL.
- **`\${oxygenInstallDir}`** - Oxygen XML Editor installation folder as file path.
- **`\${frameworks}`** - The path (as URL) of the `frameworks` subfolder of the Oxygen XML Editor install folder.
- **`\${frameworksDir}`** - The path (as file path) of the `frameworks` subfolder of the Oxygen XML Editor installation folder.
- **`\${home}`** - The path (as URL) of the user home folder.
- **`\${homeDir}`** - The path (as file path) of the user home folder.
- **`\${pdu}`** - Current project folder as URL.
- **`\${pd}`** - Current project folder as file path.
- **`\${pn}`** - Current project name.
- **`\${cfdu}`** - Current file folder as URL, that is the path of the current edited document up to the name of the parent folder, represented as a URL.
- **`\${cfd}`** - Current file folder as file path, that is the path of the current edited document up to the name of the parent folder.
- **`\${cfn}`** - Current file name without extension and without parent folder.
- **`\${cfne}`** - Current file name with extension.
- **`\${cf}`** - Current file as file path, that is the absolute file path of the current edited document.
- **`\${cfu}`** - The path of the current file as a URL.
- **`\${af}`** - The file path of the zip archive that includes the current transformed file (this variable is available only in a transformation scenario).
- **`\${afu}`** - The URL of the zip archive that includes the current transformed file (this variable is available only in a transformation scenario).
- **`\${afd}`** - The directory of the zip archive that includes the current transformed file (this variable is available only in a transformation scenario).
- **`\${afdu}`** - The URL of the directory of the zip archive that includes the current transformed file (this variable is available only in a transformation scenario).
- **`\${afn}`** - The file name (without parent directory and without file extension) of the zip archive that includes the current transformed file (this variable is available only in a transformation scenario).
- **`\${afne}`** - The file name (with file extension, for example `.zip` or `.epub`, but without parent directory) of the zip archive that includes the current transformed file (this variable is available only in a transformation scenario).
- **`\${currentFileURL}`** - Current file as URL, that is the absolute file path of the current edited document represented as URL.
- **`\${ps}`** - Path separator, that is the separator which can be used on the current platform (Windows, Mac OS X, Linux) between library files specified in the class path.
- **`\${timeStamp}`** - Time stamp, that is the current time in Unix format. It can be used for example to save transformation results in different output files on each transform.
- **`\${caret}`** - The position where the caret is inserted. This variable can be used in a *code template*, in **Author** operations, or in a *selection plugin*.

- **`\${selection}`** - The XML content of the current selection in the editor panel. This variable can be used in a *code template* and Author operations, or in a *selection plugin*.
- **`\${id}`** - Application-level unique identifier.
- **`\${uuid}`** - Universally unique identifier.
- **`\${env(VAR\_NAME)}`** - Value of the *VAR\_NAME* environment variable. The environment variables are managed by the operating system. If you are looking for Java System Properties, use the **`\${system(var.name)}`** editor variable.
- **`\${ask('message', type, ('real\_value1':'rendered\_value1'; 'real\_value2':'rendered\_value2'; ...), 'default\_value')}`** - To prompt for values at runtime, use the *ask('message', type, ('real\_value1':'rendered\_value1'; 'real\_value2':'rendered\_value2'; ...), 'default-value')* editor variable. The following parameters can be set:
  - 'message' - the displayed message. Note the quotes that enclose the message.
  - type - optional parameter. Can have one of the following values:
    - url - input is considered an URL. Oxygen XML Editor checks that the URL is valid before passing it to the transformation;
    - password - input characters are hidden;
    - generic - the input is treated as generic text that requires no special handling;
    - relative\_url - input is considered an URL. Oxygen XML Editor tries to make the URL relative to that of the document you are editing.



**Note:** You can use the `ask` editor variable in file templates. In this case, Oxygen XML Editor keeps an absolute URL.

- combobox - displays a dialog that contains a non-editable combo-box;
- editable\_combobox - displays a dialog that contains an editable combo-box;
- radio - displays a dialog that contains radio buttons;
- 'default-value' - optional parameter. Provides a default value in the input text box.

#### Examples:

- ``${ask('message')}`` - Only the message displayed for the user is specified.
  - ``${ask('message', generic, 'default')}`` - 'message' is displayed, the type is not specified (the default is string), the default value is 'default'.
  - ``${ask('message', password)}`` - 'message' is displayed, the characters typed are masked with a circle symbol.
  - ``${ask('message', password, 'default')}`` - same as before, the default value is 'default'.
  - ``${ask('message', url)}`` - 'message' is displayed, the parameter type is URL.
  - ``${ask('message', url, 'default')}`` - same as before, the default value is 'default'.
- **`\${system(var.name)}`** - Value of the *var.name* Java system property. The Java system properties can be specified in the command line arguments of the Java runtime as `-Dvar.name=var.value`. If you are looking for operating system environment variables, use the **`\${env(VAR\_NAME)}`** editor variable instead.
  - **`\${date(pattern)}`** - Current date. Follows the given pattern. Example: yyyy-MM-dd.
  - **`\${dbgXML}`** - The path to the current Debugger source selection (for tools started from the XSLT/XQuery Debugger).
  - **`\${dbgXSL}`** - The path to the current Debugger stylesheet selection (for tools started from the XSLT/XQuery Debugger).
  - **`\${tsf}`** - The transformation result file.
  - **`\${ps}`** - The path separator which can be used on different operating systems between libraries specified in the class path.
  - **`\${dsu}`** - The path of the detected schema as a URL.
  - **`\${ds}`** - The path of the detected schema as a local file path.
  - **`\${cp}`** - Current page number.
  - **`\${tp}`** - Total number of pages in the document.

## Custom Editor Variables

An editor variable can be created by the user and included in any user defined expression where a built-in editor variable is also allowed. For example a custom editor variable may be necessary for configuring the command line of an external tool, the working directory of a custom validator, the command line of a custom XSLT engine, a custom FO processor, etc. All the custom editor variables are listed together with the built-in editor variables, for example when editing the working folder or the command line of an *external tool* or of a *custom validator*, the working directory, etc.

Creating a custom editor variable is very simple: just specify the name that will be used in user defined expressions, the value that will replace the variable name at runtime and a textual description for the user of that variable.

You can configure the custom editor variables in the [Preferences page](#).

## Configure Toolbars

You can configure the toolbars that appear in the current editor mode (Author, Text, Grid, Schema Design) using the **Configure toolbars** dialog that is opened from menu **Window > Configure toolbars ...**

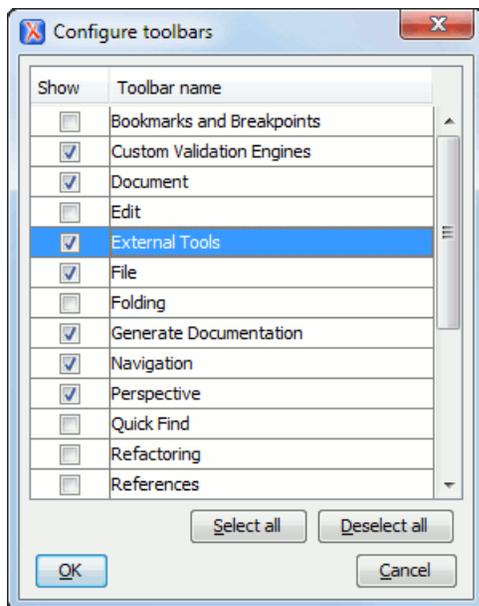


Figure 429: Configure Toolbars Dialog

## Custom System Properties

A number of Java system properties can be set in the application to influence its behavior:

Table 13: Custom System Properties

Property	Allowed values	Purpose
<i>com.oxygenxml.disable.http.protocol.handlers</i>	true/false (false by default)	By default Oxygen uses for HTTP(S) connections the open source Apache HTTP Client software. If you disable this feature, the default Java SUN protocols HTTP(S) will be used instead. You will also lose <b>WebDav</b> support and probably other related features.
<i>com.oxygenxml.default.options</i>	An URL-like relative or absolute path.	Provides the path to an XML file containing default application options. Read this topic for

Property	Allowed values	Purpose
<i>com.oxygenxml.customOptionsDir</i>	A file system absolute path pointing to a folder.	more details: <a href="#">Customized Default Options</a> on page 784. Sets a different folder which will be used by the application to load and save preference files. The default place where the options are saved varies according to the operating system: <a href="#">Importing / Exporting Global Options</a> on page 785
<i>com.oxygenxml.ApplicationDataFolder</i>	A file system absolute path pointing to a folder.	When the application runs on Windows you can set this property to it to change the place where the application considers that the <i>APPDATA</i> folder is located.
<i>com.oxygenxml.editor.frameworks.url</i>	An URL-like absolute path.	Changes the folder where the application considers that all frameworks/document types are installed. It has the same effect as changing the <b>Use custom frameworks directory</b> value in the <a href="#">Global</a> on page 787 Preferences page.
<i>com.oxygenxml.MultipleInstances</i>	true/false	If <b>true</b> allows multiple instances of the application to be started. By default it is <b>true</b> on Linux and <b>false</b> on Windows.
<i>com.oxygenxml.xep.location</i>	A file system absolute path pointing to a folder.	Points to a folder where RenderX XEP is installed. Has the same effect as configuring XEP in the <a href="#">FO Processors</a> on page 832 Preferences page.
<i>com.oxygenxml.additional.classpath</i>	A list of JAR-like resources separated by the platform file separator.	An additional list of libraries to be used in the application's internal class loader in addition to the libraries specified in the <code>lib</code> folder.
<i>com.oxygenxml.user.home</i>	A file system absolute path pointing to a folder.	Overwrites the user home which was implicitly detected for the application.
<i>com.oxygenxml.use.late.delegation.for.authorextensions</i>	true/false (true by default)	All Java extensions in a document type configuration are instantiated in a separate class loader. When <b>true</b> , the JAR libraries used in a certain document type configuration will have priority to resolve classes before delegating to the parent class loader. This is the default behavior. When <b>false</b> the parent class loader will take precedence.
<i>com.oxygenxml.stack.size.validation.threads</i>	The number of bytes used to validation threads.	Some parts of the application (validation, content completion) which use the Relax NG parser require sometimes a larger Thread stack size in order to parse complex schemas. The default value is (5 * 1024 * 1024) which should be more than enough.
<i>com.oxygenxml.jing.skip.validation.xhtml.data.attrs</i>	true/false (true by default)	By default the Relax NG validation was configured to skip validation for XHTML attributes starting with "data-" which should

<b>Property</b>	<b>Allowed values</b>	<b>Purpose</b>
		be skipped from validation according to the XHTML 5 specification.

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# Chapter 26

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## Upgrading the Application

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### Topics:

- [Upgrading Oxygen XML Editor on Windows / Linux](#)
- [Upgrading Oxygen XML Editor on Mac OS X](#)

This chapter presents the procedure you have to follow to upgrade Oxygen XML Editor.

## Upgrading Oxygen XML Editor on Windows / Linux

---

The following steps describe the upgrading procedure of Oxygen XML Editor, valid for Windows:

1. In case you added files, or modified files from the installation folder of Oxygen XML Editor, save a copy of them. These files are overwritten during the upgrade.



**Note:** Custom frameworks are preserved, but we recommend you to back them up as well.

2. Run the new installation kit and install the new version in the folder where the old version was installed.
3. When you are promoted to choose whether you want to upgrade the existed installation, select **Proceed**. The old version is uninstalled automatically and the new one takes its place.
4. Copy the files you previously backed up in the installation folder.

## Upgrading Oxygen XML Editor on Mac OS X

---

The following steps describe the upgrading procedure of Oxygen XML Editor, valid for Mac OS X:

1. Back up anything you need from the installation folder of Oxygen XML Editor.
2. Remove the installation folder.
3. Unpack the archive with the new version.



**Note:** Do not unpack a new version of Oxygen XML Editor on top of an older version. This causes problems because of used libraries that become duplicated.

4. Copy the backed-up files in the new installation folder.

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# Chapter

# 27

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## Common Problems

---

### Topics:

- [\*XML Document Opened After a Long Time\*](#)
- [\*Out Of Memory Error When I Open Large Documents\*](#)
- [\*Special Characters Are Replaced With a Square in Editor\*](#)
- [\*XSLT Debugger Is Very Slow\*](#)
- [\*The Scroll Function of my Notebook's Trackpad is Not Working\*](#)
- [\*NullPointerException at Startup on Windows XP\*](#)
- [\*Crash at Startup on Windows with an Error Message About a File nvoglv32.dll\*](#)
- [\*Oxygen XML Editor Crashed on My Mac OS X Computer\*](#)
- [\*Wrong Highlights of Matched Words in a Search in User Manual\*](#)
- [\*Keyboard Shortcuts Do Not Work\*](#)
- [\*After Installing Oxygen XML Editor I Cannot Open XML Files in Internet Explorer Anymore\*](#)
- [\*I Cannot Associate Oxygen XML Editor With a File Type on My Windows Computer\*](#)
- [\*The Files Are Opened in Split Panels When I Restart the Oxygen XML Editor Application\*](#)
- [\*Grey Window on Linux With the Compiz / Beryl Window Manager\*](#)
- [\*Drag and Drop Without Initial Selection Does Not Work\*](#)
- [\*Set Specific JVM Version on Mac OS X\*](#)
- [\*Segmentation Fault Error on Mac OS X\*](#)

This chapter presents common problems that may appear when running the application and the solutions for these problems.

- [\*Damaged File Associations on Mac OS X\*](#)
- [\*I Cannot Connect to SVN Repository From Repositories View\*](#)
- [\*Problem Report Submitted on the Technical Support Form\*](#)
- [\*Signature verification failed error on open or edit a resource from Documentum\*](#)
- [\*Cannot cancel a system shutdown when there is at least one modified document open in Oxygen XML Editor\*](#)
- [\*Compatibility issue between Java and certain graphics card drivers\*](#)
- [\*An Image appears stretched out in the PDF output\*](#)
- [\*The DITA PDF Transformation Fails\*](#)

## XML Document Opened After a Long Time

---

Oxygen XML Editor opens an XML document after a long time. Why does it happen?

Usually the time necessary for opening an XML document is long when the whole content of your document is on a single line or the document size is very large. If the content is on a single line please enable the **Format and indent the document on open** preference from menu *Options > Preferences > Editor > Format* before opening the document. If the document is very large (above 30 MB) you should make sure that the minimum limit of document size that enables the support for editing large documents (the value of *the option Optimize loading in the Text edit mode for files over*) is less than the size of your document. If that fails and you get an Out Of Memory error (**OutOfMemoryError**) you should *increase the memory available to Oxygen XML Editor*.

## Out Of Memory Error When I Open Large Documents

---

I am trying to open a file larger than 100 MB for editing in Oxygen XML Editor but it keeps telling me it runs out of memory (**OutOfMemoryError**). What can I do?

You should make sure that the minimum limit of document size that enables the support for editing large documents (the value of *the option Optimize loading in the Text edit mode for files over*) is less than the size of your document. That will enable the optimized support for large documents. If that fails and you still get an Out Of Memory error you should *increase the memory available to Oxygen XML Editor*.

## Special Characters Are Replaced With a Square in Editor

---

My file was created with other application and it contains special characters like é, ©, ®, etc. Why does Oxygen XML Editor display a square for these characters when I open the file in Oxygen XML Editor?

You must set a font able to render the special characters in the *Font preferences*. If it is a text file you must set also *the encoding used for non XML files*. If you want to set a font which is installed on your computer but that font is not accessible in the **Font** preferences that means the Java virtual machine is not able to load the system fonts, probably because it is not a True Type font. It is a problem of the Java virtual machine and a possible solution is to copy the font file in the `[JVM-home-folder]/lib/fonts` folder. `[JVM-home-folder]` is the value of the property `java.home` which is available in the **System properties** tab of the **About** dialog that is opened from menu **Help > About**.

## XSLT Debugger Is Very Slow

---

When I run a transformation in the **XSLT Debugger** perspective it is very slow. Can I increase the speed?

If the transformation produces HTML or XHTML output you should *disable rendering of output in the XHTML output view* during the transformation process. To view the XHTML output result do one of the following:

- run the transformation in the **Editor** perspective and make sure the *Open in Browser/System Application option* is enabled;
- run the transformation in the **XSLT Debugger** perspective, save the text output area to a file, and use a browser application for viewing it (for example Firefox or Internet Explorer).

## The Scroll Function of my Notebook's Trackpad is Not Working

---

I got a new notebook (Lenovo Thinkpad™ with Windows) and noticed that the scroll function of my trackpad is not working in Oxygen XML Editor.

It is a problem of the Synaptics™ trackpads which can be fixed by adding the following lines to the `C:\Program Files\Synaptics\SynTP\TP4table.dat` file:

```
* , * , oxygen14.2.exe , * , * , WheelStd , 1 , 9
* , * , oxygenAuthor14.2.exe , * , * , WheelStd , 1 , 9
* , * , oxygenDeveloper14.2.exe , * , * , WheelStd , 1 , 9
* , * , syncroSVNClient.exe , * , * , WheelStd , 1 , 9
* , * , diffDirs.exe , * , * , WheelStd , 1 , 9
* , * , diffFiles.exe , * , * , WheelStd , 1 , 9
```

## NullPointerException at Startup on Windows XP

---

When I start Oxygen XML Editor on Windows XP I get the following error. What can I do?

```
Cannot start Oxygen XML Editor.
Due to: java.lang.NullPointerException
java.lang.NullPointerException
at com.sun.java.swing.plaf.windows.XPStyle.getString(Unknown Source)
at com.sun.java.swing.plaf.windows.XPStyle.getString(Unknown Source)
at com.sun.java.swing.plaf.windows.XPStyle.getDimension(Unknown Source)
at com.sun.java.swing.plaf.windows.WindowsProgressBarUI.
getPreferredInnerHorizontal(Unknown Source)
```

The error is caused by a [bug in the Java runtime from Sun Microsystems](#). You can avoid it by setting the Java system property `com.oxygenxml.no.xp.theme` to the value `true` in the startup script, that is [adding the startup parameter `-Dcom.oxygenxml.no.xp.theme=true`](#). If you start Oxygen XML Editor with the `oxygen.bat` script just add the parameter `-Dcom.oxygenxml.no.xp.theme=true` to the `java` command in the script. If you start Oxygen XML Editor from the Start menu shortcut you have to add the same parameter on a new line in the file `[oXygen-install-folder]\oxygen14.2.vmoptions .`

## Crash at Startup on Windows with an Error Message About a File `nvogl32.dll`

---

I try to start Oxygen XML Editor on Windows but it crashed with an error message about “Fault Module Name: `nvogl32.dll`”. What is the problem?

It is an OpenGL driver issue that can be avoided by creating an empty file called `opengl32.dll` in the Oxygen XML Editor install folder (if you start Oxygen XML Editor with the shortcut created by the installer on the Start menu or on Desktop) or in the subfolder `bin` of the home folder of the Java virtual machine that runs Oxygen XML Editor (if you start Oxygen XML Editor with the `oxygen.bat` script). The home folder of the Java virtual machine that runs Oxygen XML Editor is the value of the property `java.home` which is available in the **System properties** tab of the **About** dialog that is opened from menu **Help > About**.

## Oxygen XML Editor Crashed on My Mac OS X Computer

---

Oxygen XML Editor crashed the Apple Java virtual machine/Oxygen XML Editor could not start up on my Mac OS X computer due to a JVM crash. What can I do?

Usually it is an incompatibility between the Apple JVM and a native library of the host system. More details are available in the crash log file generated by OS X and reported in the crash error message.

## Wrong Highlights of Matched Words in a Search in User Manual

---

When I do a keyword search in the User Manual that comes with the Oxygen XML Editor application the search highlights the wrong word in the text. Sometimes the highlighted word is several words after the matched word. What can I do to get correct highlights?

This does not happen when Oxygen XML Editor runs with a built-in Java virtual machine, that is a JVM that was installed by Oxygen XML Editor in a subfolder of the installation folder, for example on Windows and Linux when installing Oxygen XML Editor with the installation wizard specific for that platform. When Oxygen XML Editor runs from an All Platforms installation it uses whatever JVM was found on the host system which may be incompatible with

the JavaHelp indexer used for creating the built-in User Manual. Such a JVM may offset the highlight of the matched word with several characters, usually to the right of the matched word. In order to see the highlight exactly on the matched word it is recommended to install the application with the specific installation wizard for your platform (available only for Windows and Linux).

## Keyboard Shortcuts Do Not Work

---

The keyboard shortcuts listed in **Options > Preferences > Menu Shortcut Keys** do not work. What can I do?

Usually this happens when a special keyboard layout is set in the operating system which generates other characters than the usual ones for the keys of a standard keyboard. For example if you set the extended Greek layout for your keyboard you should return to the default Greek layout or to the English one. Otherwise the Java virtual machine that runs the application will receive other key codes than the usual ones for a standard keyboard.

## After Installing Oxygen XML Editor I Cannot Open XML Files in Internet Explorer Anymore

---

Before installing Oxygen XML Editor I had no problems opening XML files in Internet Explorer. Now when I try to open an XML file in Internet Explorer it opens the file in Oxygen XML Editor. How can I load XML files in Internet Explorer again?

XML files are opened in Oxygen XML Editor because Internet Explorer uses the Windows system file associations for opening files and you associated XML files with Oxygen XML Editor in the installer panel called **File Associations** therefore Internet Explorer opens XML files with the associated Windows application.

By default the association with XML files is disabled in the Oxygen XML Editor installer panel called **File Associations**. When you enabled it the installer displayed a warning message about the effect that you experience right now.

For opening XML files in Internet Explorer again you have to set Internet Explorer as the default system application for XML files, for example by right-clicking on an XML file in Windows Explorer, selecting **Open With > Choose Program**, selecting IE in the list of applications and selecting the checkbox **Always use the selected program**. Also you have to run the following command from a command line:

```
wscript revert.vbs
```

where `revert.vbs` is a text file with the following content:

```
function revert()
  Set objShell = CreateObject("WScript.Shell")
  objShell.RegWrite "HKCR\.xml\*", "xmlfile", "REG_SZ"
  objShell.RegWrite "HKCR\.xml\Content Type", "text/xml", "REG_SZ"
end function

revert()
```

## I Cannot Associate Oxygen XML Editor With a File Type on My Windows Computer

---

I cannot associate the Oxygen XML Editor application with a file type on my Windows computer by right clicking on a file in Windows Explorer, selecting **Open With > Choose Program** and browsing to the file . When I select the file in the Windows file browser dialog the Oxygen XML Editor application is not added to the list of applications in the **Open With** dialog. What can I do?

The problem is due to some garbage Windows registry entries remained from versions of Oxygen XML Editor older than version 9.0. Please uninstall all your installed versions of Oxygen XML Editor and run a registry cleaner application for cleaning these older entries. After that just reinstall your current version of Oxygen XML Editor and try again to create the file association.

## The Files Are Opened in Split Panels When I Restart the Oxygen XML Editor Application

---

When I close the Oxygen XML Editor application with multiple files open and then restart it, every file opens in a split panel of the editing area instead of a tab sharing with the other opened files the same editing area which organizes the editors in a tabbed pane. I want to have the files arranged as a tabbed pane as they used to be arranged before closing the Oxygen XML Editor application.

This happens sometimes when several files are opened automatically on startup. It is a problem of the JIDE docking views library used in Oxygen XML Editor for docking and floating views. The workaround is to run the action **Window > Reset Layout**. If you have a specific layout of the Oxygen XML Editor views which you want to preserve when running this action you should set your layout with the option **Use fixed layout** that is available from menu **Options > Preferences > Perspectives Layout**.

## Grey Window on Linux With the Compiz / Beryl Window Manager

---

I try to run Oxygen XML Editor on Linux with the Compiz / Beryl window manager but I get only a grey window which does not respond to user actions. Sometimes the Oxygen XML Editor window responds to user actions but after opening and closing an Oxygen XML Editor dialog or after resizing the Oxygen XML Editor window or a view of the Oxygen XML Editor window the content of this window becomes grey and it does not respond to user actions. What is wrong?

Sun Microsystems' Java virtual machine *does not support the Compiz window manager and the Beryl one very well*. It is expected that better support for Compiz / Beryl will be added in future versions of their Java virtual machine. You should turn off the special effects of the Compiz / Beryl window manager before starting the Oxygen XML Editor application or switch to other window manager.

## Drag and Drop Without Initial Selection Does Not Work

---

When I try to drag with the mouse an unselected file from the **Project** view or the **DITA Maps Manager** view, the drag never starts, it only selects the resource. I need to drag the resource again after it becomes selected. As a result any drag and drop without initial selection becomes a two step operation. How can I fix this?

This is a *bug* present in JVM versions prior to 1.5.0\_09. This issue is fixed in 1.5.0\_09 and newer versions (including 1.6). See *the installation instructions* for setting a specific JVM version for running the Oxygen XML Editor application.

## Set Specific JVM Version on Mac OS X

---

How do I configure Oxygen XML Editor to run with the version X of the Apple Java virtual machine on my Mac OS X computer?

Oxygen XML Editor uses the first JVM from the list of preferred JVM versions set on your Mac computer that has a version number 1.6.0 or higher. You can move your desired JVM version up in the preferred list by dragging it with the mouse on a higher position in the list of JVMs available in the **Java Preferences** panel that is opened from **Applications > Utilities > Java > Java Preferences**.

## Segmentation Fault Error on Mac OS X

---

On my Mac OS X machine the application gives a *Segmentation fault* error when I double-click on the application icon. Sometimes it gives no error but it does not start. What is the problem?

Please make sure you have the latest Java update from the Apple website installed on your Mac OS X computer. If installing the latest Java update doesn't solve the problem please copy the file `JavaApplicationStub` from the

/System/Frameworks/JavaVM.framework folder to the Oxygen.app/Contents/MacOS folder. For browsing the .app folder you have to **(CMD+click)** on the Oxygen XML Editor icon and select **Show Package Contents**.

## Damaged File Associations on Mac OS X

---

After upgrading OS X to version 10.4.x / Oxygen XML Editor to version 6.x Oxygen XML Editor is not associated anymore to the file types XML, XSL, XSD, etc. This worked in the previous version of Oxygen XML Editor. How can I create the file associations again?

The upgrade damaged the file associations in the LaunchService Database on your Mac OS X machine. Please rebuild the LaunchService Database with the following procedure. This will reset all file associations and will rescan the entire file system searching for applications that declare file associations and collecting them in a database used by Finder.

1. Find all the Oxygen XML Editor installations on your hard drive.
2. Delete them by dragging them to the Trash.
3. Clear the Trash.
4. Unpack the Oxygen XML Editor installation kit on your desktop.
5. Copy the contents of the archive into the folder / Applications / Oxygen.
6. Run the following command in a Terminal:

```
/System/Library/Frameworks/CoreServices.framework/Versions/A/Frameworks/LaunchServices.framework/Versions/A/Support/lregister
-kill -r -domain local -domain system -domain user
```

7. Restart Finder with the following command:

```
killall Finder
```

8. Create a XML or XSD file on your desktop.  
It should take the Oxygen XML Editor icon.
9. Double click the file.
10. Accepting the confirmation dialog.

Oxygen XML Editor will start up and the file associations work correctly.

## I Cannot Connect to SVN Repository From Repositories View

---

I cannot connect to a SVN repository from the **Repositories** view of SVN Client. How can I find more details about the error?

First check that you entered the correct URL of the repository in the **Repositories** view. Also check that a SVN server is running on the server machine specified in the repository URL and is accepting connections from SVN clients. You can check that the SVN server accepts connections with the command line SVN client from CollabNet.

If you try to access the repository with a `svn+ssh` URL also check that a SSH server is running on port 22 on the server machine specified in the URL.

If the above conditions are verified and you cannot connect to the SVN repository please generate a logging file on your computer and send the logging file to `support@oxygenxml.com`. For generating a logging file you need to create a text file called `log4j.properties` in the install folder with the following content:

```
log4j.rootCategory= debug, R2
log4j.appender.R2=org.apache.log4j.RollingFileAppender
log4j.appender.R2.File=logging.log
log4j.appender.R2.MaxFileSize=12000KB
log4j.appender.R2.MaxBackupIndex=20
```

```
log4j.appender.R2.layout=org.apache.log4j.PatternLayout
log4j.appender.R2.layout.ConversionPattern=%r %p [ %t ] %c - %m%n
```

Restart the application, reproduce the error, close the application and send the file `logging.log` generated in the install directory to [support@oxygenxml.com](mailto:support@oxygenxml.com).

## Problem Report Submitted on the Technical Support Form

---

What details should I add to my problem report that I enter on the Technical Support online form of the product website?

For problems like server connection error, unexpected delay while editing a document, a crash of the application, etc for which the usual details requested on the Technical Support online form are not enough you should generate a log file and attach it to the problem report. In case of a crash you should also attach the crash report file generated by your operating system. For generating a logging file you need to create a text file called `log4j.properties` in the install folder with the following content:

```
log4j.rootCategory= debug, R2

log4j.appender.R2=org.apache.log4j.RollingFileAppender
log4j.appender.R2.File=logging.log
log4j.appender.R2.MaxFileSize=12000KB
log4j.appender.R2.MaxBackupIndex=20
log4j.appender.R2.layout=org.apache.log4j.PatternLayout
log4j.appender.R2.layout.ConversionPattern=%r %p [ %t ] %c - %m%n
```

Restart the application, reproduce the error and close the application. The log file is called `logging.log` and is located in the install folder.

## Signature verification failed error on open or edit a resource from Documentum

---

When I try to open/edit a resource from Documentum, I receive the following error:

```
signature verification failed: certificate for All-MB.jar.checksum not signed
by a certification authority.
```

The problem is that the certificates from the Java Runtime Environment 1.6.0\_22 or later no longer validate the signatures of the UCF jars.

Set the `-Drequire.signed.ucf.jars=false` parameter, as explained in the [Setting a Parameter in the Launcher Configuration File / Startup Script](#) topic.

```
-vmargs
-Xms40m
-Xmx256m
-Drequire.signed.ucf.jars=false
```

## Cannot cancel a system shutdown when there is at least one modified document open in Oxygen XML Editor

---

If I try to shutdown my Win XP when there is at least one modified document open in Oxygen XML Editor, I am prompted to cancel the shutdown or force quit the application. If I choose **Cancel**, the system shuts down anyway. Why is that?

This problem was reported on Windows XP systems only. The known workaround is to start Oxygen XML Editor using the `oxygen.bat` script.

## Compatibility issue between Java and certain graphics card drivers

---

Under certain settings, a compatibility issue can appear between Java and some graphics card drivers, which results in the text from the editor (in **Author** or **Text** mode) being displayed garbled. In case you encounter this problem, update your graphics card driver. Another possible workaround is to go to **Preferences > Fonts > Text antialiasing** and set the value of **Text antialiasing** option to ON.

 **Note:** If this workaround does not resolve the problem, set the **Text antialiasing** option to other values than ON.

## An Image appears stretched out in the PDF output

---

Sometimes when publishing XML content (DITA, Docbook, etc) images are scaled up in the PDF outputs but are displayed perfectly in the HTML (or WebHelp) output.

PDF output from XML content is obtained by first obtaining a intermediary XML format called XSL-FO and then applying an XSL-FO processor to it to obtain the PDF. This stretching problem is caused by the fact that all XSL-FO processors take into account the DPI (dots-per-inch) resolution when computing the size of the rendered image.

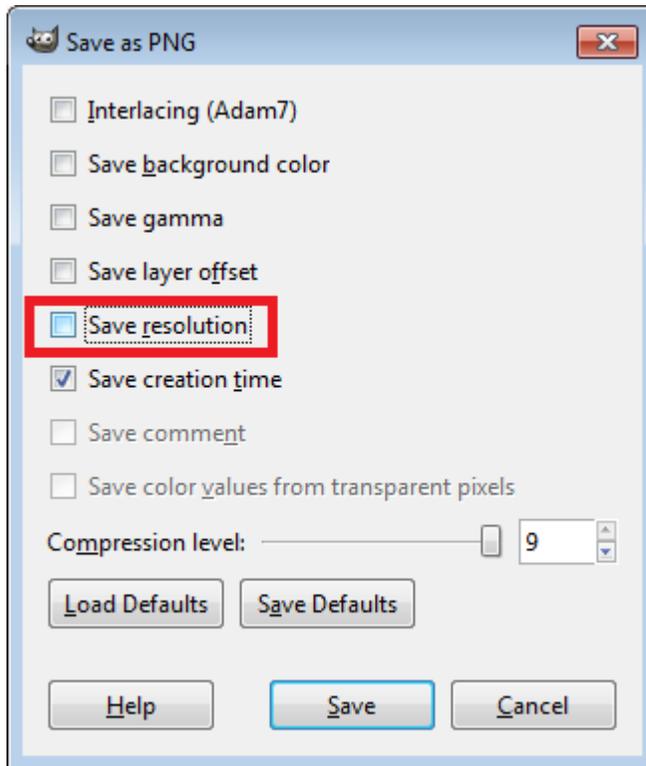
The PDF processor which comes out of the box with the application is the open-source Apache FOP processor. Here is what Apache FOP does when deciding the image size:

1. If the XSL-FO output contains width, height or a scale specified for the image `external-graphic` tag, then these dimensions are used. This means that if in the XML (DITA, Docbook, etc) you set explicit dimensions to the image they will be used as such in the PDF output.
2. If there are no sizes (width, height or scale) specified on the image XML element, the processor looks at the image resolution information available in the image content. If the image has such a resolution saved in it, the resolution will be used and combined with the image width and height in order to obtain the rendered image dimensions.
3. If the image does not contain resolution information inside, Apache FOP will look at the FOP configuration file for a default resolution. The FOP configuration file for XSLT transformations which output PDF is located in the `OXYGEN_INSTALL_DIR\lib\fop-config.xml`. DITA publishing uses the DITA Open Toolkit which has the Apache FOP configuration file located in `OXYGEN_INSTALL_DIR/frameworks/dita/DITA-OT/plugins/org.dita.pdf2/fop/conf/fop.xconf`. The configuration file contains two XML elements called `source-resolution` and `target-resolution`. The values set to those elements can be increased, usually a DPI value of 110 or 120 should render the image in PDF just like in the HTML output.

The commercial **RenderX XEP** XSL-FO processor behaves similarly but as a fallback it uses 120 as the DPI value instead of using a configuration file.

 **Tip:**

As a conclusion, it is best to save your images without any DPI resolution information in them. For example the open-source GIMP image editor allows you when saving a PNG image whether to save the resolution to it or not:



Having images without any resolution information saved in them allows you to control the image resolution from the configuration file for all referenced images.

## The DITA PDF Transformation Fails

To generate the PDF output, Oxygen XML uses the DITA Open Toolkit.

In case your transformation fails you can detect some of the problems that caused the errors by running *the [Validate and Check for Completeness](#) action*. Depending on the options you select when you run it, this action emphasises errors like topics referenced in other topics but not in the DITA Map, broken links, and missing external resources.

You can also analyse the **results** tab of the DITA transformation and search for messages that contain text similar to `[ fop ] [ ERROR ]`. In case you encounter this type of error messages, edit the transformation scenario you are using and set the **clean.temp** parameter to **no** and the **retain.topic.fo** parameter to **yes**. Run the transformation, go to the temporary directory of the transformation, open the `topic.fo` file and go to the line indicated by the error. Depending on the XSL FO context try to find the DITA topic that contains the text which generates the error.

If none of the above methods helps you, go to **Help > About > Components > Frameworks** and check what version of the DITA Open Toolkit you are using. Copy the whole output from the DITA OT console output and either report the problem on the DITA User List or to the Oxygen XML team.

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# Chapter 28

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## MAC OS Specific Features

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The following features are specific to MAC OS:

- expanding to full screen and returning to standard by clicking the arrows symbol from the top-right corner of the application window.



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# Chapter 29

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## Terms

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<b>Active cell</b>	The selected cell in which data is entered when you begin typing. Only one cell is active at a time. The active cell is bounded by a heavy border.
<b>Block</b>	A block is an element that takes up the entire available width. A block is delimited by line breaks before and after it.
<b>Inline</b>	An inline element takes up as much width as necessary, and does not force line breaks.
<b>Inline XML element</b>	Inline elements are elements which appear in a mixed-content context (parents with both non-whitespace text and elements).



# Index

**A**

- Archives 585, 586, 589
  - browse 586
  - edit 589
  - file browser 586
  - modify 586
- Author Editor 235, 236, 237, 238, 241, 243, 244, 245, 246, 247, 248, 250, 252, 258, 259, 260, 261, 262, 263, 265, 266, 267, 270
  - attributes view 241
  - breadcrumb 244
  - change tracking 261, 262, 263, 265, 266, 267, 270
    - callouts 267
    - manage changes 262
    - managing comments 266
    - the Review view 270
    - track changes behavior 263
    - track changes limitations 265
  - content author role 237
  - contextual menu 248
  - edit content 252
  - editing XML 250
  - edit markup 250
  - elements view 241
  - entities view 243
  - external references 247
  - find/replace 248
  - navigation 244, 245, 246
    - bookmarks 246
    - display the markup 245
  - outline view 238
  - position information tooltip 246
  - reload content 258
  - roles: content author, framework developer 236
  - validation 258
  - whitespace handling 259, 260
    - versions differences 260
  - WYSIWYG editing 236
- Author Settings 373, 375, 376, 377, 378, 380, 385, 386, 388, 407, 411, 412, 418, 421, 424, 427
  - actions 373, 375
    - insert section 373
    - insert table 375
  - Author default operations 380
  - content 378
    - content completion customization 378
- Java API 385, 388, 407, 411, 412, 418, 421, 424, 427
  - Author extension state listener 411
  - Author schema aware editing handler 412
  - configure XML node renderer customizer 427
  - CSS styles filter 421
  - customize outline icons 427
  - customize XML node 427
  - extensions bundle 407
  - generate unique ID 427
  - references resolver 418
  - table cell span provider 424
  - table column width provider 421
- Java API example 386
- menus 373, 377, 378
  - contextual menu 378

Author Settings (*continued*)

- menus (*continued*)
  - main menu 377
- toolbars 373, 376
  - configure toolbar 376

**B**

- Bidirectional 232
  - BIDI text 232

**C**

- Common Problems 867
- Comparing and Merging Documents 573, 574, 575, 576, 578, 579, 581, 582
  - directories comparison 574, 575, 576
    - compare images view 576
    - comparison results 575
    - user interface 574
  - files comparison 576, 578, 579, 581, 582
    - character comparison 582
    - compare toolbar 579
    - file contents panel 581
    - files selector 581
    - main menu 578
    - word comparison 581
- Composing Web Service Calls 651, 652, 655, 656
  - generate WSDL documentation 656
  - SOAP request 652, 655
    - testing remote WSDL files 655
    - UDDI registry browser 655
- Configure the Application 401, 785, 786, 787, 789, 798, 799, 800, 801, 802, 803, 804, 806, 807, 808, 809, 810, 813, 814, 815, 816, 818, 820, 821, 822, 823, 824, 825, 827, 828, 829, 830, 831, 832, 834, 835, 836, 837, 838, 840, 841,

Configure the Application (*continued*)

843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 854,  
855, 856, 857, 858, 859, 860, 862

- (S)FTP 855
- archive 847
- BOM 799
- byte order mark 799
- certificates 856
- configure toolbars 862
- CSS validator 820
- custom validation 818
- data sources 838, 841
  - table filters 841
- Data Sources 840
  - download links for database drivers 840
- Diff 845
- Diff appearance 846
- Diff directories 846
- Diff directories appearance 847
- document type association 789
- editor preferences 799
- Editor preferences 800, 801, 802, 803, 804, 806, 807, 808,  
809, 810, 813, 814, 815, 816, 818
  - author 803
  - author profiling conditional text 807
  - author track changes 806
  - callouts 807
  - code templates 816
  - colors 813
  - content completion 810
  - document checking 818
  - document templates 816
  - elements and attributes by prefix 814
  - format 808
  - format - CSS 810
  - format - JavaScript 810
  - format - XML 809
  - grid 802
  - open/save 815
  - pages 801
  - print 800
  - schema aware 804
  - schema design 808
  - spell check 816
  - syntax highlight 813
  - text 801
  - text/diagram 802
- editor variables 401, 860
- encoding 799
- external tools 849
- file types 851
- fonts 789
- global 787
- HTTP(S)/WebDAV preferences 854
- import 836, 837
  - date/time patterns 837
- import/export global options 785
- menu shortcut keys 850
- messages 844, 858
- outline 857
- perspectives layout 798
- plugins 848

Configure the Application (*continued*)

Configure the Application (*continued*)

- proxy preferences 854
- reset global options 859
- scenarios management 859
- sharing preferences 785
  - global options 785
  - project options 785
- SSH 856
- SVN 841
- SVN Diff 843
- SVN file editors 852
- tree editor 859
- UTF-8 799
- view 857
- working copy 843
- XML 820
- XML catalog 820
- XML instances generator 822
- XML parser 821
- XProc engines 823
- XSLT 825
- XSLT/FO/XQuery 824
- XSLT/FO/XQuery preferences 825, 827, 828, 829, 830, 831, 832, 834, 835
  - custom engines 835
  - debugger 831
  - FO Processors 832
  - MSXML 828
  - MSXML.NET 829
  - profiler 832
  - Saxon6 825
  - Saxon HE/PE/EE 825, 830
  - Saxon-HE/PE/EE 825
  - Saxon HE/PE/EE advanced options 827, 831
  - XPath 834
  - XQuery 830
  - XSLTProc 827

## Content Management System 643

## Copy/Paste 276, 496

- grid editor 496
- smart paste 276

## CSS arithmetic functions 456

- CSS arithmetic extensions 456

## CSS Support in &lt;oXygen/&gt; Author 430, 432, 441, 442

- CSS 2.1 features 430, 432
  - properties support table 432
  - supported selectors 430

## Oxygen CSS extensions 441, 442

- media type oxygen 442

## Customization Support 367, 370, 371, 393, 400, 403, 404, 406, 414, 457

- document type associations (advanced customization tutorial) 371, 393, 400, 403, 404, 406, 414

## Author settings 371

## basic association 393

## configuring extensions - link target reference finder 414

## configuring transformation scenarios 404

## configuring validation scenarios 406

## new file templates 400

## XML Catalogs 403

## example files 457

## the Simple Documentation Framework Files 457

Customization Support (*continued*)

- simple customization tutorial (*continued*)
- simple customization tutorial 367, 370
  - CSS 367
  - XML instance template 370
  - XML Schema 367

**D**

- Databases 546, 591, 592, 610, 611, 623, 624, 626, 627, 628
  - debugging with MarkLogic 626
  - limitations of the MarkLogic debugger 626
  - native XML databases (NXD) 610
  - Native XML databases (NXD) 611
  - Relational databases 592
  - SharePoint connection 628
  - WebDAV connection 627
  - XQuery 546, 623, 624, 626
    - debugging 626
    - drag and drop from the Data Source Explorer 624
    - transformation 624
    - validation 546
- Debugging XSLT/XQuery Documents 552, 555, 564, 567
  - Java extensions 567
  - layout 552, 555, 564
    - information views 555
    - multiple output documents in XSLT 2.0 564
  - XSLT/XQuery debugger 564
- Debugging XSLT / XQuery Documents 553
  - layout 553
    - Control toolbar 553
- Develop an <oxygen/> Plugin 754, 765
  - example - UppercasePlugin 765
  - introduction 754
- Digital Signature 659, 661, 662, 663
  - canonicalizing files 661
  - certificates 662
  - signing files 662
  - verifying the signature 663
- DITA MAP document type 346
  - association rules 346
  - Author extension 346
    - catalogs 346
    - schema 346
- DITA MAP Document Type 346, 355
  - Author extension 346, 355
    - templates 355
    - transformation scenarios 346
- DITA Maps 278, 280, 281, 283, 284, 286, 287, 288, 294, 298, 300, 302, 303
  - advanced operations 284, 286, 287
    - edit properties 287
    - inserting a topic group 287
    - inserting a topic heading 286
    - inserting a topic reference 284
  - creating a Bookmap 283
  - creating a DITA Map 281
  - creating a subject scheme 283
  - creating a topic 283
  - DITA OT customization support 300
    - customizing the <oxygen/> Ant tool 300
    - increase the memory for Ant 300
    - resolve topic reference through an XML catalog 300
    - use your own custom build file 300
  - DITA OT installation plugin 302
  - DITA specialization 303
    - editing DITA Map specialization 303
  - DITA specialization support 302, 303
    - editing DITA Topic specialization 303
  - DITA Maps (*continued*)
    - DITA transformation scenario 288
    - editing actions 280
    - organizing topics 283
    - relationships between topics 284
    - transforming DITA Maps 288, 294, 298
      - output formats 298
      - running an ANT transformation 294
    - validating a DITA Map 281
  - DITA Topics document type 339
    - association rules 339
    - Author extensions 339
      - catalogs 339
      - schema 339
  - DITA Topics Document Type 339, 345
    - Author extensions 339, 345
      - templates 345
      - transformation scenarios 345
  - DITA transformation scenario 288, 289
    - customize scenario 289
- DocBook Targetset document type 338
  - association rules 338
  - schema 338
- DocBook Targetset Document Type 338
  - Author extensions 338
    - templates 338
- DocBook V4 document type 312, 323
  - association rules 312
  - Author extensions 312, 323
    - catalogs 312
    - templates 323
  - schema 312
- DocBook V4 Document Type 312, 315
  - Author extensions 312, 315
    - transformation scenarios 315
- DocBook V5 document type 325, 335
  - association rules 325
  - Author extensions 325, 335
    - catalogs 325
    - templates 335
  - schema 325
- DocBook V5 Document Type 325, 326
  - Author extensions 325, 326
    - transformation scenarios 326
- Documentum (CMS) Support 644, 645, 646, 647
  - actions 645, 646, 647
    - cabinets/folders 646
    - connection 646
    - resources 647
  - configuring a Documentum (CMS) data source 644, 645

**E**Editing Relax NG Schemas (*continued*)  
schema diagram (*continued*)

- Edit 58, 61, 62, 63, 64, 67, 68, 70, 74, 77, 228, 233, 271, 589, 770, 774
  - archives 589
  - change user interface language 58
  - close documents 77
  - conditional text 271
  - copy/paste 770
  - create new documents 64
  - edit documents with long lines 233
  - file properties 77
  - find/replace 770
  - find/replace (keyboard shortcuts) 774
  - integrate external tools 228
  - open and close documents 63
  - open documents 68
  - open read-only files 233
  - open remote documents (FTP/SFTP/WebDAV) 74
  - open resource 70
  - open the currently document in the system application 77
  - Quick Find toolbar 774
  - save documents 67
  - scratch buffer 233
  - Unicode documents 62
  - Unicode support 62
  - Unicode toolbar 63
- Editing CSS Stylesheets 214, 215, 216
  - Content Completion Assistant 215
  - folding 216
  - format and indent (pretty print) 216
  - other editing actions 216
  - Outline view 215
  - validation 214
- Editing JavaScript Documents 220
- Editing JavaScript Files 221, 222, 223, 224
  - Content Completion Assistant 222
  - Outline view 223
  - Text mode 221
  - validating JavaScript files 224
- Editing JSON Documents 216, 217, 218, 219
  - convert XML to JSON 219
  - folding 217
  - Grid mode 218
  - Outline view 218
  - syntax highlight 217
  - Text mode 217
  - Validating JSON Documents 219
- Editing NVDL Schemas 186, 187, 188, 189
  - Component Dependencies view 189
  - editor specific actions 188
  - schema diagram 187, 188
    - actions in the diagram view 187
    - full model view 187
    - Outline view 188
  - searching and refactoring actions 188
- Editing RelaxNG Schemas 185
  - Component Dependencies View 185
- Editing Relax NG Schemas 178, 179, 180, 181, 182, 183
  - editor specific actions 182
  - Resource Hierarchy/Dependencies View 183
  - schema diagram 178, 179, 180, 181

Editing Relax NG Schemas (*continued*)

- schema diagram (*continued*)
  - actions 181
  - full model view 178
  - logical model view 180
  - Outline view 181
  - symbols 179
- searching and refactoring actions 183

## Editing Schematron Schemas 225, 226

- validation against Schematron 226

## Editing StratML Documents 220

## Editing XML Documents 78, 82, 84, 85, 86, 88, 92, 93, 94, 96, 97, 98, 99, 101, 104, 105, 106, 107, 109, 110, 112, 113, 116, 117, 118, 119, 120, 121, 122, 251

- against a schema 97
- associate a schema to a document 85, 86, 88
  - add schema association in XML instance 86
  - learning a document structure 88
  - setting a default schema 85
  - supported schema types 85
- checking XML well-formedness 96
- converting between schema languages 113
- document navigation 106, 107, 109
  - bookmarks 106
  - folding 106
  - navigation buttons 109
  - outline view 107
  - using the Go To dialog 109
- editor specific actions 118, 119, 120, 121, 122
  - document actions 120
  - edit actions 119
  - refactoring actions 121
  - select actions 119
  - smart editing 121
  - source actions 119
  - split actions 119
  - syntax highlight depending on namespace prefix 122
- formatting and indenting documents (pretty print) 116
- grouping documents in XML projects 78, 82, 109
  - large documents 109
  - new project 78
  - project level settings 82
  - project view 78
  - team collaboration - Subversion 82
- image preview 117
- including document parts with XInclude 110
- locking and unlocking XML markup 118
- making a persistent copy of results 117
- markup transparency 118
- status information 117
- streamline with content completion 88, 92, 93, 94, 251
  - code templates 94, 251
  - the Annotation panel 93
  - the Attributes view 93
  - the Elements view 93
  - the Entities view 94
  - the Model panel 92
- validation against a schema 97, 98, 99, 101, 104, 105
  - automatic validation 99
  - caching the schema used for validation 99
  - custom validation 99
  - marking validation errors 97

Editing XML Documents (*continued*)

- validation against a schema (*continued*)

- Editing XML Documents (*continued*)
  - validation against a schema (*continued*)
    - references to XML Schema specification 105
    - resolving references to remote schemas with an XML Catalog 105
    - validation actions 104
    - validation example 98
    - validation scenario 101
  - working with XML Catalogs 112
  - XML tree nodes 116
- Editing XML Schemas 123, 157, 160, 161, 163, 165, 168, 169, 170, 173, 175
  - Component Dependencies view 175
  - generate documentation for XML Schema 163, 165, 168, 169
    - as HTML 165
    - as PDF, DocBook or custom format 168
    - from command line 169
  - relational database table to XML schema 157
  - Resource Hierarchy/Dependencies view 173
  - schema instance generator 157, 160
    - running from command line 160
  - schema regular expressions builder 161
  - searching and refactoring actions 170
- Editing XProc Scripts 224
- Editing XQuery Documents 212, 213
  - folding 213
  - generate HTML documentation 213
- Editing XSL Stylesheets 209, 210
  - Component Dependencies view 209
  - quick assist support 210
  - XSpec 210
- Editing XSLT Stylesheets 189, 190, 192, 195, 197, 199, 200, 202, 204, 205, 206, 207
  - content completion 190, 192, 195
    - code templates 195
    - in XPath expressions 192
  - find XSLT references and declarations 206
  - generate documentation for XSLT stylesheets 200
  - generate documentation for XSLT Stylesheets 202, 204, 205
    - as HTML 202
    - from command line 205
    - in custom format 204
  - Outline view 197
  - refactoring actions 207
  - Resource Hierarchy/Dependencies view 207
  - validation 189, 190
    - custom validation 190
    - validation scenario 190
  - XSLT Input view 195
  - XSLT stylesheet documentation 199
- Edit Large Documents 229, 230
  - larger than 300 MB 230
  - smaller than 300 megabytes 229
- EPUB Document Type 363
- Extend Oxygen with plugins 754
  - implement plugin 754
  - requirements 754
- Extend Oxygen with Plugins 753, 755, 756, 757, 759, 760, 761, 764, 765
  - implement plugin 755, 756, 757, 759, 760, 761, 764, 765
    - CMS integration plugin 761
    - components validation plugin 757

- Extend Oxygen with Plugins (*continued*)
  - implement plugin (*continued*)
    - custom protocol plugin 756, 759, 760
    - document plugin 756
    - general plugin 755
    - how to install a plugin 765
    - how to write a custom protocol plugin 764
    - resource locking custom protocol plugin 756
    - selection plugin 755

## F

- Feedback-Enabled WebHelp Systems 350
- Find/Replace 248, 770, 773, 774
  - Author editor 248
  - Find All Elements/Attributes dialog 773
  - keyboard shortcuts 774
  - Quick Find toolbar 774

## G

- Getting Started 47, 48, 52, 53, 54, 55, 56
  - dockable views and editors 56
  - help 48
  - perspectives 48, 52, 53, 54, 55
    - database 54
    - editor 48
    - tree editor 55
    - XQuery debugger 53
    - XSLT debugger 52
  - supported types of documents 48
- grid editor 495
  - navigation 495
    - collapse all 495
    - collapse children 495
    - collapse others 495
    - expand all 495
    - expand children 495
- Grid Editor 493, 494, 495, 496, 498
  - add nodes 495
  - bidirectional text 498
  - clear column content 495
  - copy/paste 496
  - drag and drop 496
  - duplicate nodes 495
  - inserting table column 495
  - insert table row 495
  - layouts (grid vs. tree) 494
  - navigation 494
  - refresh layout 496
  - sort table column 495
  - start editing a cell value 496
  - stop editing a cell value 496

**I**

- Importing data 634
- Importing Data 634, 636, 639
  - from a database 634
    - table content as XML document 634
  - from database 636
    - convert table structure to XML Schema 636
  - from HTML files 639
  - from MS Excel 636
  - from text files 639
- Installation 26, 27, 28, 29, 30
  - all platforms version 28
  - Linux 28
  - Mac OS X 28
  - multiple instances (Unix / Linux server) 29
  - requirements 26
  - unattended (Windows and Linux only) 30
  - Windows 27
    - Windows NT terminal server 29
- Integrating the Ant tool 229

**L**

- License 34, 36, 37, 38, 40, 41
  - floating (concurrent) license 36
  - floating license server 37
  - floating license servlet 36
  - license server installed as Windows service 38
  - register a license key 34
  - registration code 41
  - release floating license 40
  - unregister license key 41

**M**

- Master Files 82

**N**

- Native XML Databases (NXD) 602, 609, 610, 611, 612, 613
  - database connections configuration 611, 612
    - Berkeley DB XML 611
    - Documentum xDb (X-Hive/DB) 612
    - eXist 612
  - data sources configuration 609, 610, 611
    - Berkeley DB XML 610
    - Documentum xDb (X-Hive/DB) 611
    - eXist 610
    - MarkLogic 611
  - resource management 602, 613
    - Data Source Explorer view 602, 613

**O**

- OutOfMemory 32, 44, 808, 815, 832
- Out Of Memory 32, 44, 230, 231, 291, 512, 514, 808, 815, 832, 869
  - insufficient memory 230
  - large documents error 869
  - Large File Viewer 231
  - memory allocated for a transformation 291, 512
  - opening XML documents closed a long time ago 869
- OutOfMemoryError 32, 44, 808, 815, 832
- Oxygen CSS extensions 445, 446
  - <oXygen/> CSS custom functions 445, 446
    - oxy\_unparsed-entity-uri()* 446
    - oxy\_url()* 445
- Oxygen CSS Extensions 436, 437, 439, 442, 443, 444, 445
  - <oXygen/> CSS custom functions 445
    - additional properties 442, 443, 444
      - display tags 444
      - editable property 443
      - folding elements 442
      - link elements 444
      - morph value 443
      - placeholders for empty elements 443
    - supported features from CSS level 3 436, 437, 439
      - additional custom selectors 439
      - attr() function 437
      - namespace selectors 436

**P**

- Performance Problems 44, 45
  - external processes 44
  - large documents 44
  - problems on Linux/Solaris 45
- Profile DITA step by step 308
  - conditional text 308
    - profiling tutorial 308
- Profiling 306, 570
  - conditional text 306
    - filter content 306
  - filter content 306
    - conditional text 306
      - XSLT stylesheets and XQuery documents 570
- Profiling XSLT Stylesheets and XQuery Documents 570, 571
  - profiling information 570, 571
    - Hotspots view 571
    - Invocation tree view 570
  - XSLT/XQuery profiler 571

**Q**

- Querying Documents 212, 538, 541, 543, 544, 545, 546, 547
  - running XPath and XQuery expressions 541
    - XPath/Xquery Builder view 541
  - running XPath expressions 538
    - XPath toolbar 538
- XQuery 212, 543, 544, 545, 546, 547
  - Input view 545
  - other editing actions 547
  - Outline view 212, 544
  - syntax highlight and content completion 543
  - transforming XML documents; advanced Saxon B/SA options 547
  - validation 546

**R**

- Relational Databases 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 605, 607, 609, 613, 634, 636
  - connections configuration 597, 598, 599, 600, 601
    - generic JDBC 600
    - IBM DB2 connection 597
    - JDBC-ODBC connection 597
    - Microsoft SQL Server 598
    - MySQL 599
    - Oracle 11g 600
    - PostgreSQL 8.3 601
  - creating XML Schema from databases 636
  - data sources configuration 592, 593, 594, 595, 596
    - generic JDBC data source 594
    - IBM DB2 592
    - Microsoft SQL Server 593
    - MySQL 594
    - Oracle 11g 595
    - PostgreSQL 8.3 596
  - importing from databases 634
  - resource management 602, 605, 613
    - Data Source Explorer view 602, 613
    - Table Explorer view 605
  - SQL execution support 607, 609
    - drag and drop from the Data Source Explorer 607
    - executing SQL statements 609
    - SQL validation 609

**S**

- SharePoint Connection 628, 629
  - actions at connection level 629
  - actions at file level 629
  - actions at folder level 629
  - configuration 628
- Startup parameter 32
- SVG Documents 227, 228
  - preview result pane 228
  - standalone SVG viewer 227
- SVN Branches/Tags 694, 695, 696, 700, 704, 708, 709, 710
  - create a branch/tag 694
  - merging 695, 696, 700, 704, 708, 709
    - merge options 708
    - merge revisions 696
    - merge two different trees 704
    - reintegrate a branch 700
    - resolve merge conflicts 709
  - relocate a working copy 710
  - switch the repository location 710
- SVN Client 665, 666, 672, 673, 674, 675, 676, 678, 679, 683, 693, 694, 710, 711, 714, 717, 718, 719, 720, 721, 728, 732,

SVN Client (*continued*)

- 733, 734, 735, 736, 737, 738, 739, 741, 744, 746, 747, 748, 749, 750
- Annotations view 736
- check out a working copy 676
- command line interface 744, 746, 747, 748, 749, 750
  - add 747
  - add / edit property 750
  - add to svn:ignore 747
  - branch / tag 748
  - cleanup 748
  - copy 747
  - delete 747
  - export 746
  - information 746
  - lock 749
  - mark resolved 748
  - merge 748
  - move / rename 747
  - override and commit 750
  - override and update 750
  - remove property 750
  - revert 748
  - revert changes from this revision 750
  - scan for locks 749
  - show / refresh properties 748
- Compare view 737, 738, 739
  - Compare images view 739
  - toolbar 738
- Console view 741
- define a repository location 673, 674
  - add/edit/remove repository locations 673
  - authentication 674
- define a working copy 676
- Help view 741
- History view 732, 733, 734
  - history actions 734
  - history filter dialog 733
  - history filter field 734
- image preview 739
- main window 666, 672
  - main menu 666
  - status bar 672
  - toolbar 672
  - views 666
- obtain information regarding a resource 693
  - request history 693
  - request status information 693
- Preferences 744
- Properties view 739, 741
  - toolbar and contextual menu 741
- Repositories view 719, 720, 721
  - contextual menu actions 721
  - toolbar 720
- Resource History view 734, 735
  - Directory Change Set view 735
  - popup menu on double selection 734
- Revision Graph 741
- share a project 675
- sparse checkouts 719
- SVN branches/tags 694, 710, 711, 714
  - create patch - from repository 714

SVN Client (*continued*)

- SVN branches/tags (*continued*)
  - create patch - from working copy 711
  - patch 710
- SVN properties 693, 741
  - Add / Edit / Remove 741
- SVN working copy resources 679
  - synchronize with the SVN repository 683
  - use an existing working copy 678
- Working Copy view 728
  - contextual menu actions 728
  - working with repositories 717, 718
    - copy/move/delete resources 718
    - export resources 717
    - import resources 717
- SVN working copy resources 683
  - lock / unlock resources 683
  - locked items 683
- SVN Working Copy Resources 679, 681, 682, 683
  - add resources to version control 679
  - copy resources 681
  - delete resources 681
  - edit files 679
  - ignore resources 681
  - lock/unlock resources 682, 683
    - locking a file 683
    - scanning for locks 682
    - unlocking a file 683
  - move resources 682
  - rename resources 682
- Synchronize with the SVN Repository 684, 686, 687, 688, 689, 690, 691, 692
  - commit changes 691
  - integration with Bug Tracking tools 692
  - resolve conflicts 686, 687, 688, 689, 690
    - content conflicts vs property conflicts 686
    - drop incoming modifications 689
    - edit real content conflicts 687
    - merge conflicted resources 689
    - real conflicts vs mergeable conflicts 686
    - revert changes 688
    - tree conflicts 690
  - update the working copy 690
  - view differences 684
- Synchronize With The SVN Repository 683

**T**

- TEI ODD document type 357
  - association rules 357
  - Author extensions 357
    - catalogs 357
    - schema 357
- TEI ODD Document Type 357, 359
  - Author extensions 357, 359
  - templates 359
  - transformation scenarios 359
- TEI P4 document type 359
  - association rules 359
  - Author extensions 359
    - catalogs 359
    - schema 359
- TEI P4 Document Type 359, 361
  - Author extensions 359, 361
  - templates 361
  - transformation scenarios 361
- TEI P5 document type 362
  - association rules 362
  - schema 362
- TEI P5 Document Type 362
  - Author extensions 362
    - templates 362
    - transformation scenarios 362
- Text editor specific actions 769, 770
  - undo and redo 770
- Text Editor Specific Actions 774, 777, 780, 781, 782
  - change the font size 780
  - check spelling 777
  - check spelling in files 780
  - drag and drop 781
  - exit the application 782
  - find and replace text in multiple files 774
  - insert file at caret position 781
  - open file at caret position 781
  - open file at caret position in system application 781
  - print a file 781
  - switch between opened tabs 781
  - word/line editor actions 781
- Transformation Scenario 501, 502, 506, 507, 523, 525, 526
  - batch transformation 526
  - built-in transformation scenarios 526
  - new transformation scenario 501, 502, 506, 507, 523, 525
    - additional XSLT stylesheets 507
    - configure transformation scenario 501
    - create a transformation scenario 525
    - XML transformation with XSLT 502
    - XSLT/XQuery extensions 523
    - XSLT parameters 506
  - sharing the transformation scenarios; project level scenarios 526
- Transforming Documents 315, 317, 499, 500, 501, 527, 530, 531, 532
  - custom XSLT processors 531
  - output formats 315, 317, 500
    - WebHelp 315
    - WebHelp with feedback 317
  - supported XSLT processors 530
  - transformation scenario 501
  - Transformation Scenarios view 527

Transforming Documents (*continued*)

- XSL-FO processors 532
- XSLT processors extensions paths 531

**U**

- Uninstalling the application 44
- Upgrade 41, 42
  - check for new version 42

**V**

- Validating XML Documents 96
- Validation Scenario 103
  - sharing the validation scenarios; project level scenarios 103

**W**

- WebDAV Connection 627, 628
  - actions at connection level 627
  - actions at file level 628
  - actions at folder level 628
  - configuration 627
- WebHelp Internationalization 349
  - WebHelp localization 349
    - WebHelp i18n 349
- Workspace Access 757

**X**

- XHTML document type 355
  - association rules 355
  - Author extensions 355
    - catalogs 355
  - CSS 355
  - schema 355
- XHTML Document Type 355, 356, 357
  - Author extensions 355, 356, 357
    - templates 357
  - transformation scenarios 356
- XML Outline View 107, 108, 109, 239, 240
  - Author 240
    - outline filters 240
  - contextual menu 240
  - document structure change 108, 239
    - popup menu 108
  - document tag selection 109
  - modification follow-up 108, 239
  - outliner filters 108
  - XML document overview 107, 239
- XML Schema Diagram Editor 125, 127, 131, 132, 134, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 152, 154, 155, 156, 157
  - Attributes view 154, 157
    - contextual editing 157
  - editing actions 146
  - edit schema namespaces 156
  - Facets view 155, 156
    - editing patterns 156
  - group schema components 143, 144
    - attributes 143
    - constraints 144
    - substitutions 144
  - navigation 144
  - Outline view 152
  - schema components 127, 131, 132, 134, 136, 137, 138, 139, 140, 141, 142, 143
    - xs:alternative 136
    - xs:any 139
    - xs:anyAttribute 140
    - xs:assert 142
    - xs:attribute 131
    - xs:attributeGroup 132
    - xs:complexType 132
    - xs:element 127
    - xs:field 142
- XML Schema Diagram Editor (*continued*)
  - schema components (*continued*)
    - xs:group 136
    - xs:import 137
    - xs:include 137
    - xs:key 141
    - xs:keyRef 141
    - xs:notation 138
    - xs:openContent 143
    - xs:override 138
    - xs:redefine 137
    - xs:schema 127
    - xs:selector 142
    - xs:sequence, xs:choice, xs:all 138
    - xs:simpleType 134
    - xs:unique 140
  - the Palette view 156
  - validation 145
- XML Schema Text Editor 123, 124
  - content completion 123
  - flatten an XML Schema 124
  - references to XML Schema specification 124
  - XML Schema actions 124
- XQJ Connection 548
  - XQJ configuration 548
- XQJ Support 548
  - XQJ processor configuration 548
- XSLT/XQuery Debugger 555, 556, 557, 558, 559, 560, 561, 562, 564, 565
  - debug steps 564
  - determining what XSLT/XQuery expression generated particular output 565
    - using breakpoints 565
      - inserting breakpoints 565
      - removing breakpoints 565
  - viewing processing information 555, 556, 557, 558, 559, 560, 561, 562
    - breakpoints view 557
    - context node view 555
    - messages view 558
    - node set view 562
    - output mapping stack view 559
    - stack view 558
    - templates view 561
    - trace history view 560
    - variables view 562
    - XPath watch view 556

