<oXygen/> XML Editor User Manual

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Chapter 1. Introduction

Welcome to the User Manual of the <oXygen/> XML Editor ! This book explains how to use the 9.1 version of the <oXygen/> XML Editor effectively to develop complex XML applications quickly and easily. Please note that this manual assumes that you are familiar with the basic concepts of XML and its related technologies.

The <oXygen/> XML Editor is a cross-platform application for document development using structured mark-up languages such as XML , XSD, Relax NG, XSL, DTD.

<oXygen/> 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/> supports output to multiple target formats, including: PDF, PS, TXT, HTML and XML.

<oXygen/> 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.

Key Features and Benefits

The <oXygen/> XML Editor offers the following key features and benefits.

Multiplatform availability: Windows, Mac OS X, Linux, Solaris	Multilanguage support: English, German, French, Italian and Japanese
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, Relax NG , Schematron, DTD, NRL schemas, NVDL schemas, XSLT, XSL:FO, WSDL, XQuery, HTML, CSS	Outline view in sync with a non well-formed document
Validate XML Schema schemas, Relax NG schemas, DTDs, Schematron schemas, NRL schemas, NVDL schemas, WSDL, XQuery, HTML and CSS	Manual and automatic validation of XML documents against XML Schema schemas, Relax NG schemas, DTDs, Schematron, NRL and NVDL schemas
Multiple built-in validation engines (Xerces, libxml, MSXML 4.0, MSXML.NET) and support for custom validation engines (Saxon SA, XSV, SQC).	Multiple built-in XSLT transformers (Saxon 6.5, Saxon 9 B, Saxon 9 SA, Saxon.NET, Xalan, libxslt, MSXML 3.0 / 4.0, Microsoft .NET 1.0, Microsoft .NET 2.0) and support for custom JAXP transformers.
Visual schema editor with full and logical model views	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
Generate HTML documentation from XML Schemas	Support for latest versions of document frameworks: DocBook and TEI.
Conversions from DTD, Relax NG schema or a set of documents to XML Schema, DTD or Relax NG schema	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

New XML document wizards to easily create documents specifying a schema or a DTD	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
Tree view/edit support for XML documents	Batch validate selected files in project
Fully-fledged client for the Subversion (SVN) versioning system with support for SVN 1.3 and SVN 1.4 repositories.	Generate large sets of sample XML instances from XML Schema
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 with <oXygen/> 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	XQuery 1.0 support
WSDL Support	SVG Editor and Viewer
XSLT 2.0 full support	XPath 2.0 support
XSLT refactoring actions	Dockable views and editors
Document folding	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

About the <oXygen/> User Manual

This User Manual gives a complete overview of the <oXygen/> XML Editor and describes the basic process of authoring, management, validation of structured mark-up documents and their transformation to multiple target outputs. In this manual it is assumed that you are familiar with the use of your operating system and the concepts related to structured mark-up.

The <oXygen/> XML Editor User Manual is comprised of the following parts:

- Chapter 1, *Introduction*: you are reading it.
- Chapter 2, *Installation*: defines the platform and environment requirements of <oXygen/> and instructions for application installation, license installation, starting <oXygen/>, upgrade and uninstall.

- Chapter 3, *Getting started*: provides general orientation and an overview of the <oXygen/>'s editing perspectives.
- Chapter 4, *Editing documents*: explains how to obtain maximum benefit from the editor, project and validation features.
- Chapter 8, *Transforming documents*: explains the considerations for transformation of structured sources to multiple target format and how to obtain maximum benefit.
- Chapter 9, *Querying documents*: explains the support offered by <oXygen/> for querying XML documents.
- Chapter 10, *Debugging XSLT stylesheets and XQuery documents*: explains how to debug XSLT stylesheets or XQuery documents.
- Chapter 11, *Profiling XSLT stylesheets and XQuery documents*: explains how to profile the execution of XSLT stylesheets or XQuery documents.
- Chapter 12, *Comparing and merging documents*: explains how to find differences and merge files and directories.
- Chapter 14, *Importing data*: explains how to import data from a database, an Excel sheet or text file.
- Chapter 15, *Composing Web Service calls*: explains the facilities offered by <oXygen/> for composing and testing WSDL SOAP messages.
- Chapter 16, *Digital signature*: explains how to canonicalize, sign and verify the signature of documents.
- Chapter 17, *The Syncro SVN Client*: explains how to configure and use the Subversion client of <oXygen/>.
- Chapter 18, *How to develop an <oXygen/> plugin*: explains how to develop plugins for the <oXygen/> standalone application.
- Chapter 19, *Text editor specific actions*: explains the actions of <oXygen/> that are specific for any text editor.
- Chapter 20, *Configuring the application*: explains how to configure preferences of the application.
- Chapter 21, *Common problems*: a list of frequent errors and their possible causes and solutions.
- Appendix A, *Appendix*: a collection of documents covering topics such as credits, licensing, errors and known problems.

Feedback and input to the <oXygen/> User Manual is welcomed.

Chapter 2. Installation

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 required.

If you need help at any point during these procedures please send email to <support@oxygenxml.com>

Caution

If you want to execute <oXygen/> with Java Web Start directly from <oXygen/> Java Web Start page [http://www.oxygenxml.com/javawebstart/] or your intranet server please configure your Java Web Start not to ask for desktop integration (File -> Preferences, Shortcuts), otherwise it will show up a dialog in the same time with the <oXygen/> license registration dialog leading to a blocking situation.

Installation Requirements

Platform Requirements

Minimum run-time requirements are listed below.

- Pentium Class Platform
- 256 MB of RAM
- 200 MB free disk space

Operating System, Tools and Environment Requirements

Operating System

Windows	Windows 98 or later.
Mac OS	minimum Mac OS X 10.0
UNIX/Linux	All versions/flavors

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 [http://www.oxygenxml.com/download.html] for every archive. You should check the MD5 sum of the downloaded archive with a MD5 checking tool available on your platform.

Environment Prerequisites

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

- <oXygen/> XML Editor supports only official and stable Java virtual machine versions 1.5.0 and later from Sun Microsystems (available at http://java.sun.com) and from Apple Computer (pre-installed on Mac OS X). For Mac OS X, Java VM updates are available at http://www.apple.com/macosx/fea-

tures/java/. <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 [http://www.oxygenxml.com/forum/ftopic1887.html].

- The PATH environment variable is set to the most current Java VM installation.
- References to older Java VM installations are removed from the PATH.

Installation Instructions

Prior to 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 prior to execution of the application but this JRE will be used on your computer only for running <oXygen/> , 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.

Procedure 2.1. Windows Installation

1. Download the oxygen.exe installation kit 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/> 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 of remove the *jre* subfolder of the install folder in order for the variable JAVA_HOME or JDK_HOME to have an effect.

Procedure 2.2. Mac OS X Installation

1. Create a folder called `oxygen` on your local disk.
2. Within the `oxygen` folder, create child folder named in accordance with the version number of the application. The directory structure looks as follows: `/../oxygen/9.1/`
3. Download the Mac OS X Installation package (`oxygen.tar.gz`) to this folder.
4. Extract the archive to the same folder.

5. Execute the file named `oxygen`

> **Note**
>
> <oXygen/> uses the first JVM from the list of preferred JVM versions set on your Mac computer that has the version number not less than 1.5.0. To change the version of the Java virtual machine that runs the application you must move your desired JVM version up in the preferred list by dragging it with the mouse on the first position in the list of JVMs available from Applications -> Utilities -> Java -> Java Preferences.

Procedure 2.3. Linux Installation

1. Download the oxygen-v9.1.sh installation kit 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/> 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 for running the application.

> **Note**
>
> For silent (unattended) installation run the installer executable from command line and pass the -q parameter. In unattended mode the installer does not overwrite files with the same name if the application is installed in the same folder as a previous version. The -overwrite parameter added after -q forces overwriting these files.

Procedure 2.4. All Platforms Installation

1. Create a folder called `oxygen` on your local disk.
2. Within the `oxygen` folder, create child folder named in accordance with the application version number. The directory structure looks as follows: `/../oxygen/9.1/`
3. Download the All Platforms Installation package (`oxygen-v9.1.tar.gz`) to this folder.
4. Extract the archive to the same folder.
5. Run from a command line the script `oxygen.bat` on Windows, `oxygenMac.sh` on Mac OS X, `oxygen.sh` on Unix/Linux.

> **Note**
>
> To change the version of the Java virtual machine that runs the application you have to specify the full path to the java executable of the desired JVM version in the Java command at the end of the script file, for example:

```
"C:\Program Files\Java\jre1.5.0_09\bin\java" -Xmx256m
 -Dsun.java2d.noddraw=true ...
```

on Windows,

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

on Mac OS X.

Procedure 2.5. Windows NT Terminal Server

1. Install the application on the server, making its shortcuts available to all users.
2. Edit the `oxygen.vmoptions` file located in the install folder, adding the parameter "-Dcom.oxygenxml.MultipleInstances=true" so that the file content looks like: **-Xmx256m -Dcom.oxygenxml.MultipleInstances=true** The "Xmx" value represents the maximum memory for each application instance. Please make sure you tune them in a way that the multiple editor instances won't use all the available physical memory.

Procedure 2.6. Unix Server

1. Install the editor 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. Create a file called `oxygen.vmoptions` in the <oXygen/><oXygen/> install folder where the `oxygen9.1` file is located. The content of the file must be:

   ```
   -Xmx256m -Dcom.oxygenxml.MultipleInstances=true
   ```

   The "-Xmx" value represents the maximum memory for each editor instance. Please make sure you tune it in a way that the multiple editor instances won't use all the available physical memory.
3. Make sure the X server processes located on the workstations allow connections from the server host. For this use the xhost command.
4. Telnet (or ssh) on the server host.
5. Start an xterm process, with display on the workstation. Ex: **xterm -display workstationip:0.0**
6. Start the application by typing **oxygen.sh**

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 forces overwriting these files.

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

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

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 are 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 varfile 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 9\.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`

Setting a parameter in the startup script

On the Windows platform if you start the application by double-clicking on the Start menu shortcut/Desktop shortcut in order to set a startup parameter you have to add a line with the parameter to the file `oxygen.vmoptions` located in the installation directory together with the launcher file called `oxygen.exe`. If the file `oxygen.vmoptions` does not exist yet in the folder of the launcher file you have to create it there. For example for setting the maximum amount of Java memory to 600 MB the content of the file `oxygen.vmoptions` must be:

```
-Xmx600m
```

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 for setting the maximum amount of Java memory to 600 MB the java command should start with:

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

On the Mac OS X platform to add or modify a startup parameter you have to right-click on the <oXygen/> application icon in Finder, in the pop-up menu select *Show Package Contents*, then in the *Contents* directory you edit the file *Info.plist*: in the key *VMOptions* you modify the parameter if it already exists in that key or you add it after the model of the existing parameters inside that key.

On the Linux platform you have to create a file called *oxygen.vmoptions* if it does not exist already and specify the parameter exactly as in the case of the *.vmoptions* file on the Windows platform.

If you use the *All platforms* distribution you have to add or modify the startup parameter that you want to set in the java command line at the end of the startup script `oxygen.bat` on Windows, `oxygenMac.sh` on Mac OS X and `oxygen.sh` on Linux. All these files are located in the installation directory. For example for setting the maximum amount of Java memory to 600 MB on Windows the -Xmx parameter must be modified in the java command at the end of `oxygen.bat` like this:

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

on Mac OS X the java command at the end of `oxygenMac.sh` should look like:

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

and on Linux the java command at the end of `oxygen.sh` should look like:

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

Starting the application

As a Java based application, the <oXygen/> XML Editor can run on all Operating Systems that support the Java Runtime Environment (JRE version 1.5.0 or later). The following instructions assume that JRE and the appropriate <oXygen/> distribution package for your Operating System are installed.

To start the application follow the instructions for the installed package:

Procedure 2.7. Windows

- From the Windows Explorer double-click `oxygen.exe` .

Procedure 2.8. Linux

- At the prompt type: **sh oxygen.sh** .

Procedure 2.9. Mac OS X

- Double-click the `oxygen` icon.

Procedure 2.10. All Platforms

- On Windows run `oxygen.bat` . On Mac OS X run `oxygenMac.sh` . On Linux/Unix run `oxygen.sh`

Obtaining and registering a license key

The <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/> [http://www.oxygenxml.com/register.html] web site. This license is supplied at no cost for a period of 30 days from date of issue. During this period the <oXygen/> XML Editor is fully functional enabling you to test all aspects of the application. Thereafter, the application is disabled and a permanent license must be purchased in order to use the application. For special circumstances, if a trial period of greater than 30 days is required, please contact `<support@oxygenxml.com>` . All licenses are obtained from the <oXygen/> web site [http://www.oxygenxml.com] .

For definitions and legal details of the license types available for <oXygen/> you should consult the End User License Agreement received with the license key and available also on the <oXygen/> website at http://www.oxygenxml.com/eula.html

Note

Starting with version 7.1 <oXygen/> accepts a license key for a newer version in the license registration dialog, e.g. version 7.1 accepts a license key for version 8.0.

Once you have obtained a license key the installation procedure is described below.

Named User license registration

1. Save a backup copy of the message containing the new license key.
2. Start the application.
3. Copy to the clipboard the license text as explained in the message.
4. If this is a new install of the application then it will display automatically the registration dialog when it is started. In the case you already used the application and obtained a new license, use the menu option Help/Register to make the registration dialog appear.

Figure 2.1. Registration Dialog

5. Paste the license text in the registration dialog, and press Register.

You have the following alternative for the procedure of license install:

1. Save the license key in a file named `licensekey.txt`.
2. Copy the file in the application folder. In that way the license will not be asked when the application will start.
3. Start the application.

How floating (concurrent) licenses work

If all the floating licenses are used in the same local network the installation procedure of floating licenses is the same as for the Named User licenses. Within the same network the license management is done by communication between the instances of <oXygen/> that are connected to the same local network and that run at the same time. Any new instance of <oXygen/> that is started after the number of running instances is equal with the number of purchased licenses will display a warning message and will disable the open file action.

If the floating licenses are used on machines connected to different local networks a separate license server must be started and the licenses deployed on it. Contact the <oXygen/> Support Team at `<support@oxygenxml.com>` to request the license server kit.

Procedure 2.11. Floating license server setup

1. Contact the <oXygen/> Support Team at `<support@oxygenxml.com>` to request the license server kit.

2. Unzip the zip archive containing the license server in a folder on your server machine. After that if you want to install the license server as a Windows service go to the special section which describes that.

3. You have to configure the server to look into a license directory (by default is [Server License Install Directory]/licenses) and use a certain TCP/IP port for communication (by default port 12346 is used). The license directory will contain the license files to be managed. A license file must begin with "license" and it has to have the extension "txt". It is the job of the license server to sum up the total number of licenses contained in the license files from the licenses directory.

   To change the default configuration of the license server the following parameters have to be used:

   - **-licenseDir** followed by the path of the directory where the license files will be placed;
   - **-port** followed by the port number used to communicate with <oXygen/> instances.

After the floating license server is set up the <oXygen/> application can be started and configured to request a license from it:

Procedure 2.12. Request a floating license from the license server

1. Start the application.

2. Go to *Help -> Register...* . The license dialog is displayed.

3. Check the *Use a license server* checkbox.

4. Fill-in the *Host* text field with the host name or IP address of the license server.

5. Fill-in the *Port* text field with the port number used for communicating with the license server. Default is 12346.

6. Click the *Register* 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/>. If the maximum number of licenses was exceeded a warning dialog will pop up letting the user know about the problem.

Figure 2.2. Floating license number exceeded

The error message contains information about the users who requested and successfully received the floating licenses.

How to install the <oXygen/> license server as a Windows service

In order to install the <oXygen/> license server as a Windows service run the following command from the command line in the install folder of the license server:

```
installWindowsService.bat
```

After installing the server as a Windows service, use the following two commands to start and stop the license server:

```
startWindowsService.bat
```

```
stopWindowsService.bat
```

Uninstalling the Windows service requires the following command:

```
uninstallWindowsService.bat
```

The installService.bat script installs the <oXygen/> license server as a Windows service with the name "oXygenLicenseServer" and accepts two parameters: the path of the folder containing the floating license key files and the local port number on which the server accepts connections from instances of the <oXygen/> XML Editor. The parameters are optional. The default values are:

licenses — for the license file folder

12555 — for the local port number

The JAVA_HOME variable must point to the home folder of a Java runtime environment installed on your Windows system.

The startService.bat script starts the Windows service so that the license server can accept connections from <oXygen/> clients.

The stopService.bat script stops the Windows service. The license server is shut down and it cannot accept connections from <oXygen/> clients.

The uninstallService.bat script uninstalls the Windows service created by the installService.bat script.

The license server creates two log files in the directory where the license server is installed:

outLicenseServer.log — the standard output stream of the server

errLicenseServer.log — the standard error stream of the server

The license server must be installed in a folder which does not contain space characters in the path name. Also the path set as the value of the JAVA_HOME environment variable must not contain space characters. Otherwise the install script fails.

How to release a floating license

The floating license key registered for the current <oXygen/> instance will be released automatically when the <oXygen/> instance is closed. If you do not have Internet access to connect to the floating license server and you own also an individual license which you want to use in this case instead of the floating license, you have to open the license registration dialog again by going to Help -> Register, uncheck the *Use a license server* checkbox, press the *Paste* button to paste the individual license and press OK to switch from the floating license to the pasted individual license.

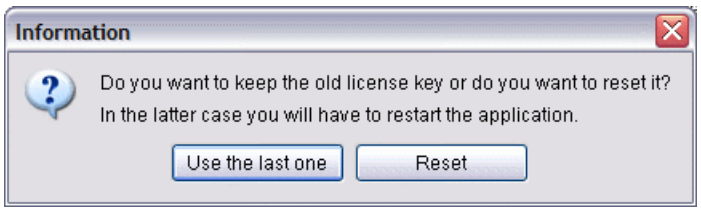
License registration with an activation code

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 activation code and other details associated with your license in a request form on the <oXygen/> website. The button **Use activation code** in the registration dialog avaliable from menu Help → Register opens this request form in the default Web browser on your computer.

Unregistering the license key

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 instance with an individual, Named User license, or to transfer your license key to other computer before other user starts using your current computer. This is done by going to Help → Register to display the license registration dialog, making sure the text area for the license key is empty and the checkbox *Use a license server* is unchecked, and pressing the Register button of the dialog. This brings up a confirmation dialog in which you select between falling back to the license key entered previously (for the case of releasing a floating license and reverting to the individual license entered previously in the *Register* dialog) and removing your license key from your user account of the computer.

Figure 2.3. Unregister a license key



Upgrading the <oXygen/> application

From time to time, upgrade and patch versions of <oXygen/> are released to provide enhancements that rectify problems, improve functionality and the general efficiency of the application.

This section explains the procedure for upgrading <oXygen/> while preserving any personal configuration settings and customizations.

Unless otherwise stated by instructions supplied with a patch or upgrade kit, the following procedure is recommended:

Procedure 2.13. Upgrade Procedure

1. Create a new folder under `/../oxygen` e.g. `/../oxygen/9.1`
2. Download and extract the upgrade to the new folder.
3. If you have defined <oXygen/> in the system PATH, modify it to the new installation folder.
4. Start <oXygen/> to ensure that the application can start and that your license is recognized by the upgrade installation.
5. If you are upgrading to a major version, for example from 8.3 to 9.0, then you will need to enter the new license text into the registration dialog that is shown when the application is started.
6. Select Help → About to determine the version number. If the previous version was 8.3, the About dialog should now show version 9.0.

Checking for new versions

<oXygen/> 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.

You can check for new versions manually at any time by going to menu Help → Check for New Versions

Uninstalling the application

Caution

The following procedure will remove <oXygen/> from your system. It will not remove the JRE. If you wish to uninstall JRE please see the instructions provided with the Java product. *Please ensure that all valuable data is saved to another location prior to performing this procedure.*

Procedure 2.14. Uninstall Procedure

1. Backup all valuable data from the <oXygen/> installation folder.
2. 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 wish to completely remove the application directory and any work saved in it, you will have to delete this directory manually. To remove the application configuration and any personal customizations remove the `%APPDATA%\com.oxygenxml` directory on Windows (usually %APPDATA% has the value [user-home-dir]\Application Data) / `.com.oxygenxml` on Linux / `Library/Preferences/com.oxygenxml` on Mac OS X from the user home directory.

Unattended uninstallation

If you want to run an unattended uninstallation this is possible only on Windows and Linux by running the uninstaller executable from command line and passing the -q parameter. The uninstaller executable is called `uninstall.exe` on Windows and `uninstall` on Linux and is located in the install folder of the application.

Performance problems

Large documents

By default the maximum memory available to <oXygen/> is set to 40% of the amount of physical RAM but not more than 700 MB. If large documents (more than 10 MB) are edited in <oXygen/> and you see that performance slows down considerably after some time then a possible cause is that it needs more memory in order to run properly. You can increase the maximum amount of memory available to <oXygen/> by setting the -Xmx parameter in a configuration file specific to the platform that runs the application. For example if your file has a size of 50 MB setting a parameter -Xmx800m should be enough for opening and editing the file in <oXygen/>

Warning

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.

Note

You can use the Large File Viewer to view huge XML files (up to two gigabytes) which would be otherwise be impossible to open in the editor.

Note

The amount of memory allocated for the FOP operations is controlled by a different setting available in <oXygen/> Preferences: Memory available to the built-in FOP.

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

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 specifying the parameter

```
-Dsun.java2d.pmoffscreen=false
```

for the Java virtual machine. This parameter disables off-screen pixmap support and must be added to the Java command line which starts the Java virtual machine at the end of the file *oxygen9.1* located in the install directory.

Chapter 3. Getting started

Supported types of documents

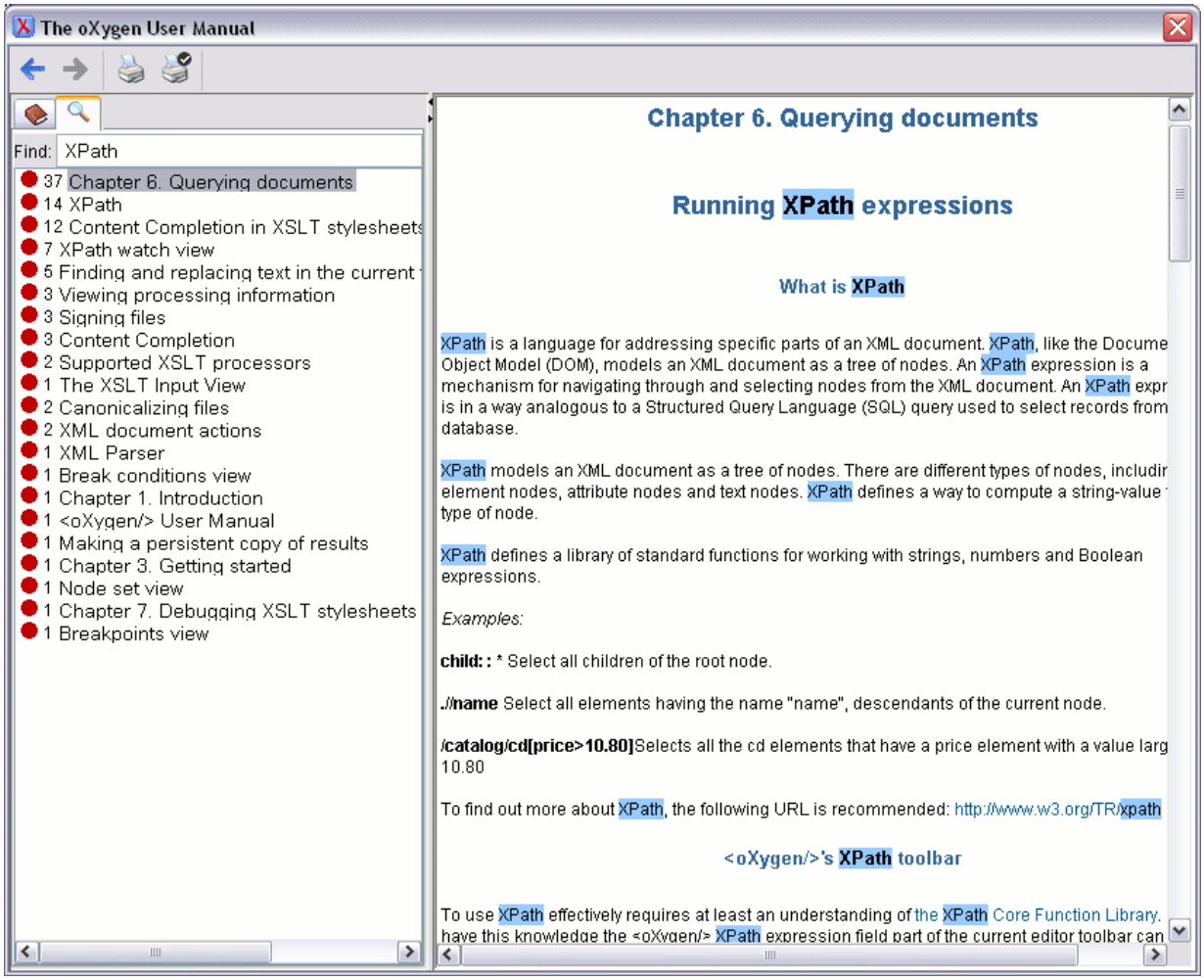
The <oXygen/> XML Editor provides a rich set of features for working with:

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

Getting help

Online help is available at any time while working in <oXygen/> by going to menu Help → Help ... which opens the Help dialog.

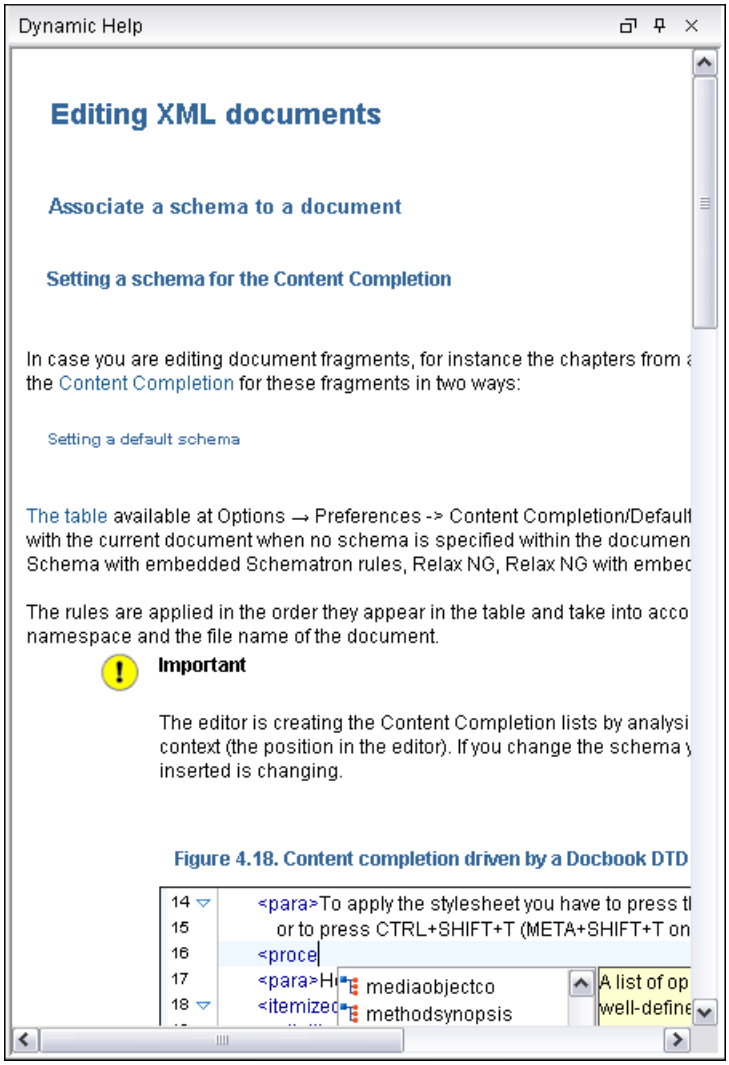
Figure 3.1. The <oXygen/> Help dialog



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

The Help dialog is modal so it does not allow other editing actions in the <oXygen/> editors, views and dialogs. The same help content is available in the view Perspective → Show View → Dynamic Help (also available from menu Help → Dynamic Help) which allows editing actions when it is visible on screen and which switches automatically to the relevant help page for the focused editor, view or dialog..

Figure 3.2. The Dynamic Help View



The name and version of the third-party libraries and frameworks used by <oXygen/> 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.

Perspectives

The <oXygen/> interface uses standard interface conventions and components to provide a familiar and intuitive editing environment across all operating systems.

In <oXygen/> you can work with documents in one of the perspectives:

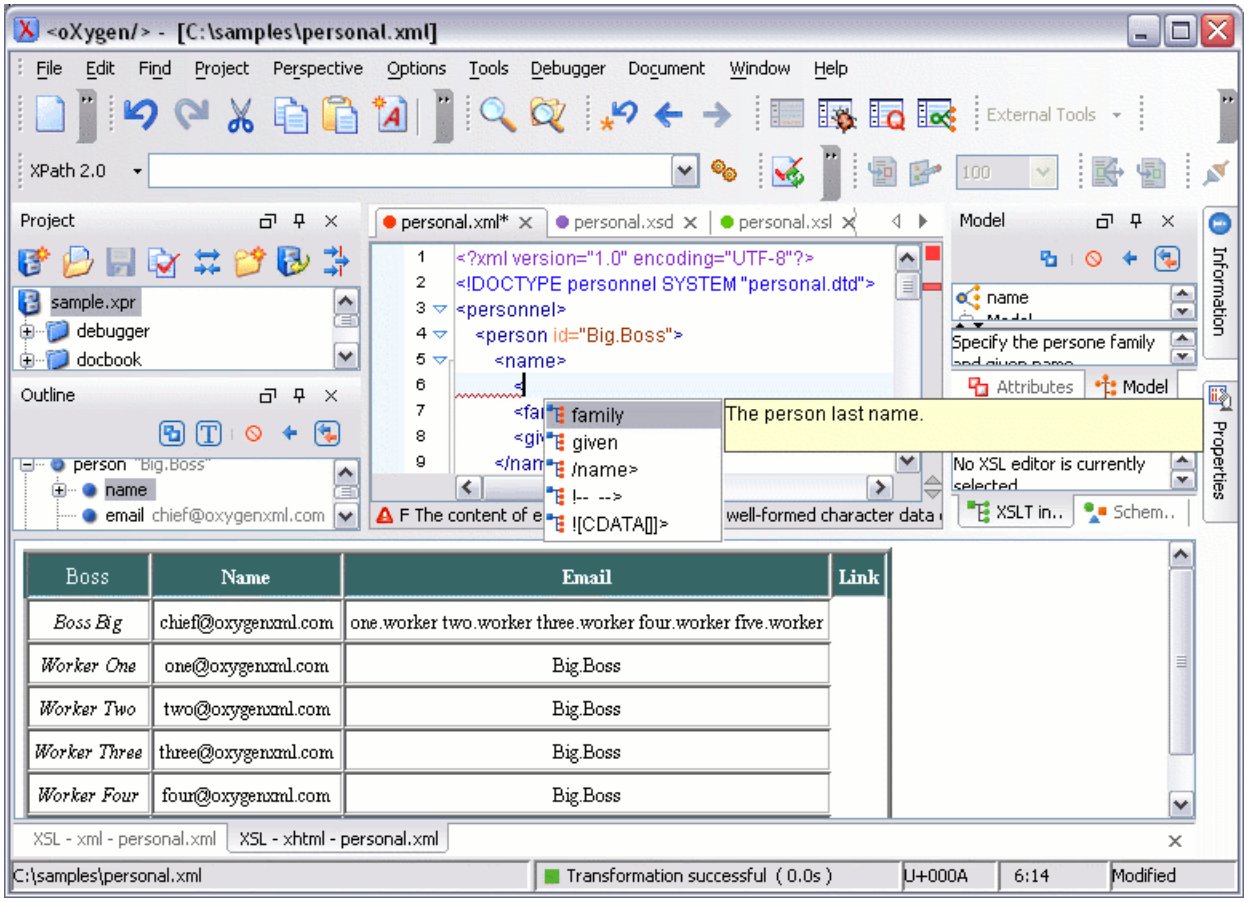
Editor perspective	Editing of documents is supported by specialized and synchronized editors and views.
XSLT Debugger perspective	XSLT stylesheets can be debugged by tracing their execution step by step.

XQuery Debugger perspective	XQuery transforms can be debugged by tracing their execution step by step.
Database perspective	Multiple connections to both relational databases and native XML ones can be managed at the same time in this perspective: database browsing, SQL execution, XQuery execution and data export to XML.
Tree Editor perspective	An XML document is viewed and edited as a tree of XML elements.

Editor perspective

The Editor perspective is used for editing the content of your documents. The space is organized in:

Figure 3.3. Editor perspective



When two or more panels are displayed, <oXygen/> provides divider bars. By selecting a divider bar, it can be dragged to a new position, therefore increasing the space occupied by one panel while decreasing it for the other.

As majority of the work process centers around the Editor panel, other panels can be hidden from view using the expand and collapse controls located on the divider bars.

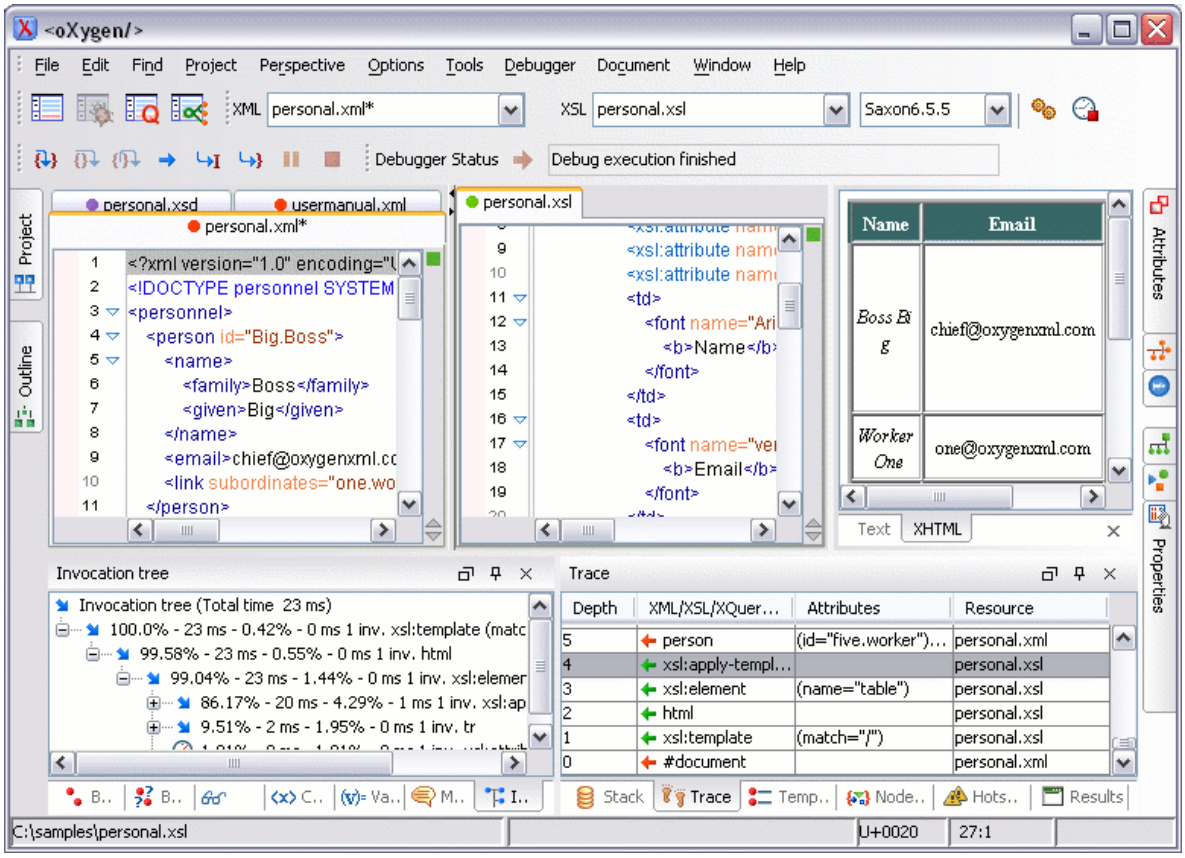
This perspective organizes the workspace in the following panels:

Main menu	Provides menu driven access to all the features and functions available within <oXygen/>.
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 panel	The place where you spend most of your time, reading, editing, applying markup and checking the validity and form of your documents.
Outline view	Provides the following functions: XML document overview, modification follow-up, document structure change, document tag selection.
Model view panel	Presents the structure of the current edited tag and additional tag documentation.
Results panel	Displays result messages returned from user operations. The following actions are available: • Hierarchical view - that allows you to see the results in tree-like manner. Clicking on a tree leaf highlights the corresponding line in the document. • Flat view - that will present the errors in a table-like manner. Clicking on a table row highlights the corresponding line in the document. • Remove selected - removes the currently selected message from the list. • Remove all - clears the message list. Navigation to the previous and next message is easy with the shortcuts **Ctrl + [** and **Ctrl +]**
Project view	Enables the definition of projects and logical management of the documents it contains.

XSLT Debugger Perspective

The XSLT Debugger perspective is used for detecting problems in an XSLT transformation process by executing the process step by step in a controlled environment and inspecting the information provided in different special views. The workspace is organized in:

Figure 3.4. XSLT Debugger perspective

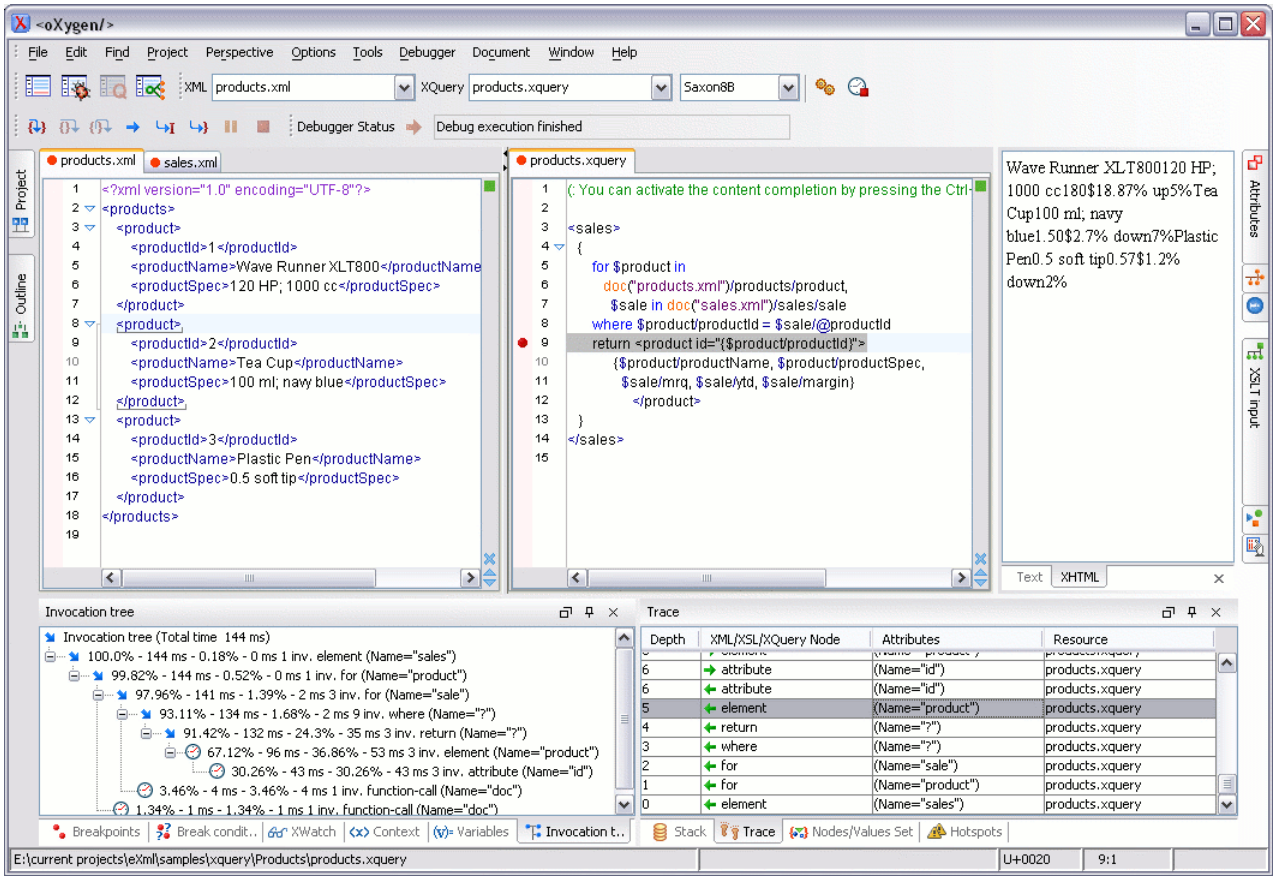


- Source document view - Displays and allows editing of data or document oriented XML files (documents).
- Stylesheet document view - Displays and allows editing of XSL files(stylesheets).
- Output document view - Displays the transformed output that results from the input of a selected document (XML) 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).
- Control toolbar - Contains all actions needed in order to configure and control the debug process.
- Information views - Distributed in two panes that are used to display 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 enables the developer to obtain a clear view of the transformation progress.

XQuery Debugger Perspective

The XQuery Debugger perspective is similar to the XSLT Debugger perspective. It is used for detecting problems in an XQuery transformation process by executing the process step by step in a controlled environment and inspecting the information provided in different special views. The workspace is organized in:

Figure 3.5. XQuery Debugger perspective



- Source document view - Displays and allows editing of data or document oriented XML files (documents).
- XQuery document view - Displays and 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 needed in order to configure and control the debug process.
- Information views - Distributed in two panes that are used to display 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 enables the developer to obtain a clear view of the transformation progress.

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, both relational and native XML databases, SQL execution, XQuery execution and data export to XML.

This perspective offers database specific support for:

- Sleepycat Berkeley DB XML Database
- eXist XML Database
- IBM DB2 (Enterprise edition only)
- JDBC-ODBC Bridge (Enterprise edition only)
- MarkLogic (Enterprise edition only, XQuery support only)
- Microsoft SQL Server (Enterprise edition only)
- MySQL (Enterprise edition only)
- Oracle 10.2 (Enterprise edition only)
- Software AG Tamino (Enterprise edition only)
- Tigerlogic (Enterprise edition only, XQuery support only)
- X-Hive/DB XML Database (Enterprise edition only)

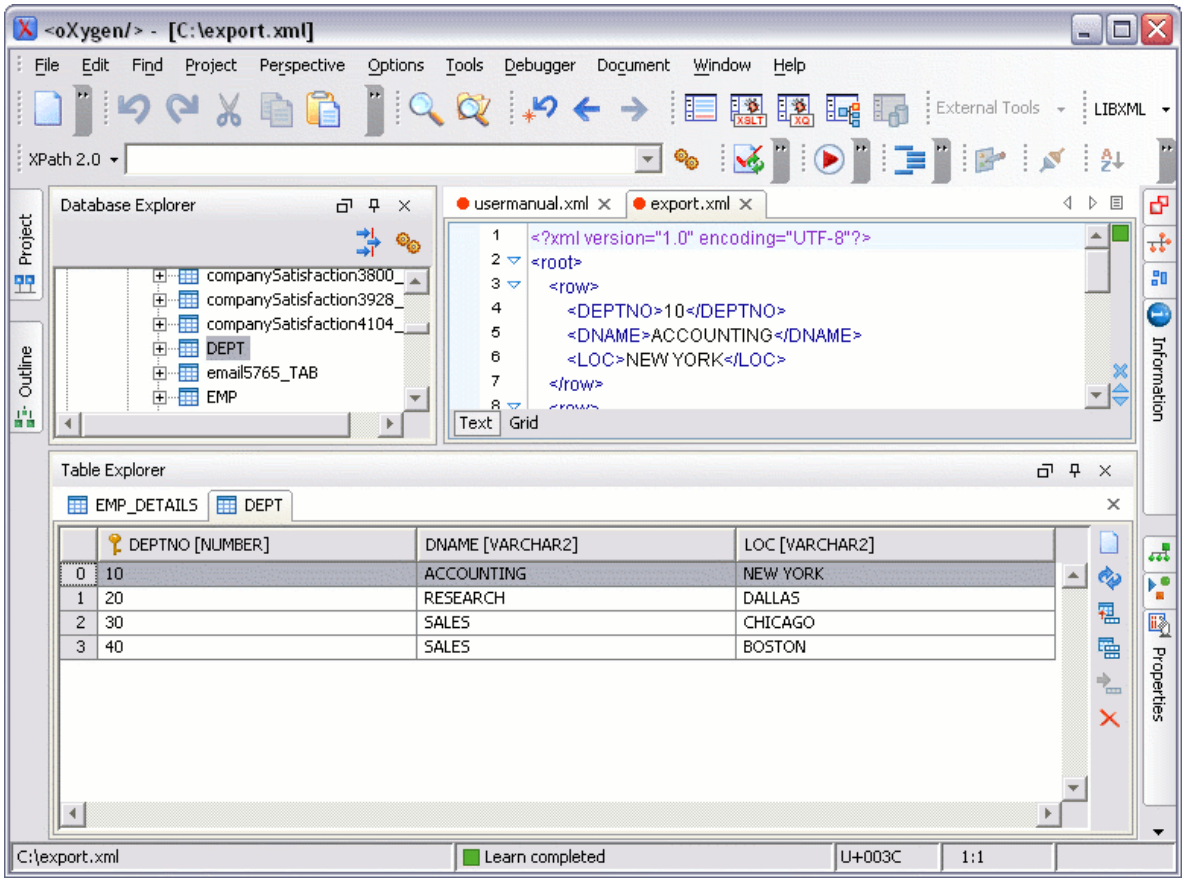
The XML capabilities of the databases marked in this list with "Enterprise edition only" are available only in the Enterprise edition of <oXygen/>. The non-XML capabilities of any database listed here are available also in the Academic and Professional editions of <oXygen/> by registering the database 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/>. The non-XML capabilities are browsing the structure of the database instance, opening a table in the *Table Explorer* view, handling the values from columns of type XML Type 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/> editor panel, handling the values from columns of type XML Type as XML instance documents that can be opened and edited in an <oXygen/> 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/> please go to the <oXygen/> website [http://www.oxygenxml.com/feature_matrix.html].

Note

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

Figure 3.6. Database perspective

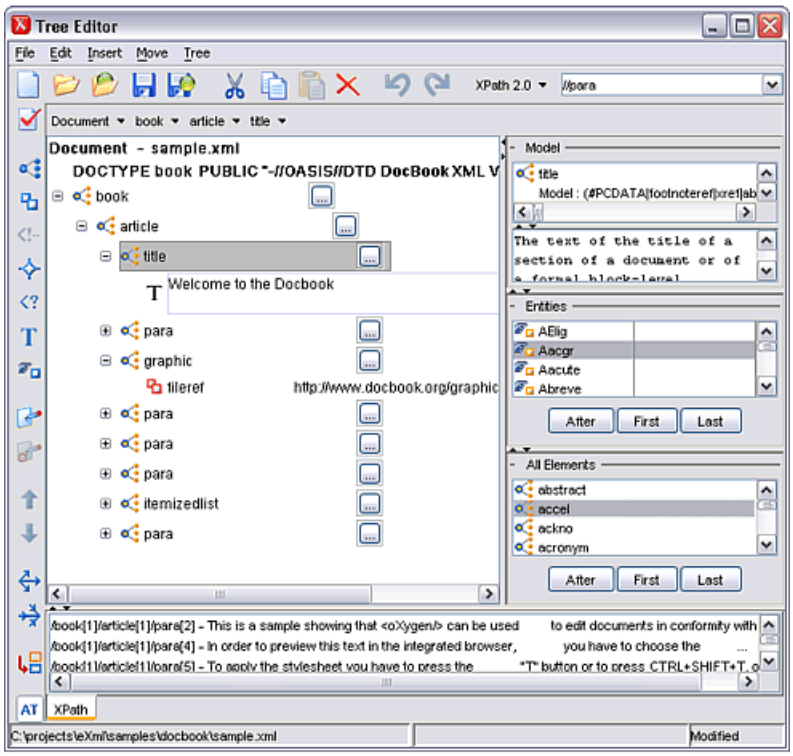


Main menu	Provides menu driven access to all the features and functions available within <oXygen/>.
Main toolbar	Provides easy access to common and frequently used functions. Each icon is a button that acts as a shortcut to a related function.
Editor panel	The place where you spend most of your time, reading, editing, applying markup and checking the validity and form of your documents.
Database explorer	Provides browsing support for the configured connections.
Table explorer	Provides table content editing support: insert a new row, delete a table row, 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 a XML tree. The workspace is organized in:

Figure 3.7. Tree Editor perspective



- Main menu - provides menu driven access to all the features and functions available in <oXygen/> 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 associated an icon for a easy visual identification of the tokens.
- Message panel - display messages returned from user operations.
- Model panel - show the detailed information about the attribute or element that you are working on.
- All Elements panel - present a list of all defined elements that you can insert 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

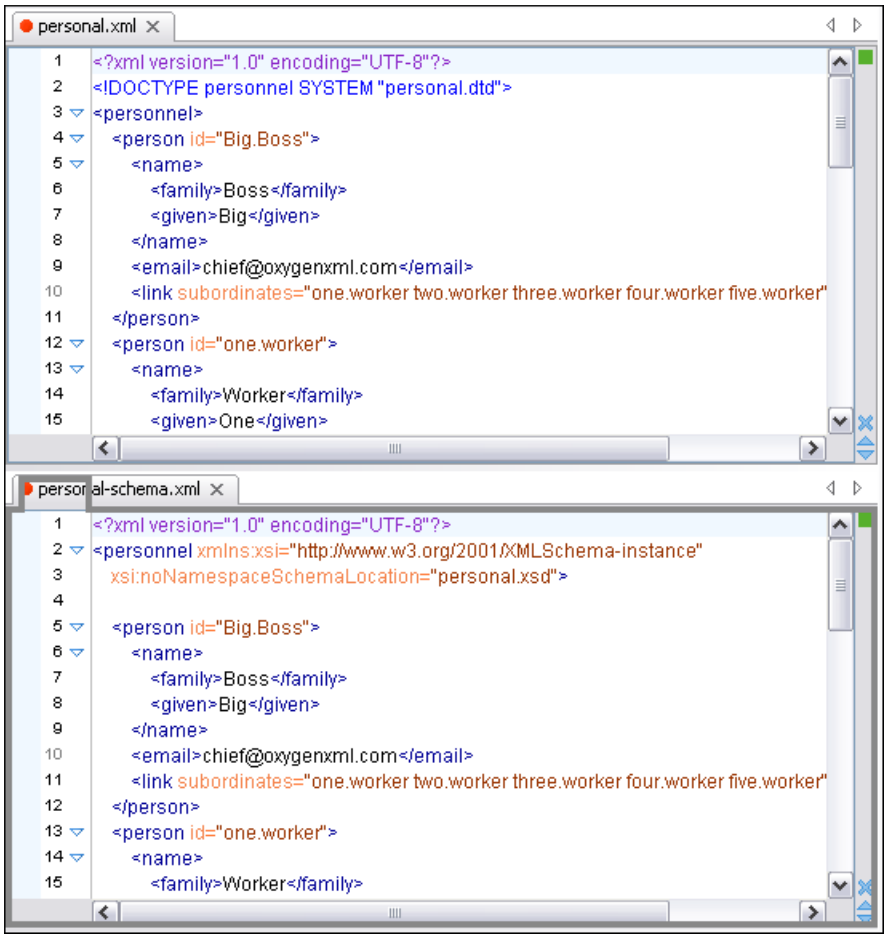
All the <oXygen/> views available in the Editor Perspective, XSLT Debugger Perspective and XQuery Debugger Perspective are dockable. You can drag them to any margin of another view or editor inside the <oXygen/> window to form any desired layout. Also a view can be set to a floating state to enable it to hover over other views and editors.

For gaining more editing space in the <oXygen/> window you should set one or more views to the auto hide state: only the title will remain always visible, attached to one of the margins of the <oXygen/> window,

the rest of the view will be restored only by the mouse pointer hovering over the title or clicking the title. The view will become hidden again when the mouse pointer goes out of the screen area covered by that view.

The editing area can be divided vertically in several editing panels by dragging the title of an editor inside the editing area and dropping it when the frame of the dragged editor is painted in the desired position. In the attached figure you can see how to unsplit the editing area by dragging the title of the `personal.xml` editor panel over personal-schema.xml until the drop frame painted in dark grey covers all the `personal-schema.xml` editor panel and then dropping it.

Figure 3.8. Split the editing area by drag and drop of the editor title



Also the editing area can be divided vertically and horizontally with the split / unsplit actions available on the Split toolbar and the Window menu: Split horizontally, Split vertically, Unsplit.

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

Any <oXygen/> view or toolbar can be opened at any time from the menu items available in the menus Perspective → Show View and Perspective → Show Toolbar

Chapter 4. Editing documents

Working with Unicode

Unicode provides a unique number for every character, no matter what the platform, no matter what the program, no matter what the 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.

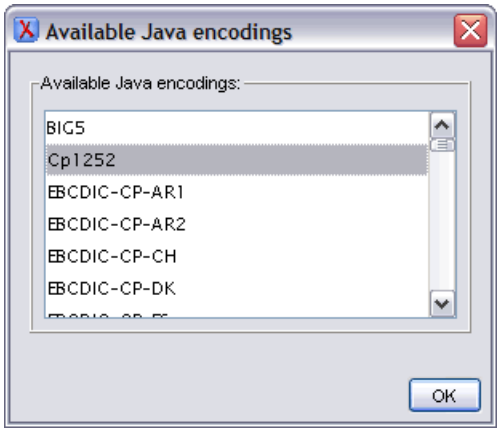
It is supported in many operating systems, all modern browsers, and many other products. The emergence of the Unicode Standard, and the availability of tools supporting it, are among the most significant recent global software technology trends. Incorporating Unicode into client-server or multi-tiered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

As a modern XML Editor, <oXygen/> 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 uses 16bit characters covering the Unicode Character set.

Opening and saving Unicode documents

On loading documents of the type XML, XSL, XSD and DTD, <oXygen/> reads the document prolog to determine the specified encoding type. This is then used to instruct the Java Encoder to load support for and save using the code chart specified. In the event that the encoding type cannot be determined, <oXygen/> will prompt and display the Available Java Encodings dialog. This dialog provides a list of all encodings supported by the Java platform.

Figure 4.1. Available Java encodings dialog



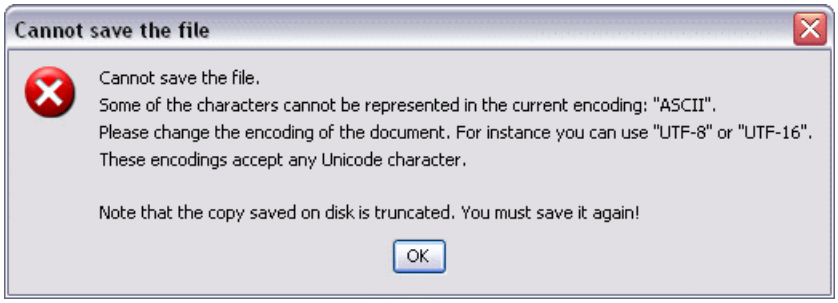
If the opened document contains a character which cannot be represented with the encoding detected from the document prolog or selected from the Available Java Encodings dialog <oXygen/> applies the policy specified for handling such errors. If the policy is set to REPORT <oXygen/> displays an error 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 will be replaced with a standard replacement character for that encoding.

While in most cases you will use UTF-8, simply changing the encoding name will cause the file to be saved using the new encoding. The appendix Unicode Character Encoding provides a matrix that matches

common names with Java Names. It also explains what you should type in the XML prolog to cause the document to be saved as the required encoding.

On saving the edited document if it contains characters not included in the encoding declared in the document prolog <oXygen/> will detect the problem and will signal it to the user who is required to resolve the conflict before he is able to save the document.

Figure 4.2. Save with wrong encoding error



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

If an XML document which specifies the UTF-16 encoding in the prolog using the attribute *encoding="UTF-16"* is edited in <oXygen/> and saved on disk the byte order mark (BOM) which always begins such an XML document is created by the save operation according with the byte order accepted by the CPU of that computer. That means that a UTF-16 document created on a Windows + Intel computer, where the byte order mark is *UnicodeLittle* and loaded and saved in <oXygen/> running on a Mac OS computer, where the byte order mark is *UnicodeBig*, is saved with the *UnicodeBig* encoding.

Note

The naming convention used under Java does not always correspond to the common names used by the Unicode standard. For instance, while in XML you will use encoding="UTF-8", in Java the same encoding has the name "UTF8".

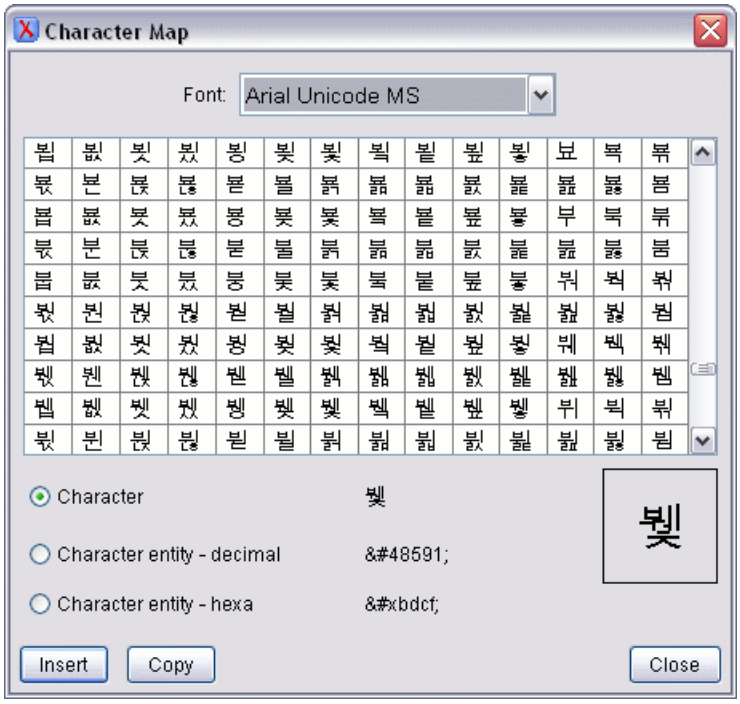
The Unicode toolbar

The display of the Unicode toolbar is switched on and off from Perspective → Show Toolbar → Unicode and contains the actions Change text orientation with the default shortcut **Ctrl + Shift + O** and 字 Insert from Character Map

The Change text orientation action enables editing documents in languages with right to left writing (Hebrew, Arabic, etc.) by moving the caret to the left when new characters are inserted in the document. 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 字 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 4.3. 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 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.

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

As with most editing applications, <oXygen/> lets you open existing documents, save your changes and close them as required.

Creating new documents

The New dialog

<oXygen/> supports a large number of document types. This dialog presents the default associations between a file extension and the type of editor which opens the file for editing. You can override these default associations in the File Types user preferences panel.

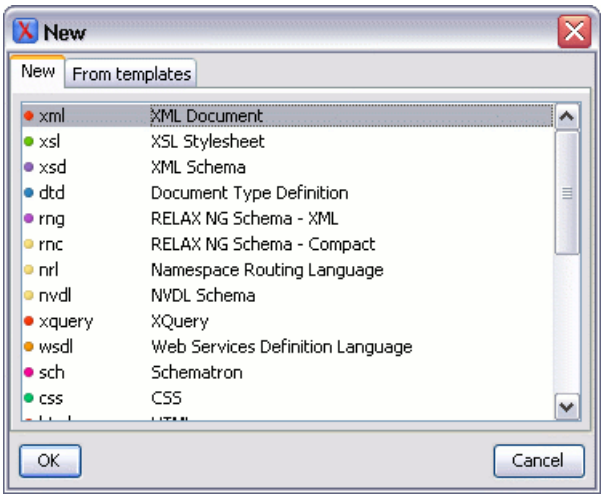
The New dialog only creates a skeleton document containing the document prolog, a root element and possibly other child elements depending on the options specific for each schema type. If you need to generate full and valid XML instance documents based on an XML Schema schema you should use the XML instance generation tool instead.

Use the following procedure to create documents.

Procedure 4.1. Creating new documents

1. Select File → New (**Ctrl+N**) or press the New toolbar button. The New dialog is displayed which contains the supported Document Types: XML, XSL, XML Schema, Document Type Definition, Relax NG Schema, XQuery, Web Services Definition Language, Schematron Schema, CSS File , Text File, Java File, JavaScript File, C File, C++ File, Batch File, Shell File, Properties File, SQL File, PHP File and PERL File.

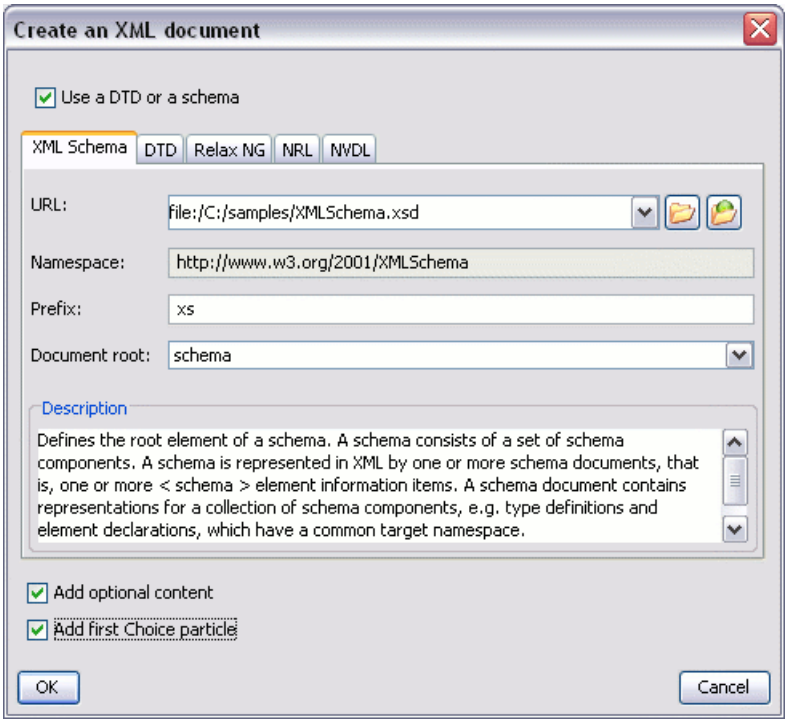
Figure 4.4. The New dialog



2. Select a document type, then click OK. If XML was selected the "Create an XML Document" dialog is displayed otherwise a new document is opened in the Editor Panel.

3. The Create an XML Document dialog enables definition of a XML Document Prolog using the system identifier of a XML Schema, DTD, Relax NG (full or compact syntax) schema, NRL (Namespace Routing Language) or NVDL (Namespace-based Validation Dispatching Language) schema. As not all XML documents are required to have a Prolog, you may choose to skip this step by clicking OK. If the prolog is required complete the fields as the following.

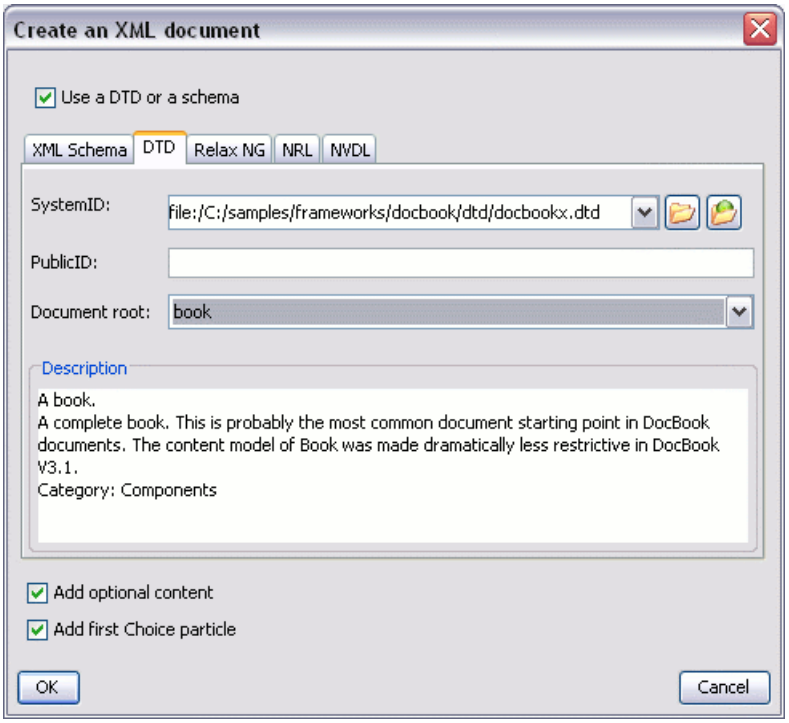
Figure 4.5. The Create an XML Document Dialog - XML Schema Tab



Complete the dialog as follows:

Use a DTD or a schema	When checked enables selection between DTD, XML Schema, Relax NG schema, NRL or NVDL schema.
URL	Specifies the location of an XML Schema Document (XSD).
Namespace	Specifies the document namespace.
Prefix	Specifies the prefix for the namespace of the document root.
Document Root	Populated from the elements defined in the specified XSD, enables selection of the element to be used as document root.
Description	Shows a small definition for the currently selected element.

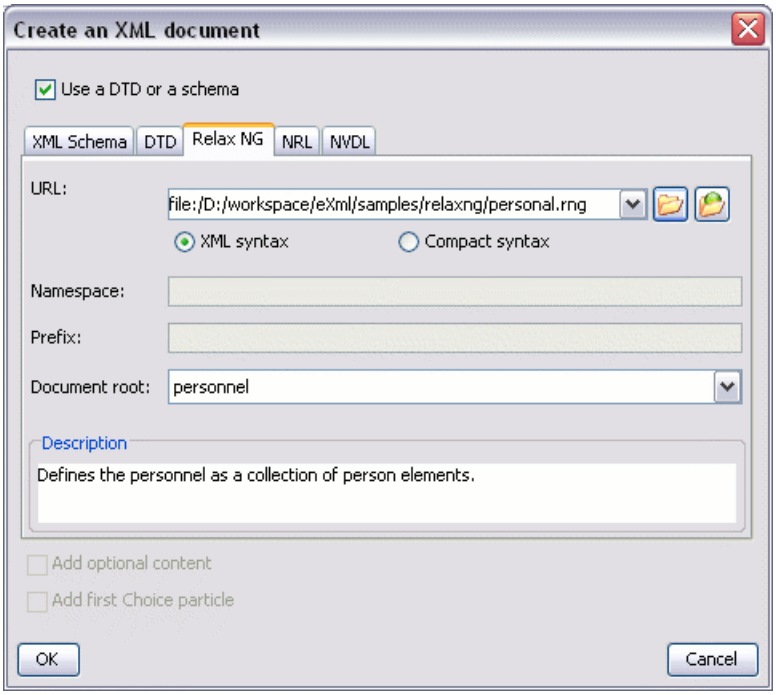
Figure 4.6. The Create an XML Document Dialog - DTD Tab



Complete the dialog as follows:

Use a DTD or a schema	When checked enables selection between DTD, XML Schema, Relax NG schema, NRL or NVDL schema.
System ID	Specifies the location of a Document Type Definition (DTD).
Public ID	Specifies the PUBLIC identifier declared in the Prolog.
Document Root	Populated from the elements defined in the specified DTD, enables selection of the element to be used as document root.
Description	Shows a small definition for the currently selected element.

Figure 4.7. The Create an XML Document Dialog - Relax NG Tab



Complete the dialog as follows:

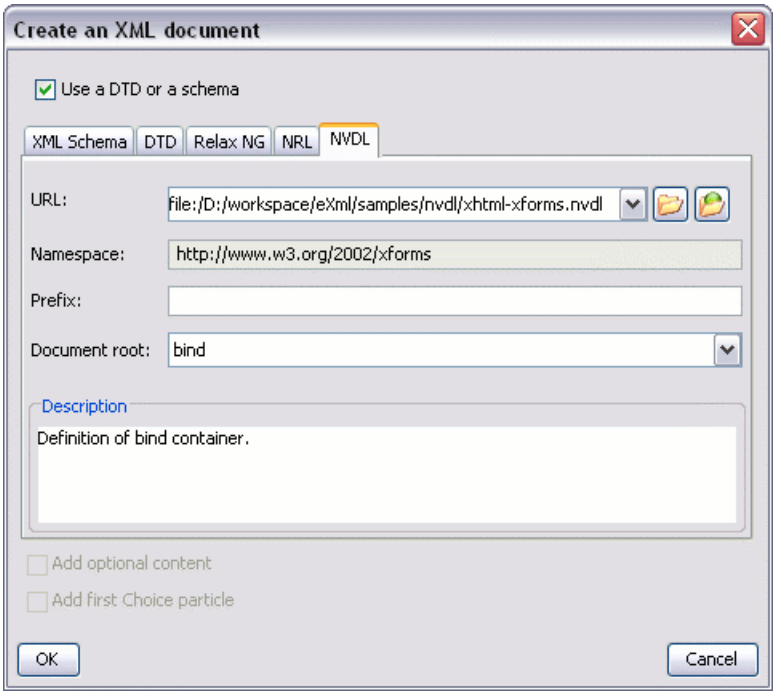
Use a DTD or a schema	When checked enables selection between DTD, XML Schema, Relax NG schema NRL or NVDL schema.
URL	Specifies the location of a Relax NG schema in XML or compact syntax (RNG/RNC).
XML syntax	When checked the specified URL refers to a Relax NG schema in XML syntax. It will be checked automatically if the user selects a document with the *.rng* extension.
Compact syntax	When checked the specified URL refers to a Relax NG schema in compact syntax. It will be checked automatically if the user selects a document with the *.rnc* extension.
Namespace	Specifies the document namespace.
Prefix	Specifies the prefix for the namespace of the document root.
Document Root	Populated from the elements defined in the specified RNG or RNC document, enables selection of the element to be used as document root.
Description	Shows a small definition for the currently selected element.

Figure 4.8. The Create an XML Document Dialog - NRL Tab

Complete the dialog as follows:

Use a DTD or a schema	When checked enables selection between DTD, XML Schema, Relax NG schema, NRL or NVDL schema.
URL	Specifies the location of a NRL schema (NRL).

Figure 4.9. The Create an XML Document Dialog - NVDL Tab



Complete the dialog as follows:

Use a DTD or a schema	When checked enables selection between DTD, XML Schema, Relax NG schema, NRL or NVDL schema.

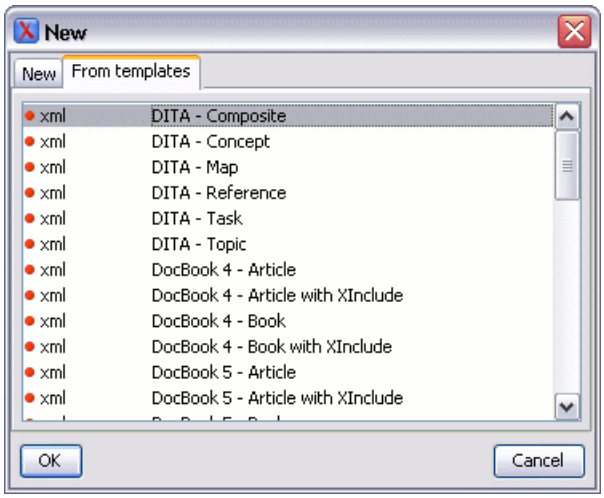
URL	Specifies the location of a Namespace-based Validation Dispatching Language schema (NVDL).
Namespace	Specifies the document namespace.
Prefix	Specifies the prefix for the namespace of the document root.
Document Root	Populated from the elements defined in the specified NVDL document, enables selection of the element to be used as document root.
Description	Shows a small definition for the currently selected element.

Creating Documents based on 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. <oXygen/> installs a rich set of templates for a number of XML applications. You may also create your own templates and share them with other users.

The Templates tab in New dialog enables you to select predefined templates or templates that have already been created in previous sessions or by other users. Open a template using the following options:

Figure 4.10. The Templates tab



The templates presented in the dialog are:

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/> install directory. Also in the option page Options → Preferences+Editor / Templates / Document TemplatesWindow → Preferences+oXygen/Editor / Templates / Document Templates can be specified a custom templates folder to be scanned.

Procedure 4.2. Creating Documents based on Templates

1. Select File → New / From Templates. The Templates tab is displayed and is used to select and open a new document based on an existing template document. Template documents act as starting points that have predefined properties such as file type, prolog, root element, containers and even existing content.
2. Scroll the Templates list and select the required Template Type.
3. Click OK. A new document is opened that already contains structure and content provided in the template starting point.

Saving documents

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

- File → Save (**Ctrl+S**)  or press the Save toolbar button to save the current document. If the document does not have a file, displays the Save As dialog.
- File → Save As: Displays the Save As dialog, used to name and save an open document to a file; or save an existing file with a new name.
- File → Save To URL or press the Save To URL ... toolbar button  to display the Save to URL dialog, used to name and save an open document to a file; or saves 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

Documents can be opened using one of the actions:

- File → Open (**Ctrl+O**) or press the  Open toolbar button to display the Open dialog used to discover, select and open one or more files. The start folder of the Open dialog can be either the last folder visited by the Open dialog the last time it was used in <oXygen/> or the folder of the current file edited in <oXygen/> This can be configured in the user preferences.
- File → Open URL ... or press the  Open URL ... toolbar button to display the Open URL dialog used to open a document using FTP/SFTP/WebDAV.
- File → Revert: Loads the last saved file content. All unsaved modifications are lost.
- File → Reopen: Displays a list of recently opened document files. Select a file to open.
- Project view contextual menu → Open : Opens the selected file from the Project view.
- From the command line when the <oXygen/> application is launched. If <oXygen/> is launched from the command line with the startup script installed by the installation wizard you can specify local file names as optional parameters:
  - multiple XML files to be opened automatically at startup in separate editor panels:

```
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 present in options 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.

Note

When more files are opened and the tabs names are on a single line, you can change the tab order by clicking and dragging a tab in the desired position.

In addition <oXygen/> supports direct opening of files from the command prompt. Use the following command syntax:

- On Windows:

  oxygen.bat FileToOpen.xml

- On Unix/Linux:

  sh ./oxygen.sh FileToOpen.xml

- On Mac OS X:

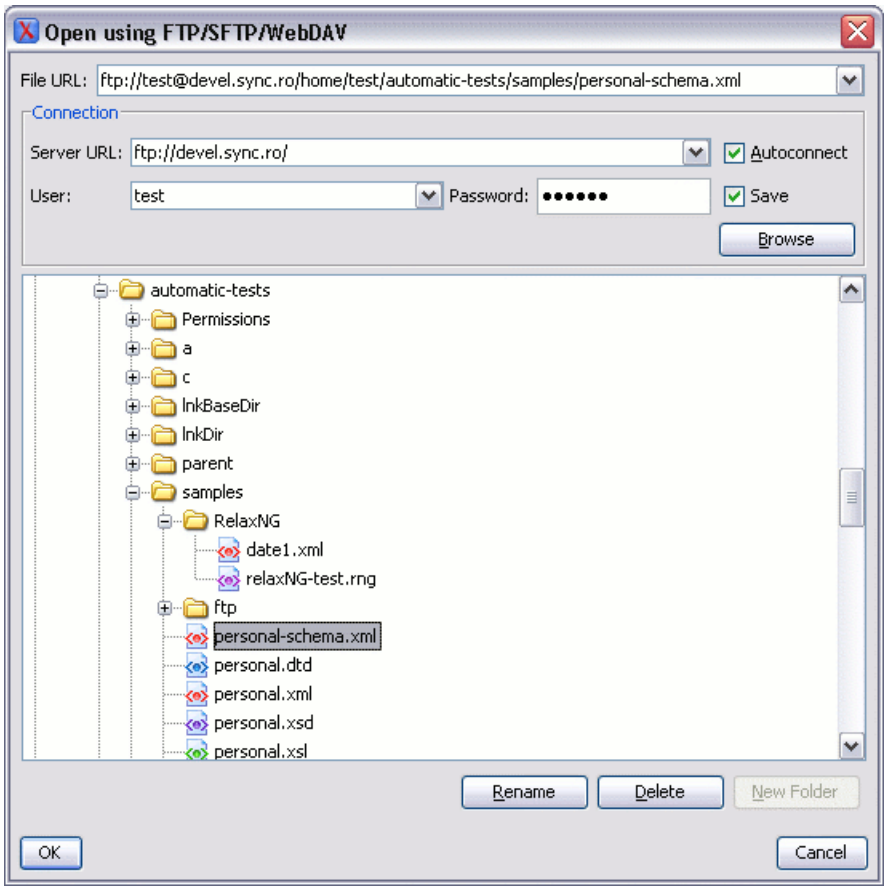
  sh ./oxygenMac.sh FileToOpen.xml

Also when the Tree Editor perspective is activated the current document in the Editor perspective will be opened and displayed as a tree of XML elements.

Opening and Saving Remote Documents via FTP/SFTP/WebDAV

<oXygen/> supports editing remote files, using the FTP, SFTP and WebDAV protocols. The remote opened files can be edited exactly as the local ones. They can be added to the project, and can be subject to XSL and FO transformations.

Figure 4.11. Open URL dialog



Note

The FTP part is using passive access to the FTP servers. Make sure the server you are trying to connect to is supporting passive connections. Also the UTF-8 encoding is supported and can be configured for communication with the FTP server if the server supports it.

Files can be opened through the Secure FTP (SFTP) protocol using the regular user/password mechanism or using a private key file and a passphrase. The user/password mechanism has precedence so for using the private key and passphrase you have to remove the password from the dialog used to browse the server repository and leave only the user name. The private key file and the passphrase must be set in the SFTP user preferences.

The WebDAV access is implemented using the Slide package of the Apache Software Foundation.

The HTTP/WebDAV capabilities have been extensively tested with various servers running on Windows (IIS), Mac OS X and Linux (Apache).

Note

If you have set a proxy server to be used by <oXygen/>, make sure it supports the WebDAV protocol. If it does not, make sure your connections do not pass through this server, otherwise you will not be able to connect to a WebDAV server. If the server requires NTLM authentication <oXygen/> will display an authentication dialog where the user and password for passing through the NTLM server must be entered.

To open the remote files, choose from the main menu File → Open URL ... The displayed dialog is composed of several parts.

- 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 the WebDAV directory.

  ### Server URLs

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

  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/

  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.

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

URLs that can be directly opened

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.

A WebDAV resource can be locked when it is opened in &oxy; by checking the option Lock WebDAV files on open to protect it from concurrent modifications on the server by other users. If other user tries to edit the same resource he will receive an error message and the name of the lock owner. The lock is released automatically when the editor for that resource is closed in &oxy;.

GZIP compression is handled correctly for the content received/sent from/to a HTTP server or a WebDAV server. The built-in client of &oxy; notifies the server when the connection is established that GZIP compression is supported.

Changing file permissions on a remote FTP server

Some FTP servers allow the modification of file permissions on the file system for the files that they serve over the FTP protocol. This feature of the protocol is accessible directly in the FTP/WebDAV file browser dialog by right-clicking on a tree node and selecting the *Change permissions* menu item which brings up the following dialog:

Figure 4.12. FTP server - change file permissions

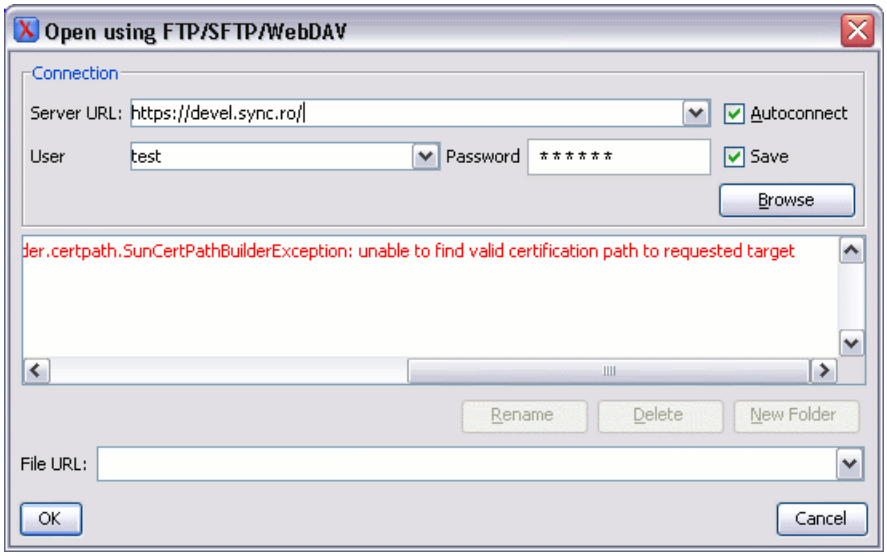
The usual Unix file permissions *Read*, *Write* and *Execute* are granted or denied in this dialog for the owner of the file, the group of the owner and the rest of the users. The aggregate number of the current state of the permissions is updated in the *Permissions* text field when a permission is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

WebDAV over HTTPS

If you want to access a WebDAV repository across an insecure network <oXygen/> 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 to <oXygen/> as part of the HTTPS protocol, without any user intervention. <oXygen/> 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/>. This means that <oXygen/> 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's key store if you get the error "No trusted certificate found" when trying to access the WebDAV repository:

Figure 4.13. The server certificate is not available



You can add a certificate to the key store by exporting it to a local file using any HTTPS-capable Web browser (for example Internet Explorer) and then importing this file into the JRE using the keytool executable bundled with the JRE. The steps are the following using Internet Explorer (if you use other browser the procedure is similar):

Procedure 4.3. Import a HTTPS server certificate

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 4.14. Security alert - untrusted certificate

b. Press the button "View Certificate".

c. Select the "Details" tab.

d. Press the button "Copy to file ...". This will start the Certificate Export Wizard on Windows

e. Follow the indications of the wizard to save the certificate to a local file, for example *server.cer* .

2. Import the local file into the JRE running <oXygen/>

   a. Open a text-mode console.

   b. Go to the lib/security subdirectory of your JRE directory, that is of the directory where it is installed the JRE running <oXygen/>, for example on Windows *C:\Program Files\Java\jre1.5.0_09\lib\security*

   c. Run the following command:**..\..\bin\keytool.exe -import -trustcacerts -file local-file.cer -keystore cacerts** where *local-file.cer* is the file containing 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/>

Opening the current document in a Web browser

To open the current document in the default Web browser installed on the computer use the action *Open in browser* available on menu Document → XML Document and also on the *Document* toolbar. It is useful for seeing the effect of applying an XSLT stylesheet or a CSS stylesheet on a document which specifies the stylesheet using an *xml-stylesheet* processing instruction.

Closing documents

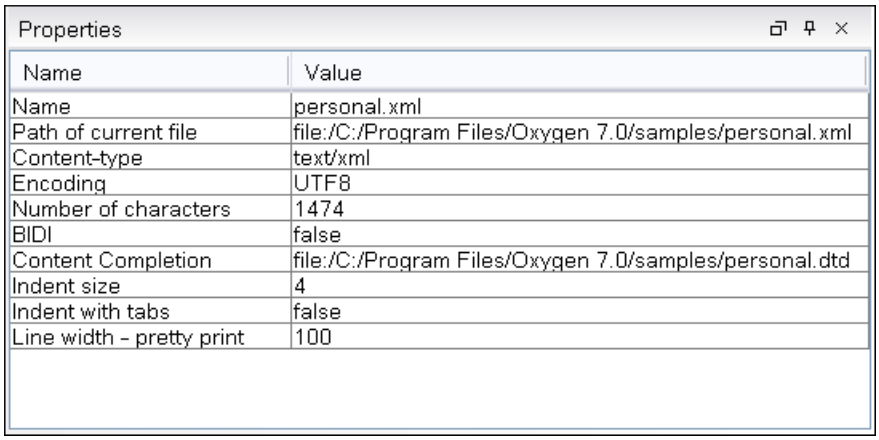
To close documents use one of the following methods:

- File → Close (**Ctrl+W**) : Closes only the selected tab. All other tab instances remain.
- File → Close All: Closes all opened documents. If a document is modified or has no file, a prompt to save, not to save, or cancel the save operation is displayed.
- Close - accessed by right-clicking on an editor tab: Closes the selected editor.
- Close Other Files - accessed by right-clicking on an editor tab: Closes the other files except the selected tab.
- Close All - accessed by right-clicking on an editor tab: Closes all open editors within the panel.

Viewing file properties

In the Properties view you can quickly access information about the current edited document like the character encoding, full path on the file system, schema used for content completion and document validation, associated transformation scenario, if bidirectional text (left to right and right to left) is enabled, document's total number of characters, line width, if indent with tabs is enabled and the indent size. The view can be accessed by going to Perspective+Show View → Properties

Figure 4.15. The Properties View



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

Editing XML documents

Associate a schema to a document

Setting a schema for the Content Completion

In case you are editing document fragments, for instance the chapters from a book each one in a separate file, you can activate the Content Completion for these fragments in two ways:

Setting a default schema

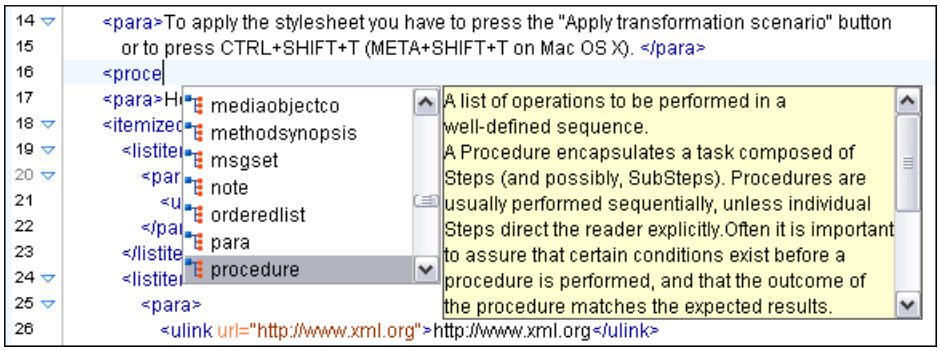
The table available at Options → Preferences -> Content Completion/Default contains a set of rules for associating a schema with the current document when no schema is specified within the document. The schema is one of the types: XML Schema, XML Schema with embedded Schematron rules, Relax NG, Relax NG with embedded Schematron rules, Schematron, DTD, NRL, 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 you can observe that the list of tags to be inserted is changing.

Figure 4.16. Content completion driven by a DocBook DTD



Adding a Processing Instruction

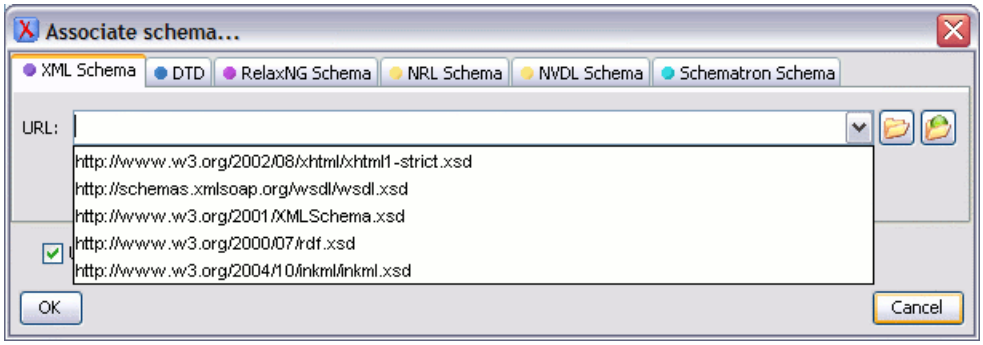
The same effect is obtained by configuring a processing instruction that specifies the schema to be used. The advantage of this method is that you can configure the Content Completion for each file. The processing instruction must be added at the beginning of the document, just after the XML prologue:

```
<?oxygen RNGSchema="file:/C:/work/relaxng/personal.rng" type="xml"?>
```

Select menu Document+XML Document → Associate schema... or click the toolbar button Associate schema to open a dialog for selecting a schema used for Content Completion and document validation. The schema is one of the types: XML Schema (with or without embedded Schematron rules), DTD, Relax NG (with or without embedded Schematron rules), NRL, NVDL, Schematron.

This is a dialog helping the user to easily associate a schema file with the edited document . Enables definition of a XML Document Prolog using the system identifier of a XML Schema, DTD, Relax NG (full or compact syntax) schema, NRL (Namespace Routing Language) schema, NVDL (Namespace-based Validation Dispatching Language) schema or Schematron schema. If you associate an XML Schema with embedded Schematron rules or a Relax NG schema with embedded Schematron rules you have to check the *Embedded Schematron rules* checkbox available for these two types of schemas.

Figure 4.17. Associate schema dialog



When associating a XML Schema to the edited document if the root element of the document defines a default namespace URI with a "xmlns" attribute the "Associate schema" action adds a xsi:schemaLocation attribute. Otherwise it adds a xsi:noNamespaceSchemaLocation attribute.

The URL combo box contains a predefined set of schemas that are used more often and it also keeps a history of the last used schemas.

<oXygen/> logs the URL of the detected schema in the Information view.

The *oxygen* processing instruction has 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, is used together with the RNGSchema attribute and can have the value "xml" or "compact".
NRLSchema	specifies the path to the NRL schema associated with the current document
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

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/> is able to learn and translate it to a DTD, which in turn can be saved to a file in order to provide a DTD for Content Completion and document validation. In addition to being useful for quick creation of a DTD that will be capable of providing an initialization source for the Content Completion assistant. This feature can also be used to produce DTDs for documents containing personal or custom element types.

When it is opened a document that does not specify a schema <oXygen/> automatically learns the document structure and uses it for Content Completion. To disable this feature uncheck the checkbox Learn on open document from Preferences.

Procedure 4.4. To create a DTD:

1. Open the structured document from which a DTD will be created.
2. Select menu Document+XML Document → Learn Structure (**Ctrl+Shift+L**) to read the mark-up structure of the current document so that it can be saved as a DTD using the Save Structure option.

<oXygen/> will learn the document structure, when finished displaying words Learn Complete in the Message Pane of the Editor Status bar.

3. Select menu Document+XML Document → Save Structure (**Ctrl+Shift+S**) to display the Save Structure dialog, used to name and create DTD documents learnt by the Learn Structure function.

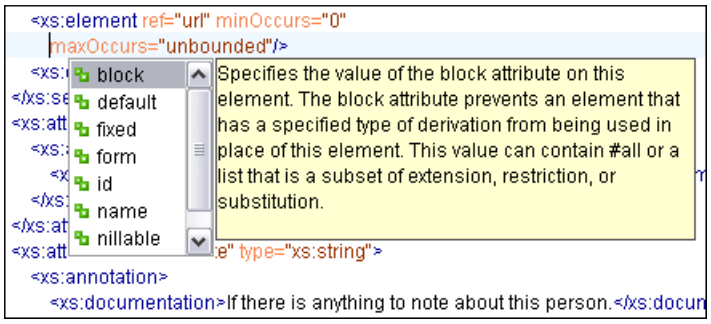
Note

The resulting DTD is only valid for documents containing the elements and structures defined by the document used as the input for creating the DTD. If new element types or structures are defined in a document, they must be added to the DTD in order for successful validation.

Streamline with Content Completion

<oXygen/>'s intelligent Content Completion feature is a content assistant that enables rapid, in-line identification and insertion of structured language elements, attributes and in some cases their parameter options.

Figure 4.18. Content Completion Assistant



If the Content Completion assistant is enabled in user preferences (the option *Use Content Completion*) it is automatically displayed whenever the < character is entered into a document or by pressing **CTRL+Space** on a partial element or attribute name. Moving the focus to highlight an element and pressing the **Enter** key or the **Tab** key, inserts both the start and end tags of the highlighted element into the document.

The DTD, XML Schema, Relax NG, NRL 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/> reads the beginning of the document and resolves the location of the DTD, XML Schema, Relax NG schema, NRL 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/> Content Completion options.<oXygen/> 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.

After inserting, the cursor is positioned directly before the > character of the start tag, if the element has attributes, in order to enable rapid insertion of any attributed supported by the element, or after the > char of the start tag if the element has no attributes. Pressing the space bar, directly after element insertion will again display the assistant. In this instance the attributes supported by that element will be displayed. If an attribute supports a fix set of parameters, the assistant will display the list of valid parameter. If the para-

meter setting is user defined and therefore variable, the assistant will be closed to enable manual insertion. The values of the attributes can be learned from the same elements in the current document.

If you press **CTRL + Enter** instead of **Enter** or **Tab** after inserting the start and end tags in the document <oXygen/> will insert an empty line between the start and end tag and the cursor will be positioned between on the empty line on an indented position with regard to the start tag.

If the feature Add Element Content of Content Completion is enabled all the elements that the new element must contain, as specified in the DTD or XML Schema, are inserted automatically in the document. The Content Completion assistant can also add optional content and first choice particle, as specified in the DTD or XML Schema, for the element if the two options are enabled.

The content assistant can be started at any time by pressing **CTRL+Space** Also it can be started with the action *Start Content Completion* (default shortcut is CTRL + Slash) which can be configured in Preferences → Menu Shortcut Keys : category *Content Completion*, description *Start Content Completion*. The effect is that the context-sensitive list of proposals will be shown in the current position of the caret in the edited document if element, attribute or attribute value insertion makes sense. Such positions are: 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, and 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 content of the Content Completion assistant is dependent on the element structure specified in the DTD, XML Schema, Relax NG (full or compact syntax) schema or NRL, NVDL schema associated to the edited document.

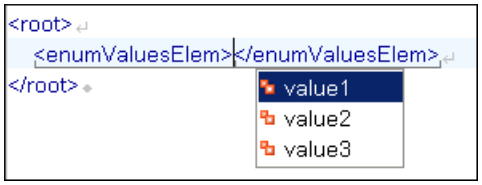
The number and type of elements displayed by the assistant is dependent on the current position of the cursor in the structured document . The child elements displayed within a given element are defined by the structure of the specified DTD, XML Schema, Relax NG (full or compact syntax) schema or NRL, NVDL schema. All elements that can't be child elements of the current element according to the specified schema are not displayed.

Inside Relax NG documents 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

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

in documents based on the schema the Content Completion assistant offers the list of values:

Figure 4.19. Content Completion assistant - element values in Relax NG documents



If the schema for the edited document defines attributes of type ID and IDREF the content assistant will display for IDREF attributes a list of all the ID values already present in the document for an easy insertion of a valid ID value at the cursor position in the document. This is available for documents that use DTD, XML Schema and Relax NG schema.

Also values of all the *xml:id* attributes are treated as ID attributes and 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 window.

If the edited document is not associated with a schema explicitly using the usual mechanisms for associating a DTD or XML Schema with a document or using a processing instruction introduced by the *Associate schema* action the content assistant will extract the elements presented in the pop-up window from the default schema.

If the schema for the document is of type 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, 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 annotations are put in an <xs:annotation> element:

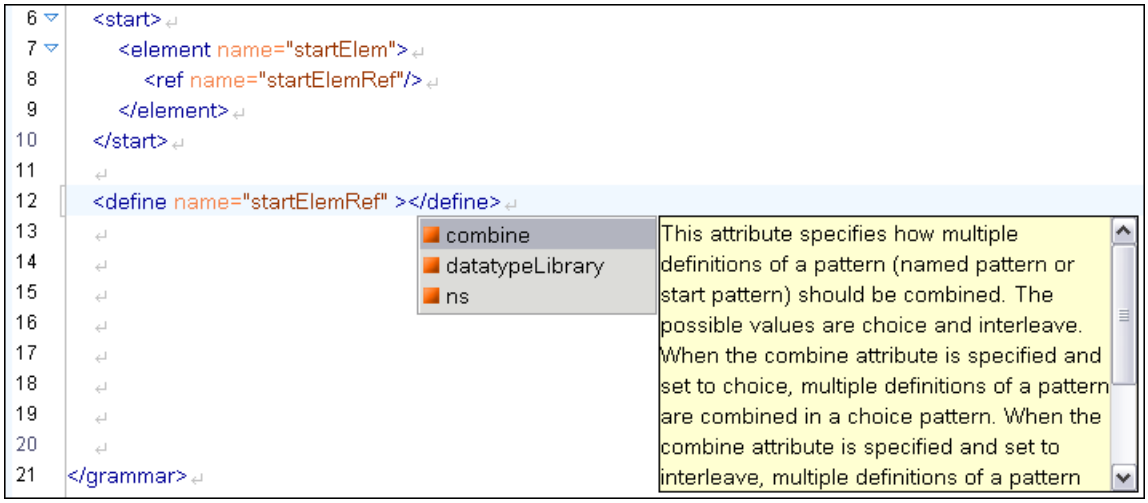
```
<xs:annotation>
    <xs:documentation>
        Description of the element.
    </xs:documentation>
</xs:annotation>
```

If the current element / attribute in the edited document does not have an annotation in the schema and that schema is of the type XML Schema <oXygen/> 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.

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 4.20. 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/> 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. -->
```

The operation of the Content Completion assistant is configured by the options available in the group called Content Completion Features.

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 if the word at cursor position is a prefix of such a short name. <oXygen/> comes with a lot of predefined code templates but you can define your own code templates for any type of editor. For more details see the example for XSLT editor code templates.

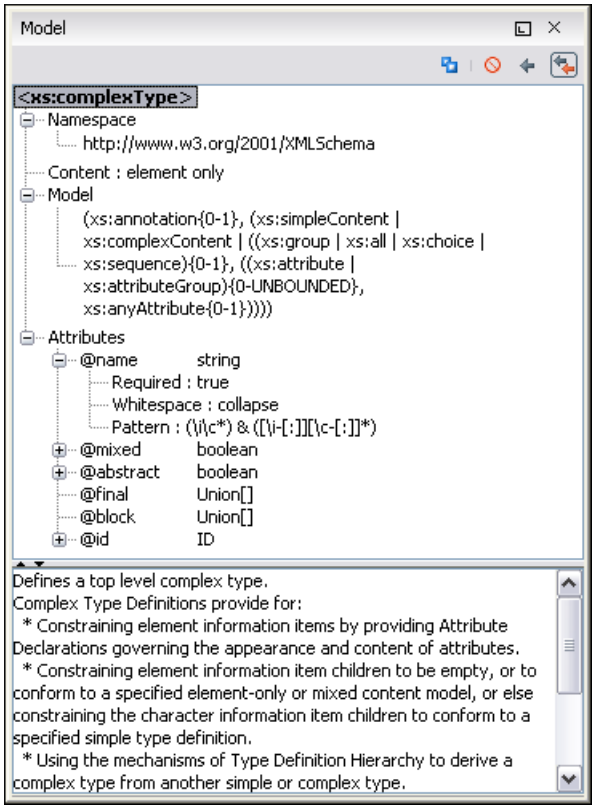
Content Completion helper panels

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

The Model panel

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

Figure 4.21. The Model View



The Model panel is comprised of:

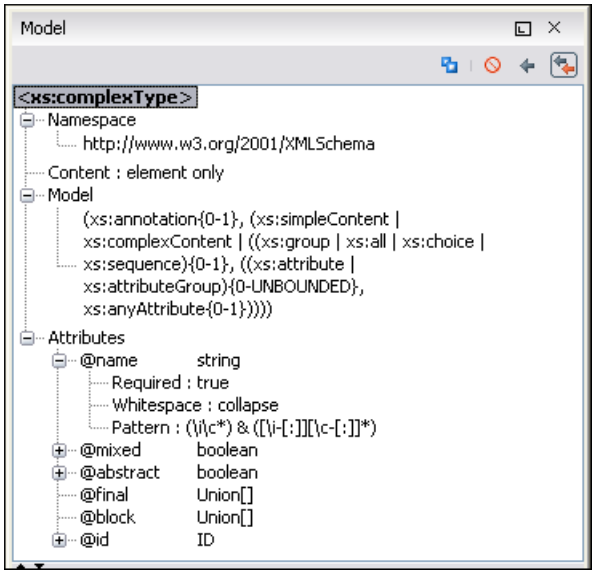
- An element structure panel.
- An annotation panel.

The Element Structure panel

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

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

Figure 4.22. The Element Structure panel

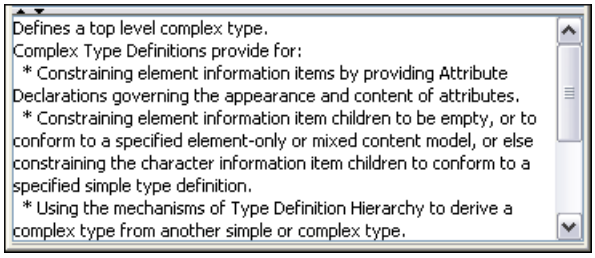


The Annotation panel

The Annotation panel shows the annotations that are present in the used schema for the currently edited or selected tag.

This information can be very useful to persons learning XML because it has small available definitions for each used tag.

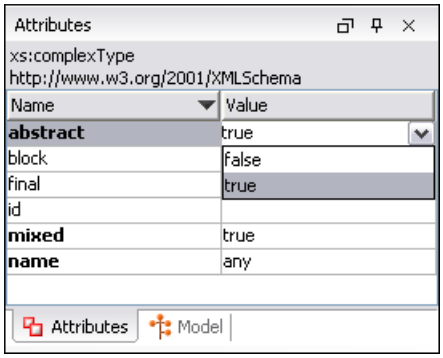
Figure 4.23. The Annotation panel



The Attributes panel

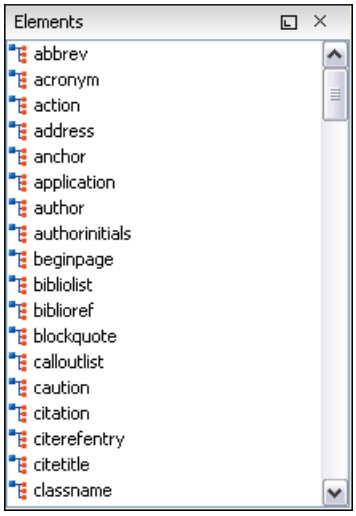
The Attributes panel presents all the possible attributes of the current element and allows to insert attributes in the current element or change the value of the attributes already used in the element. The attributes already present in the document are painted with a bold font. Clicking on the Value column of a table row will start editing the value of the attribute from the selected row. If the possible values of the attribute are specified as list in the schema associated with the edited document the Value column works as a combo box where you can select one of the possible values to be inserted in the document. The attributes table is sortable, 3 sorting orders being available by clicking on the columns' names. Thus the table's contents can be sorted in ascending order, in descending order or in a custom order, where the used attributes are placed 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 4.24. The Attributes panel



The Elements view

Figure 4.25. The Elements View

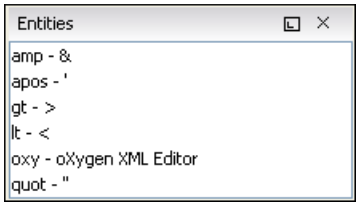


Presents a list of all defined elements that you can insert at the current caret position according to the schema used for content completion. Double-clicking any of the listed elements will insert that element in the edited document.

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.

Figure 4.26. The Entities View



Correcting 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/> provides functions that enable easy error identification and rapid error location.

Checking XML Form

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 Well-Formed XML 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.

If you select menu Document+XML Document → Check document form (**Ctrl+Shift+W**) or click the toolbar button  Check document form <oXygen/> checks if your document is *Namespace Well-Formed XML*. 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 the approximate location.

Example 4.1. Document which is not Well-Formed XML

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

When "Check document form" 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>.

Example 4.2. Document which is not namespace-wellformed

```
<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.
```

Example 4.3. Document which is not namespace-valid

```
<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 form

Validating Documents

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), Namespace Routing Language (NRL) 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 <oXygen/> Validate document 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 it is possible to select the validation phase.

Note

Validation of an XML document against a W3C 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/> window. Otherwise for large values of the *minOccurs* and *maxOccurs* attributes the validator fails with an OutOfMemory error which practically makes <oXygen/> unusable without a restart of the entire application.

Note

Validation of an XML document against a deeply recursive Relax NG schema may fail with a stack overflow error. It happens very rarely and the cause is the unusual depth of the Relax NG pattern recursion needed to match an element of the document against the schema and the depth exceeds the default stack size allocated by the Java virtual machine. The error can be overcome by simply setting a larger stack size to the JVM at startup using the -Xss parameter, for example -Xss1m.

Note

Validation of an XML document against a W3C XML Schema or Relax NG Schema with embedded ISO Schematron rules allows XPath 2.0 in the expressions of the ISO Schematron rules. This ensures that both XPath 1.0 and XPath 2.0 expressions are accepted in the embedded ISO Schematron rules and are enforced by the validation operation. For embedded Schematron 1.5 rules the version of XPath is set with a user preference.

Marking Validation Errors

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 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:

- 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 tool tip. In case there are errors, only the first three of them will be presented in the tool tip;

- middle area where 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.

- 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 Document → Validate as you type (**Ctrl + .**)-> Next error and Document → Validate as you type (**Ctrl + ,**)-> Previous error.

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/> user preferences.

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

Validation Example

Example 4.4. Validation error messages

In our example we will use the case where a DocBook listitem element does not match the rules of the `docbookx.dtd`. In this case running *Validate Document* will return the following error:

```
E The content of element type "listitem" must
match"(calloutlist|glosslist|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|anchor|
bridgehead|remark|highlights|abstract|authorblurb|epigraph|
indexterm|beginpage)+".
```

As you can see, 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 required. However, the error message does give us a clue as to the source of the problem, but indicating that "The content of element type "listitem" 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 we would want to learn about the child elements of "listitem" and their nesting rules. Once we 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.

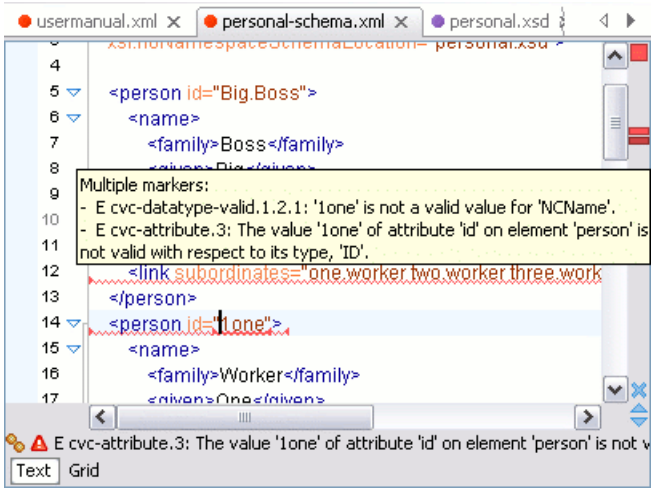
Caching the Schema Used for Validation

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 at the first validate action and is reused by the next *Validate document* actions without re parsing it. This increases the speed of the validate action starting with the second execution 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.

Validate As You Type

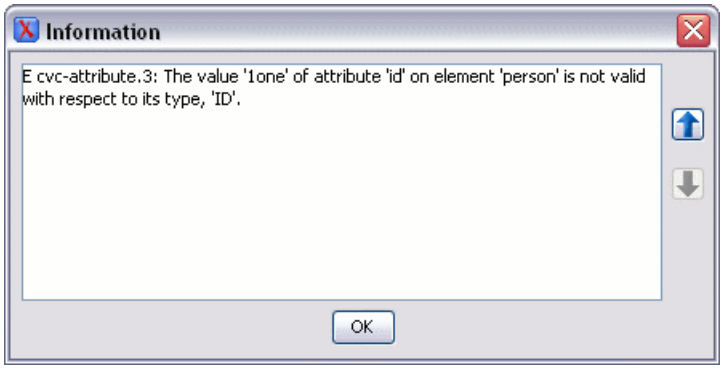
<oXygen/> can be configured to mark validation errors in the edited document as you modify it using the keyboard. If you enable the *Validate as you type* option any validation errors and warnings will be highlighted automatically in the editor panel after the configured delay from the last key typed, with underline markers in the 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 4.27. Validate as you type 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 validation as you type feature.

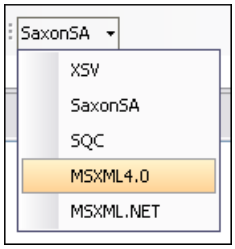
Figure 4.28. Full error message for validate as you type errors



Custom validation of XML documents

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 as custom validation engines in <oXygen/>. After such a custom validator is properly configured in Preferences it can be applied on the current document with just one click on the External Validation toolbar. The document is validated against the schema declared in the document.

Figure 4.29. External validation toolbar



Some validators are configured by default:

LIBXML

included in <oXygen/> (Windows edition), associated to XML Editor, 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. 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.

Note

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

not included in <oXygen/>, the jar file and license key file of Saxon 9 SA must be placed in the lib subdirectory of the installation directory After that <oXygen/> must be restarted. It is associated to XML Editor and XSD Editor.

MSXML 4.0

included in <oXygen/> (Windows edition). 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/> (Windows edition). 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/>. A Windows distribution of XSV can be downloaded from: ftp://ftp.cogsci.ed.ac.uk/pub/XSV/XSV210.EXE [ftp://ftp.cogsci.ed.ac.uk/pub/XSV/XSV210.EXE] A Linux distribution can be downloaded from ftp://ftp.cogsci.ed.ac.uk/pub/XSV/XSV-2.10-1.noarch.rpm.

	[ftp://ftp.cogsci.ed.ac.uk/pub/XSV/XSV-2.10-1.noarch.rpm] The executable path is configured already in <oXygen/> for the installation directory `[oXygen-install-dir]/xsv`. If it is installed in a different directory 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/>. It can be downloaded from here [http://www.alphaworks.ibm.com/tech/xmlsqc?open&l=xml-dev,t=grx,p=shecheck] (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 configured already for the SQC installation directory `[oXygen-install-dir]/sqc`. If it is installed in a different directory the predefined executable path and working directory must be corrected in Preferences. It is associated to XSD Editor. It must be used with a Java 1.4 virtual machine because it does not work with Java 1.5.

A custom validator cannot be applied on files loaded through an <oXygen/> custom protocol plugin developed independently and added to <oXygen/> after installation.

Validation Scenario

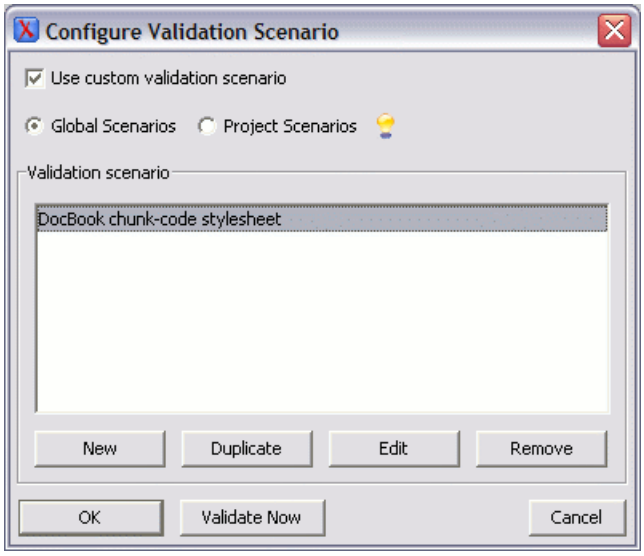
A complex XML document is usually split in smaller interrelated modules which do not make much sense individually and which cannot be validated in isolation due to interdependencies with the other modules. A mechanism is needed to set the main module of the document which in fact must be validated when an imported module needs to be checked for errors.

A typical example is the chunking DocBook XSL stylesheet which has `chunk.xsl` as the main module and which imports a stylesheet module called `param.xsl` which only defines XSLT parameters and other modules called `chunk-common.xsl` and `chunk-code.xsl`. The module `chunk-common.xsl` defines a named XSLT template with the name "chunk" which is called by `chunk-code.xsl`. The parameters defined in `param.xsl` are used in the other modules without being redefined.

Validation of `chunk-code.xsl` as an individual XSLT stylesheet issues a lot of misleading errors referring to parameters and templates used but undefined which are only caused by ignoring the context in which this module is used in real XSLT transformations and in which it should be validated. To validate such a module properly a validation scenario must be defined which sets the main module of the stylesheet and also the validation engine used to find the errors. Usually this is the engine which applies the transformation in order to detect by validation the same errors that would be issued by transformation.

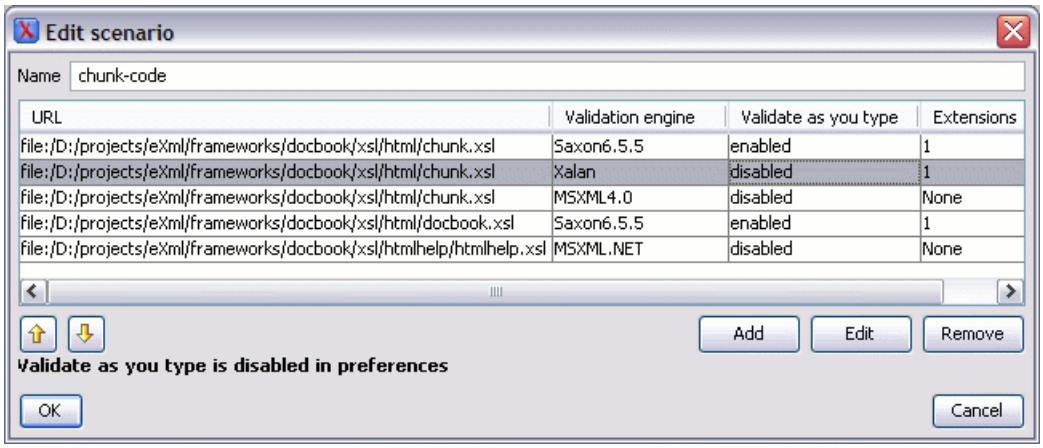
To define a validation scenario first open the *Configure Validation Scenario* dialog which displays a list of reusable scenarios for documents of the same type as the current document. You do this with the *Configure Validation Scenario* action available on the menu Document → Validate and on the *Validate* toolbar.

Figure 4.30. Configure Validation Scenarios



A validation scenario is created or edited in a special dialog opened with the *New* button or with the *Edit* one.

Figure 4.31. Edit a Validation Scenario



The table columns are:

URL The URL of the main module which includes the current module and which is the entry module of the validation process when the current module is validated.

Validation engine One of the engines available in <oXygen/> for validation of the type of document to which the current module belongs.

Validate as you type If this option is checked then the validation operation defined by this row of the table is applied also by the Validate as you type feature. If the *Validate as you type* feature is disabled in Preferences then this option does not take effect as the Preference setting has higher priority.

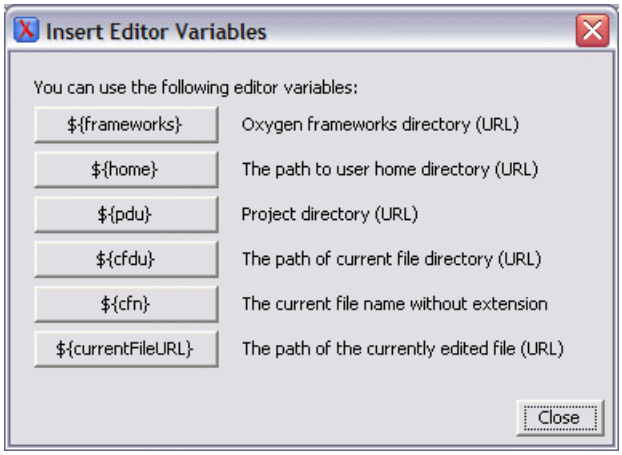
Extensions	A list of Java jar files or classes which implement extensions of the language of the current module. For example when the current module is an XSLT stylesheet an extension jar contains the implementation of the XSLT extension functions or the XSLT extension elements used in the stylesheet which includes the current module.

A row of the table is created or edited in the following dialog:

Figure 4.32. Edit a Validation Unit

The components of the dialog are the same as the columns of the table displayed in the scenario edit dialog. The URL of the main module can be specified with the help of a file browser for the local file system (the  button), with the help of the Open FTP / SFTP / WebDAV dialog opened by the  button or by inserting an editor variable with the following dialog:

Figure 4.33. Edit a Validation Unit



A second benefit of a validation scenario is that the stylesheet can be validated with several engines to make sure that it can be used in different environments with the same results. For example an XSLT stylesheet needs to be 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 and an XML document in which the master file includes smaller fragment files using XML entity references.

Validation Actions in the User Interface

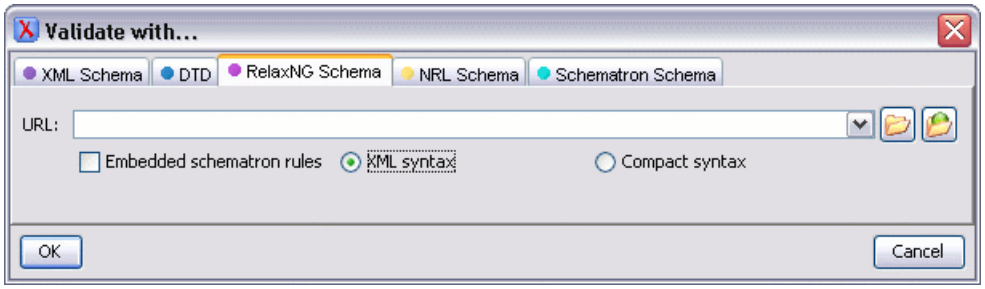
Use one of the actions for validating the current document:

- Select menu Document+XML Document → Validate document (**Ctrl+Shift+V**) or click the button Validate document available in the Validate toolbar to return an error result-list in the Message panel. Mark-up of current document is checked to conform with the specified DTD, XML Schema or Relax NG schema rules. It caches the schema and the next execution of the action uses the cached schema.

- Select menu Document+XML Document → Reset cache and validate or click the button Reset cache and validate available in the Validate toolbar to reset the cache with the schema and validate the document. It returns an error result-list in the Message panel. Mark-up of current document is checked to conform with the specified DTD, XML Schema or Relax NG schema rules.

- Select menu Document+XML Document → External Validation or click the button External validation available in the Validate toolbar to display the External Validation dialog, used to select the external schemas (XML Schema, DTD, Relax NG, NRL, NVDL, Schematron schema) and to execute the Validation operation on the current document using the selected schemas. Returns an error result-list in the Message panel. Mark-up of current document is checked to conform with the specified schemas rules. The External Validation action does not work for files loaded through an <oXygen/> custom protocol plugin developed independently and added to <oXygen/> after installation.

Figure 4.34. The External validation dialog



- Select menu Document+XML Document → Open external schema or click the button Open external schema available in the Document toolbar to open the schema used for validating the current document in a new editor.

- Select contextual menu of Project Panel,Validate Selection to validate all selected files with their declared schemas.

- Select contextual menu of Project Panel,Validate Selection with ... to select a schema and validate all selected files with that schema.

The button Validation options available on the *Validate* toolbar allows quick access to the validation options of the built-in validator in the <oXygen/> user preferences.

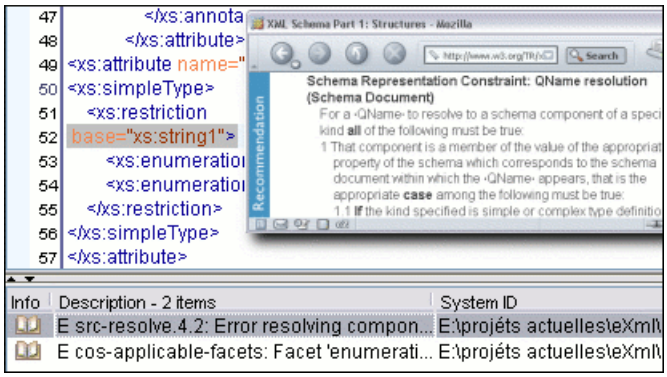
Also you can select several files in the Project panel and validate them with one click by selecting the action Validate selection or the action Validate selection with ... available from the contextual menu of the Project view.

If there are too many validation errors and the validation process is long you can limit the maximum number of reported errors.

References to XML Schema specification

If validation is done against XML Schema <oXygen/> 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 thus allowing you to understand the reason for that error.

Figure 4.35. 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*

```
<?oxygen RNGSchema="http://www.oasis-open.org/docbook/xml/5.0/rng/docbook.rng"
    type="xml"?>
```

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

```
<system systemId="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:schema-Location 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:

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

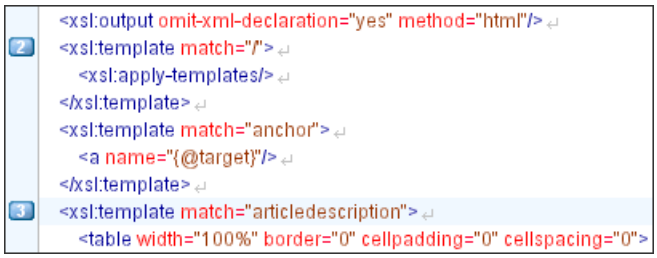
Document navigation

Navigating between XML elements located in various parts of the currently edited document is easy due to several powerful features.

Quick document browsing using bookmarks

The concept of bookmark is the same as in other IDEs: the user can mark a position in one edited document so that he can quickly 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 for placing bookmarks and for quick return to any of the marked positions.

Figure 4.36. Editor Bookmarks



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

A bookmark can be placed from Edit → Bookmarks->Create, from Edit → Bookmarks (**F7**)->Bookmarks quick creation, 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.

Folding of the XML elements

XML documents are 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.

Figure 4.37. Folding of the XML Elements

An unique feature of <oXygen/> 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 context 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 covers always the lines of text comprised between the start tag and end tag of the element where it is positioned the cursor.

Other menu actions related to folding of XML elements are available from the context menu of the current editor or from the menu Document → Folding:

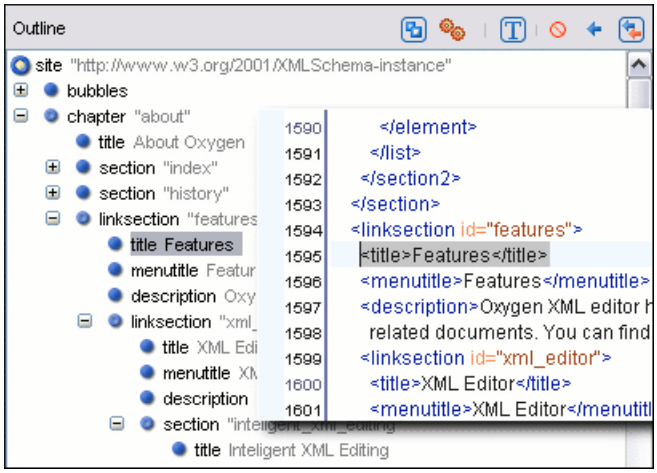
- Document+Folding+ → Close Other Folds (**Ctrl+NumPad+/**) Fold all the sections except the current element.
- Document+Folding+ → Collapse Child Folds (**Ctrl+NumPad+-**): Fold the sections indented with one level inside the current element.
- Document+Folding+ → Expand Child Folds (**Ctrl+Equals**): Unfold the sections indented with one level inside the current element.
- Document+Folding+ → Expand All (**Ctrl+NumPad+***): Unfold all the sections inside the current element.
- Document+Folding+ → Toggle Fold: Toggles the state of the current fold.

Outline View

The Outline view has the following available functions:

- the section called “XML Document Overview”
- the section called “Modification Follow-up”
- the section called “Document Structure Change”
- the section called “Document Tag Selection”

Figure 4.38. 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, making it easier for the user to be aware of the document's structure and the way tags are nested.

The *Expand more* and *Collapse all* items of the popup menu available on the outline tree enlarge or reduce the set of nodes of the edited document currently visible in the view. The tree expansion action is a faster alternative to mouse clicks on the plus signs of the tree when one wants to access quickly a node deeply nested in the hierarchy of document nodes. When a large number of nodes become expanded and the document structure is not clear any more the collapsing action clears the view quickly by reducing the depth of the expanded nodes to only one child of the currently selected node.

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.

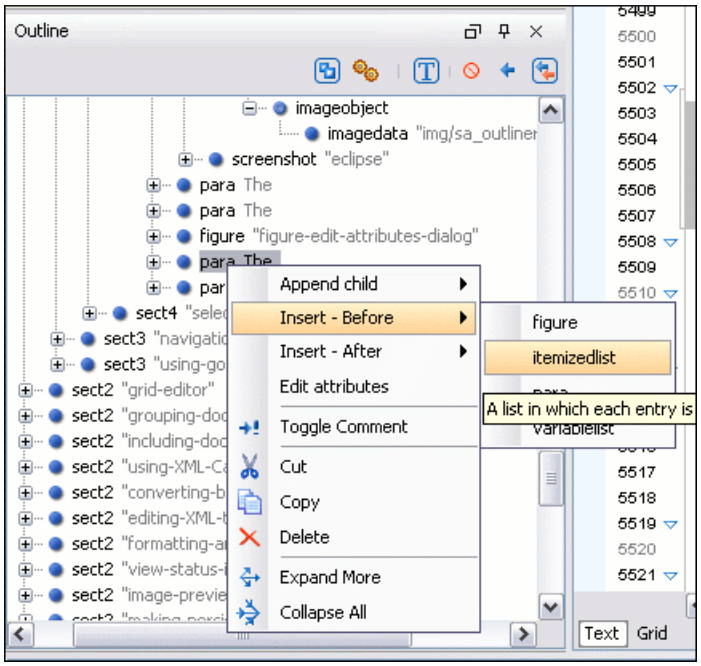
Document Structure Change

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. 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 element will be expanded first and the dragged element will be moved inside the drop one after its opening tag. If you hold down the CTRL key it will be performed a copy operation instead a move one.

The drag and drop action in the Outline view can be disabled and enabled from the Preferences dialog.

The popup menu of the Outline tree

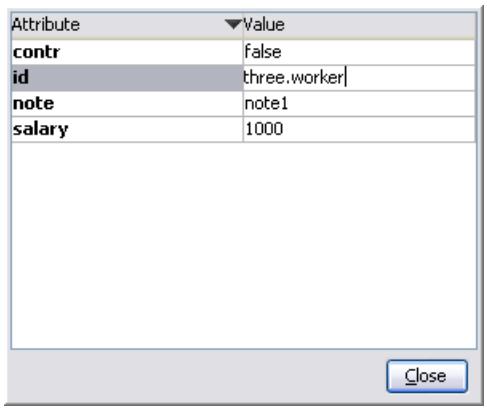
Figure 4.39. Popup menu of the Outline tree



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.

The *Edit attributes* action opens a dialog with a table containing all the attributes of the current element.

Figure 4.40. Edit attributes dialog



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 un comments 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.

Navigation buttons

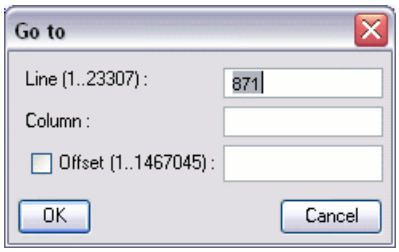
These buttons are available in editor's main toolbar:

- Go to last modification : Moves the caret to the last modification in any opened document.
- Back :Moves the caret to the previous position.
- Forward :Moves the caret to the next position. Enabled after at least one press of "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 offset relative to the beginning of the file.

Figure 4.41. Go to



Complete the dialog as follows:

Line The destination line in the current document.

Column The destination column in the current document.

Offset The destination offset relative to the beginning of document.

Grouping documents in XML projects

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 a solution for this. 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 FOP or XSLT over the master and obtain the result files, let say PDF or HTML.

Two conditions must be fulfilled:

- The master should declare the DTD to be used and the external entities - the sections. A sample document is:

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

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

  ... &testing; ...

- The document containing the section must not define again the DTD.

  <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.

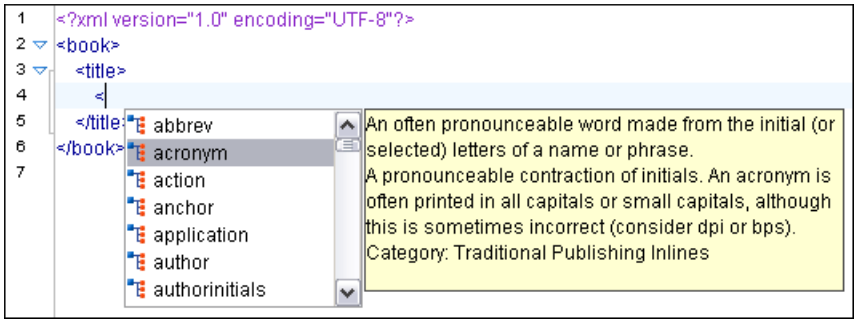
When splitting a large document and including the separate parts in the master file using external entities, only the master file will contain the Document Type Definition (the DTD) or other type of schema. The included sections can't define again the schema because the main document will not be valid.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

Creating an included part

Open a new document of type XML, with no associated schema.

You can type in the edited document the root element of your section. For example, if you are using DocBook it can be "<chapter></chapter>" or "<section></section>". Now if you are moving the cursor between the tags and press "<", you will see the list of element names that can be inserted.

Figure 4.42. Content Completion list over a document with no schema



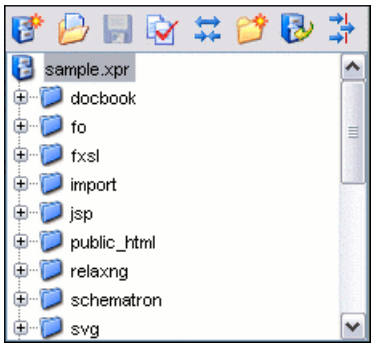
Note

The validation will not work on a included file, as no DTD is set. The validation can be done only from the master file. At this point you can only check the document to be well-formed.

Using the Project view

The Project view, located on the left-hand side of the main window, 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. On Windows the context menu can be displayed with the mouse on a right click or with the keyboard by pressing the special context menu key available on Windows keyboards.

Figure 4.43. The Project View



The default layout initialized by the Perspective → Reset Layout menu item arranges the Project view on the left side of the <oXygen/> window, above the Outline view. If you closed the view at some time to get more editing space you can reopen it quickly at any time with the Project → Show Project View menu item.

To create a new project select File → New Project or click the toolbar button New Project

To open an existing project select File → Open Project ... (**Ctrl+F2**) or click the toolbar button Open Project or select File → Reopen Project (displays a list of recently opened project files, select a project file to open).

To save a project on disk select File → Save Project (**Ctrl+F3**) or click the toolbar button Save Project

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

- Logical folders - they are marked with a blue icon and do not have any connection with folders on the disk, creating and deleting them in <oXygen/> does not affect the file system on disk.
- Linked folders - they are marked with a yellow icon and their name and content mirror a real folder existing in the file system on disk.

To create a new logical or physical folder (depending on the selected resource) select in the contextual menu New Folder or Import Folders or Import Remote Folders or click the Project view toolbar button  New Folder

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 Link to External Folders However you cannot drag and drop other files or folders over a linked folder.

To create a new linked folder inside another linked folder, or inside one of its children, right click on the linked folder where you want to create it and select New Folder from the contextual menu.

To add one or more files to a folder, right click on it, and choose Add files or Add Edited File or click the toolbar button  Add Edited File or right-click on the title of an opened editor and select from the pop-up menu Add to project or Add all to project.

The default target when adding files to a project is the project root. Selecting a folder changes the target to the selected folder. Files may have multiple instances, within the folder system but cannot appear twice within the same folder.

To remove one or more files and/or folders select them with the mouse in the project tree, right-click to invoke the contextual menu and select the Remove action or press the DELETE key.

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

A child (folder or file) of a linked folder can be renamed by right-clicking on it and accessing the Rename action from the contextual menu. The file or folder will be renamed both in the <oXygen/> Project view and on the local disk.

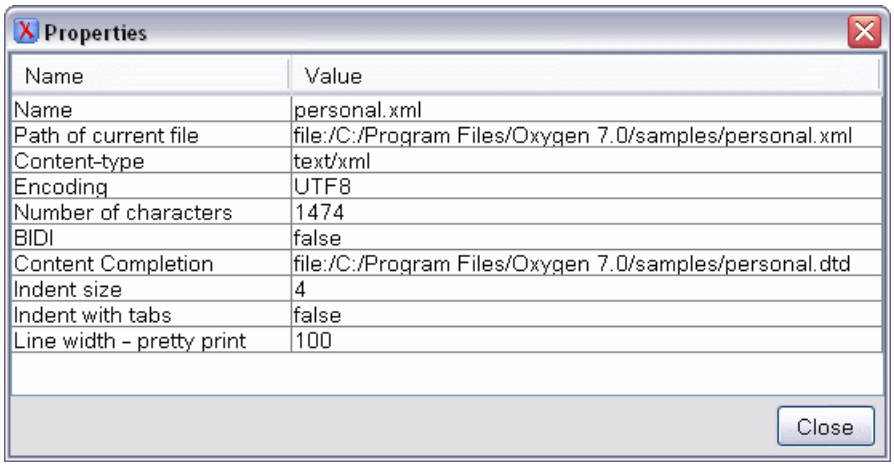
If a project folder contains many documents a certain document can be quickly located in the project tree if the user selects with the mouse the folder containing the desired document (or some arbitrary document in this folder) and types the first characters of the document name. The desired document will be 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 on it and with one of the Open actions from the popup menu. For opening a file of known type with other editor than the default use the Open as action. Also the selected document can be deleted by pressing the DELETE key or by choosing Remove from the context menu.

The currently selected files in the Project view can be validated against a schema of type Schematron, XML Schema, Relax NG, NRL, NVDL, or a combination of the later with Schematron with one of the actions *Validate Selection* and *Validate Selection 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 validate 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 similar to the ones available in the Properties view can be obtained with the *Properties* action of the popup menu invoked on a file node of the Project view tree, in a dialog like below:

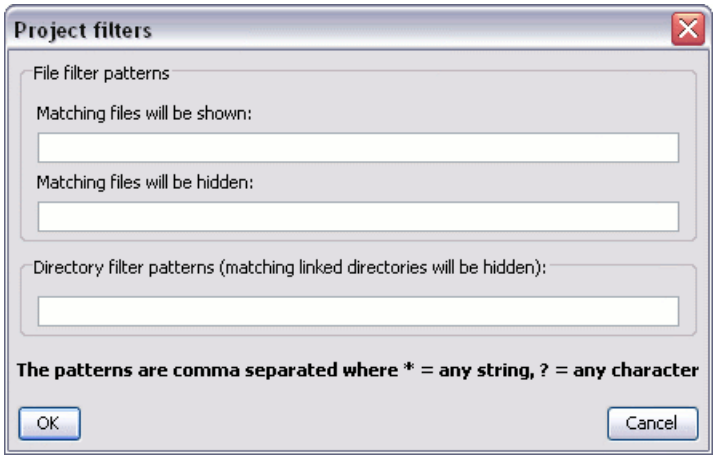
Figure 4.44. The Properties dialog



The full path to the project files is hidden by default. Click the toolbar button Show/Hide Path to toggle the file path on or off.

The files and folders that appear as visible in the Project view can be filtered. Click the toolbar button Filters to set filter patterns for the files you want or do NOT want to show.

Figure 4.45. Project filters dialog



In the dialog you can introduce filter patterns for the files that will be shown, files that will be hidden and filter patterns for the linked directories of the Project view that will be hidden.

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.

Team Collaboration - Subversion

There is a SVN (Subversion) Client application embedded in <oXygen/>. 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 the 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. For more information see the Preference Sharing and Sharing the Transformation Scenarios sections.

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 is 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 work.

The main application for XInclude is in the document orientated 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 Orientated 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 edited, better version control and distributed authoring.

An example: create a chapter file and an article file in the `samples` folder of the <oXygen/> install folder and include the chapter file in the article file using XInclude.

Chapter file introduction.xml:

```
<?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:

```
<?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.xml">
      <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 parse will use the value of the xi:fallback element - a message to FIXME.

If you want to include only a fragment of other 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"?>
<?oxygen RNGSchema="test.rng" type="xml"?>
<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"?>
```

```
<?oxygen RNGSchema="test.rng" type="xml"?>
<test>
    <a xml:id="a1" xml:base="a.xml">test</a>
</test>
```

The XInclude support in <oXygen/> 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/> will be able to validate and transform documents comprised of parts added using XInclude.

Working with XML Catalogs

When Internet access is not available or the Internet connection is slow the OASIS XML catalogs [http://www.oasis-open.org/committees/entity/spec.html] present in the list maintained in the XML Catalog Preferences panel will be scanned trying to map a remote system ID (at document validation) or a URI reference (at document transformation) pointing to a resource on a remote Web server to a local copy of the same resource. If a match is found then <oXygen/> will use the local copy of the resource instead of the remote one. This enables the XML author to work on his XML project without Internet access or when the connection is slow and waiting until the remote resource is accessed and fetched becomes unacceptable. Also XML catalogs make documents machine independent so that they can be shared by many developers by modifying only the XML catalog mappings related to the shared documents.

<oXygen/> supports any XML catalog file that conforms to one of:

- the OASIS XML Catalogs Committee Specification v1.1 [http://www.oasis-open.org/committees/download.php/14809/xml-catalogs.html]
- the OASIS Technical Resolution 9401:1997 [http://www.oasis-open.org/specs/a401.htm] 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 [http://www.oasis-open.org/committees/download.php/14809/xml-catalogs.html#s.systemsuffix] and uriSuffix [http://www.oasis-open.org/committees/download.php/14809/xml-catalogs.html#s.urisuffix].

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:

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

An XML Catalog file can be created quickly in <oXygen/> 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 [creating-from-templates].

User preferences related to XML Catalogs can be configured from Options → Preferences ... +XML / XML Catalog

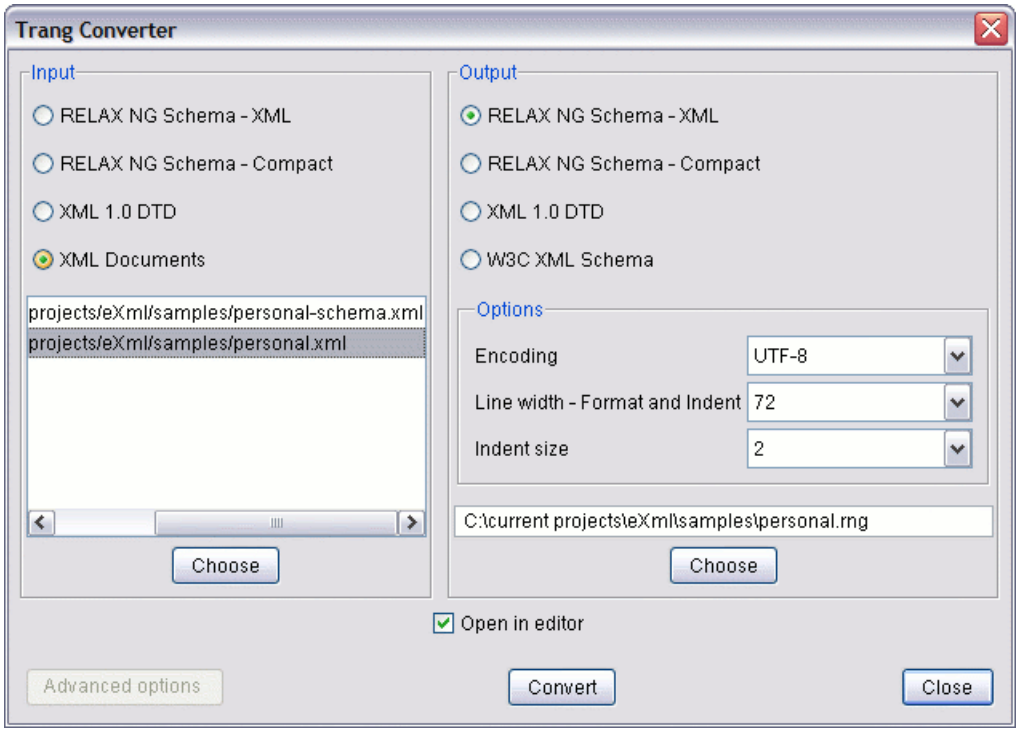
Converting between schema languages

The Trang converter 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/> will generate an approximation of the source schema.

The conversion functionality is available from Tools → Trang Converter... (**Ctrl+Alt+T**) from the Project view contextual menu - the action Open with → Trang Converter and from the toolbar button  Convert to ...

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 4.46. Convert a schema to other schema language

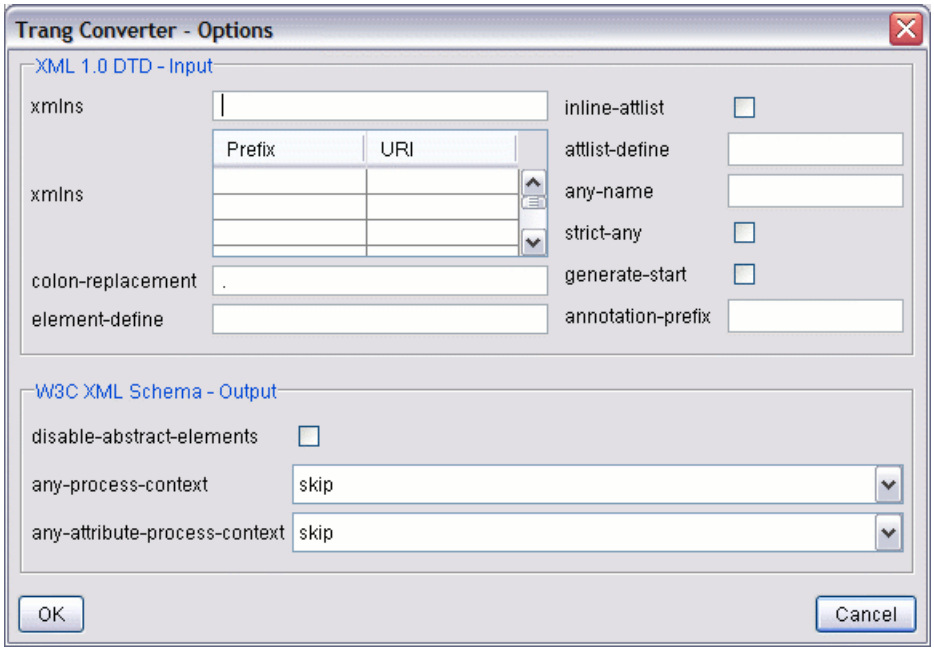


The language of the source schema is specified with one of the four radio buttons of the Input panel. If the XML Documents button is selected more than one file selection is allowed in the list below the group of radio buttons in case the conversion is based on a set of XML files instead of a single 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 4.47. 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 by 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	Specifies not to generate definitions for attribute list declarations and 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	This 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. DTDs 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 anyAttribute 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/> also as a tree of XML elements. This is possible in the Tree Editor perspective available from Tools → Tree Editor (**Ctrl+T**) that provides specially designed views and toolbars and an editable tree allowing you to execute common actions for nodes of a tree like create and 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 all the time 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 by use of the **Space bar**, **Tab** or multiple line breaks insertion from use of the **Enter**, 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, what seems to be a single paragraph.

While this is 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.

Procedure 4.5. To format and indent a document:

1. Open or focus on the document that is to be formatted and indented.

2. Select menu Document → XML Document → Format and Indent (**Ctrl+Shift+P**) or click the toolbar button  Format and indent . While in progress the Status Panel will indicate Pretty print in progress. On completion, this will change to Pretty print successful and the document will be arranged.

Note

Pretty Print can format empty elements as an auto-closing markup tag (ex. <a/>) or as a regular tag (ex. <a>). It can preserve the order or attributes or order them alphabetically. Also the user may specify a list of elements for which white spaces are preserved exactly as before Pretty print and one with elements for which white space is stripped. These can be configured from Options → Preferences+Editor / Format.

Pretty Print requires that the structured document is *Well-Formed XML*. If the document is not *Well-Formed XML* an error message is displayed. The message will usually indicate that a problem has been found in the form and will hint to the problem type. It will not highlight the general position of the error, to do this run the *well formed* action by selecting Document → Check document form (**Ctrl+Shift+W**).

Important

In XHTML files (XML files which either have the XHTML namespace or the <html> root tag) the JavaScript <script> sections will be formatted according to the JavaScript Format and Indent options and the CSS <style> sections will be formatted according to the CSS Format and Indent options.

Note

If the document is not well-formed because some XML elements contain code in a specific language, for example JavaScript:

```
    <script language="JavaScript" type="text/javascript">
        var javawsInstalled = 0;
        var javaws12Installed = 0;
        var javaws142Installed=0;
        isIE = "false";

        if (navigator.mimeTypes && navigator.mimeTypes.length) {
            x = navigator.mimeTypes['application/x-java-jnlp-file'];
            if (x) {
                javawsInstalled = 1;
                javaws12Installed=1;
                javaws142Installed=1;
            }
        } else {
            isIE = "true";
        }
</script>
```

this code can be enclosed in an XML comment to make the document well-formed before applying the *Format and Indent* action:

```
<script language="JavaScript" type="text/javascript">
  <!--
       var javawsInstalled = 0;
       var javaws12Installed = 0;
       var javaws142Installed=0;
       isIE = "false";

       if (navigator.mimeTypes && navigator.mimeTypes.length) {
           x = navigator.mimeTypes['application/x-java-jnlp-file'];
           if (x) {
               javawsInstalled = 1;
               javaws12Installed=1;
               javaws142Installed=1;
           }
       } else {
           isIE = "true";
       }
   -->
</script>
```

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 action Indent selection .

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 for covering a pattern of XML elements with only one expression. The allowed types of expressions are:

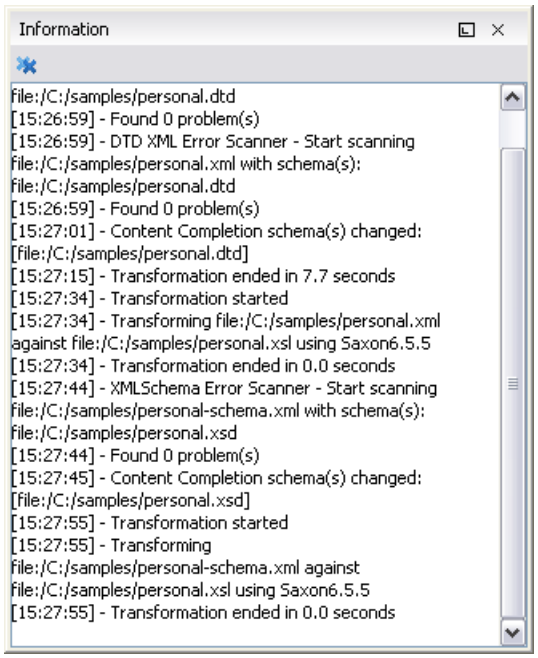
//xs:documentation	the XPath descendant axis can be used only at the beginning of the expression; the namespace prefix can be attached to any namespace, no namespace binding check is performed when applying the pretty-print operation
/chapter/abstract/title	note the use of the XPath child axis
//section/title	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.

Viewing status information

Status information generated by the Schema Detection, Validation, Validate as you type and Transformation threads are fed into the Information view allowing the user to monitor how the operation is being executed.

Figure 4.48. Information view messages



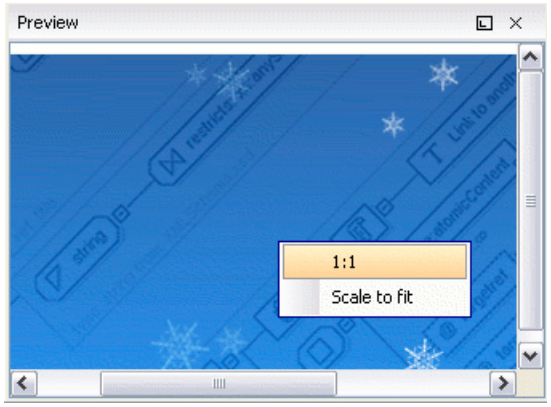
Messages contain a timestamp, the name of the thread that generated it and the actual status information. The number of displayed messages can be controlled from the options panel.

In order to make the view visible go to Perspective+Show View → Information

Image preview

Images and SVG files from the Project view can be previewed in a separate panel.

Figure 4.49. The Preview panel



To preview an image one has to either double click the image name or click the Preview action from the Project's tree 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 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).

To preview a SVG file click the Preview action from the Project's tree 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.

Making a persistent copy of results

To make a persistent copy of the results displayed in the Results panel from operations like document validation, checking the form of documents, XSLT or FO transformation, find all occurrences of a string, applying an XPath expression to the current document use one of the actions:

- File → Save Results - displays the Save Results dialog, used to save the result-list of the current message tab.
- 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 message tab.

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 an action available from Document+Source → Locks/Unlocks the XML Tags or from the toolbar button  Locks/Unlocks the XML tags

There is a default lock state for all opened editors in the Preferences XML Editor Format 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/> 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 to adjust the contrast of markup in Editor perspective. If the Edit toolbar is not visible right-click in the toolbar area and select Edit from the popup menu.

XML editor specific actions

<oXygen/> 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. On Windows the context menu can be displayed with the mouse on a right click or with the keyboard by pressing the special context menu key available on Windows keyboards.

Split actions

Also the editing area can be divided vertically and horizontally with the split / unsplit actions available on the Split toolbar, the Document → Split menu and the popup menu of the editor panel for XML files:  Split horizontally,  Split vertically,  Unsplit.

Edit actions

- 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 + ,**): Comment 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.

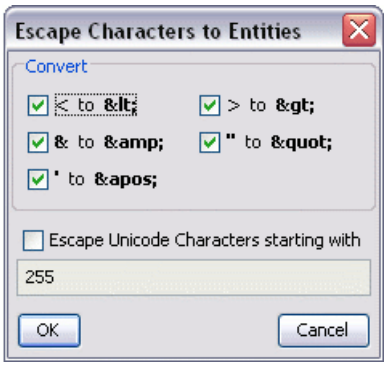
Select actions

The Select actions are enabled when the caret is positioned inside a tag name.

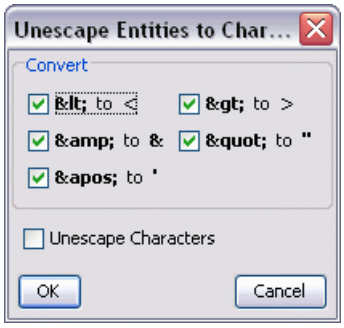
- Document+Select → Select element: Selects the entire current element;
- Document+Select → Select content: Selects the current element, excluding the start tag and end tag;
- Document+Select → Select attributes: Selects all the attributes of the current element;
- Document+Select → Select parent: Selects the parent element of the current element;

Source actions

- Document+Source+  → Locks / Unlocks the XML Tags: Disable / Enable editing of XML tags
- Document+Source → To lower case: Converts the selection's content to lower case characters.
- Document+Source → To upper case: Converts the selection's 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 selected block to the right;
- 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.

- Document+Source+ → Format and Indent Element (**Ctrl + I**): Pretty prints the element that surrounds the caret position;

- Document+Source+ → Import entities list : Shows a dialog that allows you to select a list of files as sources for external entities. The DOCTYPE section 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">
```

- 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.

- Document+Source → To Lower Case : The action works on the selection converting all upper case letters to lower case.

- Document+Source → To Upper Case : The action works on the selection converting all lower case letters to upper case.

- 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.

XML document actions

- Document+XML Document → Show Definition (also available on the contextual menu of the editor panel) : move the cursor to the definition of the current element in the schema associated with the edited XML document (DTD, XML Schema, Relax NG schema, NRL schema).

- Document+XML Document → Copy XPath (**Ctrl+Alt+.**): Copy XPath expression of current element from current editor to clipboard.

- Document+XML Document+  → Go to the 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+Close Bracket**): Moves the cursor to the end of the next tag.

- Document+XML Document → Go after Previous Tag (**Ctrl+Open Bracket**): Moves the cursor to the end of the previous tag.

- Document+XML Document → Associate XSLT/CSS Stylesheet (**Ctrl+Open Bracket**): 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 transformation stylesheet when there is no scenario associated with the current document

XML Refactoring actions

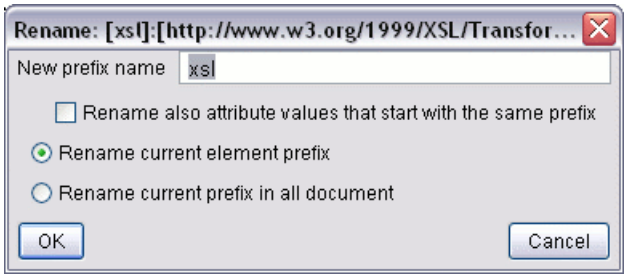
- Document+XML Refactoring+  → Surround with tag... (**Ctrl+E**): Selected Text in the editor is marked with the specified start and end tags.

- Document+XML Refactoring+  → Surround with <tag> (**Ctrl+/**): Selected Text in the editor is marked with start and end tags of the last 'Surround in' 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.

Figure 4.50. Rename Prefix 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/> 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 the 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 tag and end tag of the current element.

Smart editing

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-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.
Smart Enter	The *Smart Enter* option inserts an empty line between the start and end tags and places the cursor in an indented position on the empty line automatically when the cursor is between the start and end tag and Enter is pressed.

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

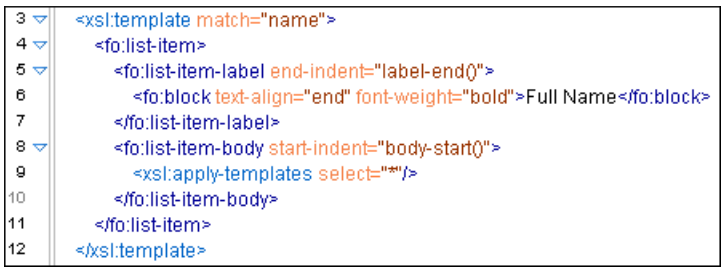
if the click position is immediately after a start tag or immediately before an end tag then the entire content of the element enclosed by that tag is selected, including all the child elements but excluding the start tag and the end tag of the element

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.

Figure 4.51. Example of coloring XML tags by prefix



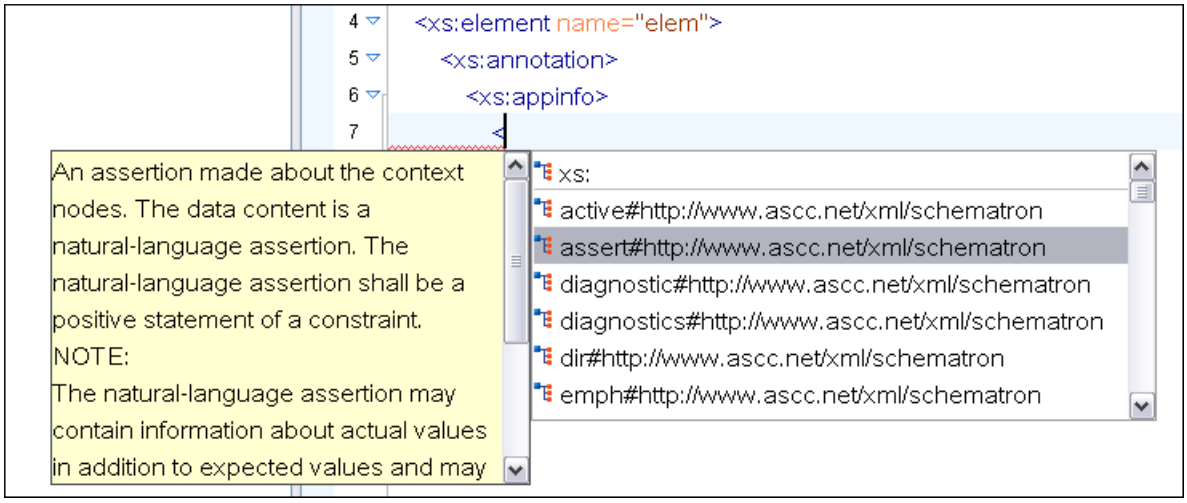
Editing XML Schema schemas

<oXygen/> provides a special type of editor for XML Schema schemas. This editor presents the usual text view of an XML document synchronized in real time with a graphical view of the schema components.

Special content completion features

The XML Schema editor of <oXygen/> enhances the content completion of the XML editor with special support for the elements and attributes of a Schematron schema inside the *xs:annotation/xs:appinfo* elements of an XML Schema.

Figure 4.52. Schematron support in XML Schema content completion



XML Schema diagram

Introduction

<oXygen/> provides a simple, expressive and easy to read Schema Diagram View for XML Schema 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/> is the only XML Editor to provide a side by side source and diagram presentation and have them synchronized in real-time:

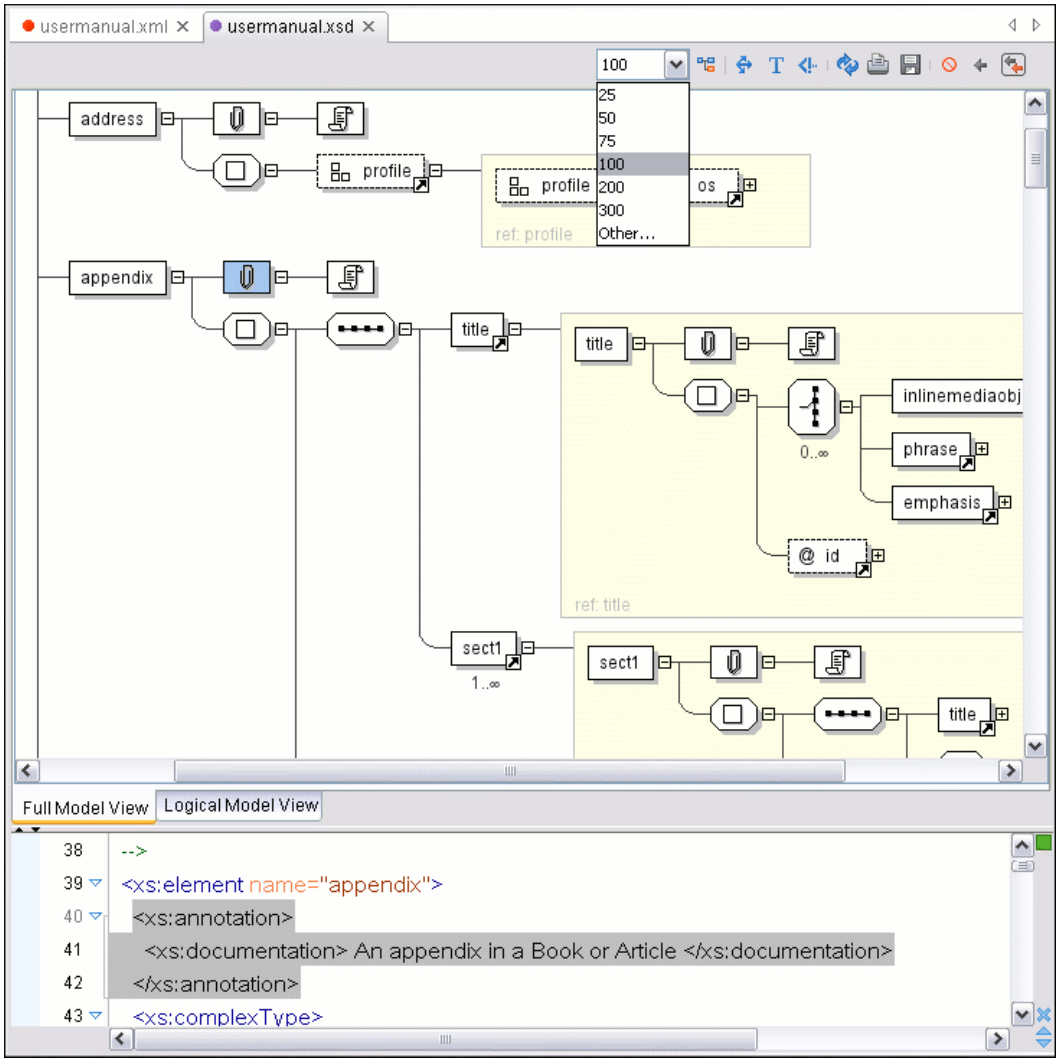
- the changes you make in the Editor will immediately be visible in the Diagram (no background parsing).
- changing the selected element in the diagram will select the underlaying code in the source editor.

The diagram image can be zoomed with one of the predefined factors available on the *Schema* toolbar: 25%, 50%, 75%, 100%, 200%, 300% or with a custom factor that can be defined on the same toolbar. Also the zoom factor is used by the print and save actions applied on the diagram.

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 4.53. XML Schema editor - full model view



The following references can be expanded in place: elements, attributes, groups, assigned types, base types, substitution elements and identity constraints. This coupled with the synchronization support makes the schema navigation easy.

At the top of the diagram view there are buttons corresponding to the following actions:

Show only the selected component

It is a two state button. When it is turned on the diagram view presents only the top level definition of the schema from the cursor position and it is updated when the cursor goes to another definition. When it is turned off the view presents all the schema definitions.

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 make a refresh, the diagram will be expanded until it reaches referred components. If this is left unchecked, only the first level of the diagram is expanded, showing the top level elements.

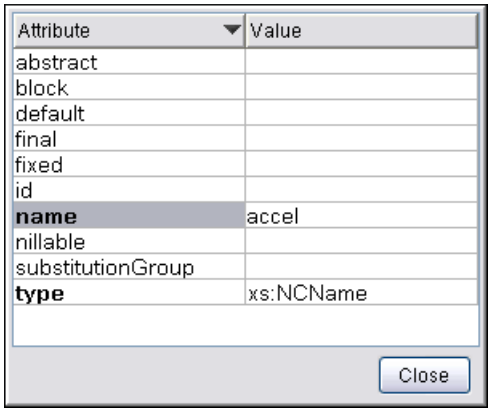
For large schemas, the editor disables this option automatically.

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)
Show/Hide Annotations	Depending on its state (selected/not selected), the documentation nodes are shown or hidden.
Show/Hide Comments	Depending on its state (selected/not selected), the comment nodes are shown or hidden.

The contextual menu offers quick access to:

- Add child: offers a list of possible items to be added as children of the current node.
- Insert before: offers a list of possible items to be added before the current node.
- Insert after: offers a list of possible items to be added after the current node.
- Edit attributes: allows the user to edit the attributes of the current node. This action can also be triggered by double-clicking an element.

Figure 4.54. Edit attributes of current XML Schema element

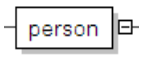


- Remove: allows the user to remove the current element.
- Collapse Children action and Expand Children action to collapse and expand all the children of the current element with only one action
- Print action and Print Selection action to print the schema or only the currently selected components of the schema on paper
- Save as Image action and Save Selection as image action to save the schema or the currently selected schema components as an image on disk
- Generate Sample XML Files action to launch the XML instance generation tool [96]
- Refresh action to rebuild the model of the currently selected element from the schema file on disk.

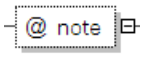
Also, the contextual menu offers access to the Collapse children, Expand children, Print, Print selection, Save as Image, Save Selection as Image and Refresh actions. The diagram can be saved as JPEG, PNG and BMP image.

The symbols used in the schema diagram

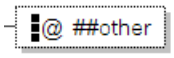
The Full Model View renders all the XML Schema elements with intuitive symbols:



a rectangle containing a string represents an *xs:element* with the *name* attribute having the value equal to the string from the rectangle

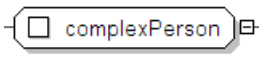


an *xs:attribute* with the *name* attribute having the value equal to the string from the rectangle



an *xs:anyAttribute* with the *namespace* attribute having the value equal to the string from the rectangle

an *xs:attributeGroup* with the *ref* attribute having the value equal to the string from the rectangle

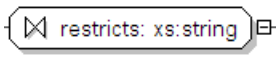


an *xs:complexType* with the *name* attribute having the value equal to the string from the rectangle

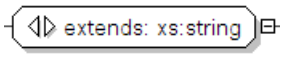
an *xs:group* with the *name* attribute having the value equal to the string from the rectangle

an *xs:element* with the *ref* attribute having the value equal to the string from the rectangle

an *xs:simpleType* with the *name* attribute having the value equal to the string from the rectangle



an *xs:restriction* with the *base* attribute having the value equal to the string from the rectangle



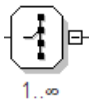
an *xs:extension* with the *base* attribute having the value equal to the string from the rectangle

an *xs:simpleContent*

an *xs:complexContent*

an *xs:all*

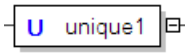
an *xs:sequence* with the *minOccurs* and *minOccurs* attributes specified under the symbol



an *xs:choice* with the *minOccurs* and *minOccurs* attributes specified under the symbol

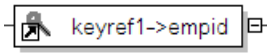
an *xs:annotation*

an *xs:documentation*

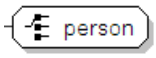


an *xs:unique* with the *name* attribute having the value equal to the string from the rectangle

an *xs:key* with the *name* attribute having the value equal to the string from the rectangle



an *xs:keyref* with the *name* and *refer* attributes having the value equal to the string from the rectangle



an *xs:selector* with the *xpath* attribute having the value equal to the string from the rectangle; it is used inside an *xs:unique*, an *xs:key* or an *xs:keyref*

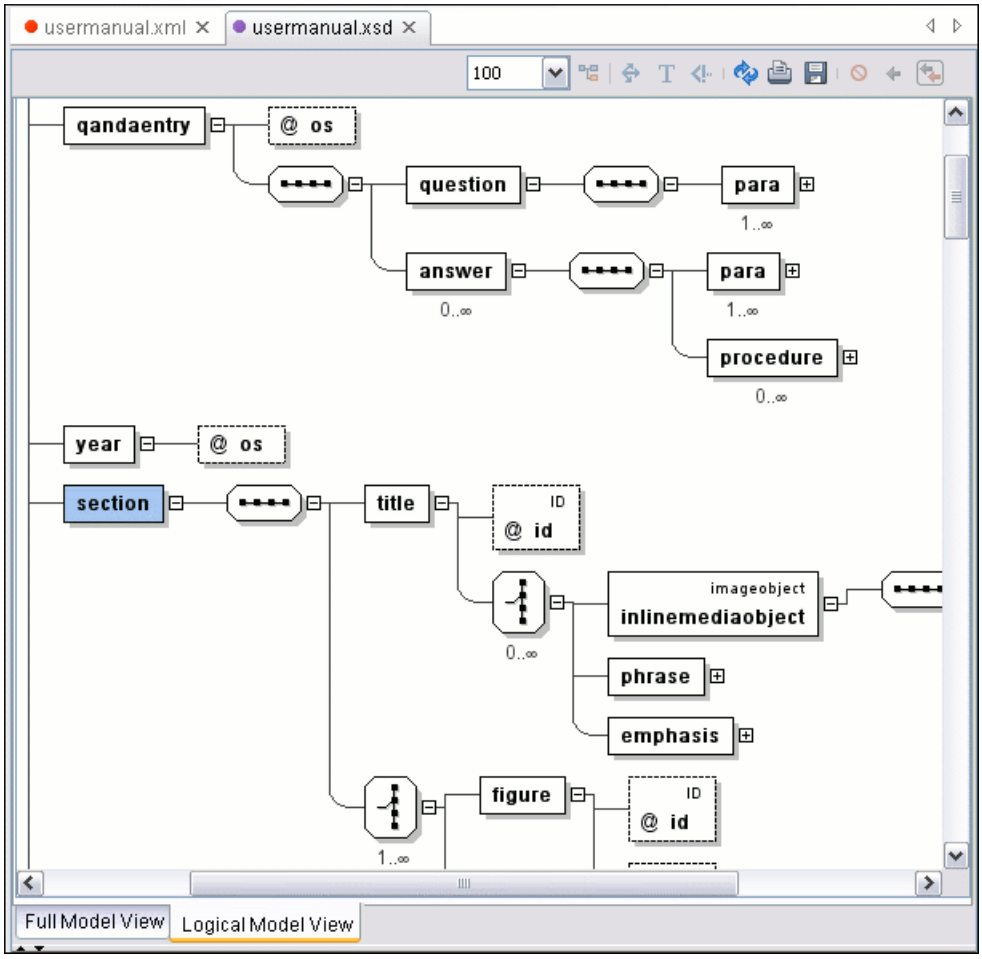
an *xs:field* with the *xpath* attribute having the value equal to the string from the rectangle; it is used inside an *xs:unique*, an *xs:key* or an *xs:keyref*

Logical model view

The Logical Model View displays a diagram of the compiled schema. This is not synchronized automatically with the source editor and it is obtained after resolving the references, type extensions and type restrictions, redefinitions etc.

It presents the global elements that when expanded show the types and identity constraints. If an element has a simple type then the type name is rendered. If an element has a complex type then the content type and attributes are presented.

Figure 4.55. Logical Model View for XML Schema



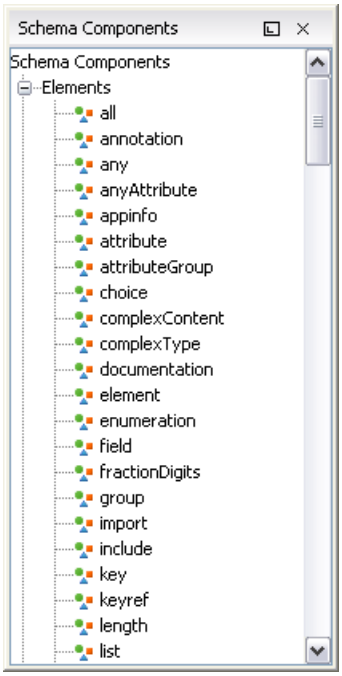
If the schema is not valid you will see an error message in the Logical Model View instead of the diagram.

A double click on a schema diagram component takes the cursor of the text editor to the definition of that component.

Schema components view

The Diagram View also contains a Schema Components View showing the global components grouped by their namespaces and types. It allows a quick access to a component by knowing its name.

Figure 4.56. Schema components view for XML Schema



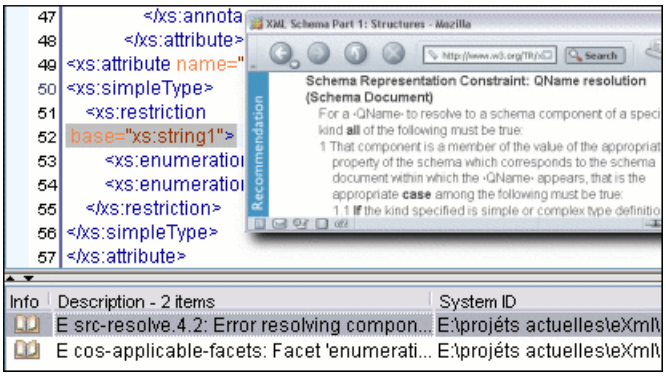
The view content depends on the selected view: in Full Model View it contains the global elements, attributes, simple types, complex types, groups, attribute groups. In Logical Model View it contains the global elements, grouped by their namespaces. It can be opened from Perspective → Show View → Schema Components

A double click on a schema component presented in the view takes the cursor of the text editor to the definition of that component.

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 specification reference to the W3C specification for XML Schema. An error message contains 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 thus allowing you to understand the reason for that error.

Figure 4.57. 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/> window. Otherwise for large values of the *minOccurs* and *maxOccurs* attributes the validator fails with an OutOfMemory error which practically makes <oXygen/> unusable without a restart of the entire application.

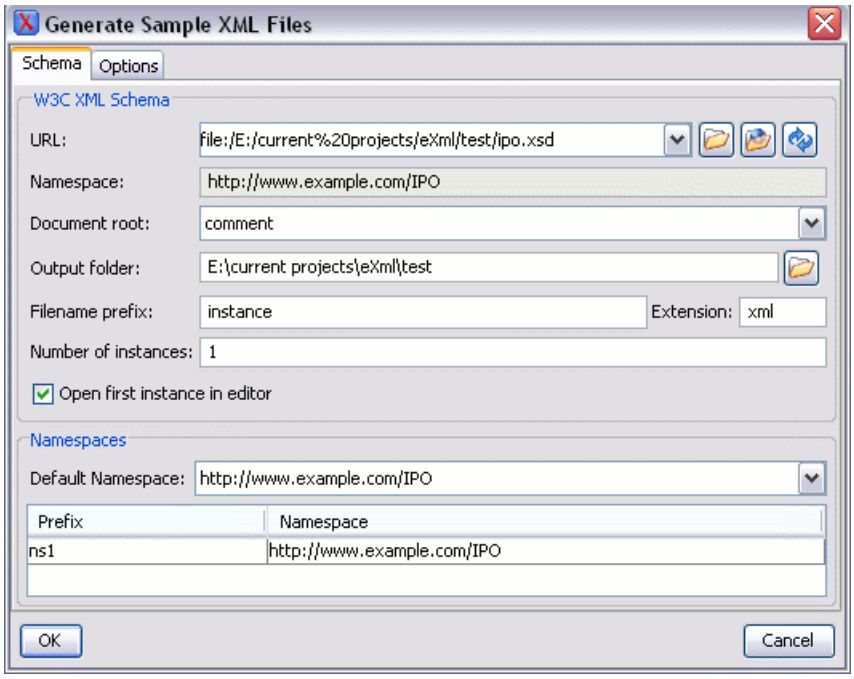
Create an XML Schema from a relational database table

To create an XML Schema from the structure of a relational database table use the special wizard available in the *Tools* menu.

XML Schema Instance Generator

To generate sample XML files from an XML Schema use the *Generate Sample XML Files...* dialog. It is opened with the action Tools → Generate Sample XML Files...

Figure 4.58. The Generate Sample XML Files dialog



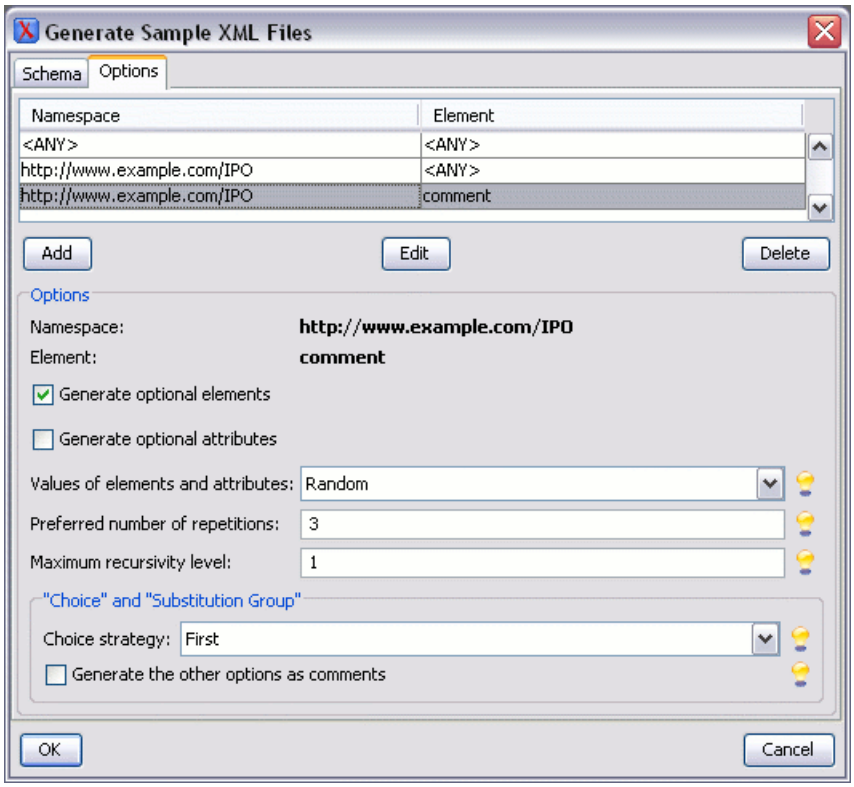
Complete the dialog as follows:

URL	Schema's URL. Last used URLs are displayed in the drop-down box.
Namespace	Displays the namespace of the selected schema.
Document root	After the list is selected, a list of elements is displayed in the combo box. The user should choose the root of the XML documents to be generated.
Output folder	Path to the folder where the generated XML instances will be saved.

Filename prefix and Extension	Generated files' names have the following format: prefixN.extension, where *prefix* and *extension* are specified by the user and *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 will be opened in editor.
Namespaces	Here the user can specify the default namespace as well as the proxies (prefixes) for namespaces.

The *Options* tab becomes active only after the URL field is filled-in and a schema is detected. It allows the user to set specific options for different namespaces and elements.

Figure 4.59. The Generate Sample XML Files dialog



Namespace / Element	Allows the user to define settings for: • All elements from all namespaces. This is the default setting and it can also be accessed from Options -> Preferences -> XML / XML Instance Generator. • All elements from a specific namespace. • A specific element from a specific namespace.
Generate optional elements	When checked, all elements will be generated, including the optional ones (having the *minOccurs* attribute set to 0 in the schema).

Generate optional attributes	When checked, all attributes will be 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 attributes and elements. Several choices are available: • None - No content is inserted; • Default - Inserts a default value depending of data type descriptor of the respective element/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 instance generator* preferences page). Please note that type restrictions are ignored for this option for generating the values of elements and attributes. 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. If you need to generate valid values please use the *Random* option. • Random - Inserts a random value depending of data type descriptor of the respective element/attribute.
Preferred number of repetitions	Allows the user set the preferred number of repeating elements related with minOccurs and maxOccurs defined in XML Schema. • If the value set here is between minOccurs and maxOccurs, that value will be used; • If the value set here is less than minOccurs, the minOccurs value will be used; • If the value set here is greater than maxOccurs, that value will be used.
Maximum recursivity level	Option to set the maximum allowed depth of the same element in case of recursivity.
Choice strategy	Option to be used in case of xs:choice or substitutionGroup. The possible strategies are: • First - the first branch of xs:choice or the head element of substitutionGroup will be always used; • Random - a random branch of xs:choice or a substitute element or the head element of a substitutionGroup will be used.
Generate the other options as comments	Option to generate the other possible choices or substitutions (for xs:choice and substitutionGroup). These alternatives will be generated inside comments groups so you can uncomment them and use later. Use this option with care (for example on a restricted namespace and element) as it may generate large result files.

The XML instance generation tool can be launched also directly from the XML Schema editor from a shortcut action available on the popup menu of the *Full Model View* of the schema diagram view. [90]

The *Options* tab is activated by default as the *Schema* tab is filled with the data of the currently selected element of the diagram.

Flatten an XML Schema

If an XML Schema is organized on several levels linked by *xs:include* statements sometimes it is more convenient to work on the schema as a single flat file. To flatten schema <oXygen/> recursively adds included files to the master one. That means <oXygen/> replaces the *xs:include* elements with the ones coming from the included files.

This action can be accessed from the schema editor's contextual menu -> Refactoring -> Flatten Schema.

In the following example *master.xsd* includes *slave.xsd*. This, in turn, includes *slave1.xsd* which includes both *slave2.xsd* and *slave3.xsd*.

Listing of master.xsd

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
    targetNamespace="tns" xmlns:tns="tns"
    xmlns:b="b" >
  <!-- included elements from slave.xsd -->
  <xs:include schemaLocation="slave.xsd"></xs:include>
  <!-- master.xsd -->
  <xs:element name="element1">
    <xs:complexType>
      <xs:sequence>
        <xs:element ref="tns:element2" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
</xs:schema>
```

Listing of slave.xsd

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
    targetNamespace="tns" xmlns:a="a" xmlns:b="b"
    xmlns:c="c">
  <!-- included elements from slave1.xsd -->
  <xs:include schemaLocation="slave1.xsd"></xs:include>
  <!-- slave  -->
  <xs:element name="element2" xmlns:c="x"/>
</xs:schema>
```

Listing of slave1.xsd

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
```

```
    targetNamespace="tns" xmlns:tns="tns"
    blockDefault=" restriction">
  <!-- included elements from slave2.xsd -->
  <xs:include schemaLocation="slave2.xsd"></xs:include>
  <!-- included elements from slave3.xsd -->
  <xs:include schemaLocation="slave3.xsd"></xs:include>
  <!-- slave1  -->
  <xs:element name="element0"/>
  <xs:element name="element7"/>
  <xs:element name="element7Substitute"
      substitutionGroup="tns:element7"
      block="extension"/>
  <xs:element name="element6">
    <xs:complexType>
      <xs:sequence>
        <xs:element ref="tns:element7"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:complexType name="type1">
    <xs:sequence>
      <xs:element ref="tns:element0"/>
    </xs:sequence>
  </xs:complexType>
</xs:schema>
```

Listing of slave2.xsd

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
  targetNamespace="tns"
  xmlns:tns="tns"
  elementFormDefault="qualified"
  attributeFormDefault="qualified">
  <!-- slave2 -->
  <xs:element name="a"></xs:element>
  <a:element name="element9"
        xmlns:a="http://www.w3.org/2001/XMLSchema">
    <xs:complexType>
      <xs:sequence>
        <!-- This element is from the target namespace -->
        <xs:element name="element3"
              xmlns:b="http://www.w3.org/2001/XMLSchema"/>
        <!-- Element from no namespace -->
        <xs:element name="element4" form="unqualified"/>
        <a:element ref="tns:a"></a:element>
      </xs:sequence>
      <!-- Attribute from the target namespace -->
      <b:attribute name="attr1" type="xs:string"
            xmlns:b="http://www.w3.org/2001/XMLSchema"/>
      <!-- Attribute from the no namespace -->
      <xs:attribute name="attr2" type="xs:string"
```

```
            form="unqualified"/>
    </xs:complexType>
  </a:element>
</xs:schema>
```

Listing of slave3.xsd

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
    targetNamespace="tns" finalDefault="restriction"
    xmlns:tns="tns">
  <!-- slave3 -->
  <xs:complexType name="ct1"/>
  <xs:complexType name="ct2" final="extension">
    <xs:complexContent>
      <xs:extension base="tns:ct1"/>
    </xs:complexContent>
  </xs:complexType>
  <xs:simpleType name="st1" final="union">
    <xs:restriction base="xs:integer"/>
  </xs:simpleType>
  <xs:simpleType name="st2" final="union">
    <xs:restriction base="tns:st1">
      <xs:enumeration value="1"/>
      <xs:enumeration value="2"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:element name="e1" type="tns:c1" final="restriction"/>
  <xs:element name="e2ext" type="tns:c2"
        substitutionGroup="tns:e1"></xs:element>
  <xs:complexType name="c1">
    <xs:sequence>
      <xs:element ref="tns:e1"/>
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="c2">
    <xs:complexContent>
      <xs:extension base="tns:c1">
        <xs:sequence>
          <xs:element ref="tns:e1"/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
</xs:schema>
```

Listing of master.xsd after it has been flattened

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema targetNamespace="tns" xmlns:a="a"
```

```
    xmlns:b="b" xmlns:c="c" xmlns:tns="tns"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
<!-- included elements from slave.xsd -->
<!-- included elements from slave1.xsd -->
<!-- included elements from slave2.xsd -->
<!-- slave2 -->
<xs:element block="restriction" name="a"/>
<a:element block="restriction" name="element9"
      xmlns:a="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <!-- This element is from the target namespace -->
      <xs:element block="restriction" form="qualified" name="element3"
        xmlns:b="http://www.w3.org/2001/XMLSchema"/>
      <!-- Element from no namespace -->
      <xs:element block="restriction" form="unqualified"
            name="element4"/>
      <a:element ref="tns:a"/>
    </xs:sequence>
    <!-- Attribute from the target namespace -->
    <b:attribute form="qualified" name="attr1" type="xs:string"
      xmlns:b="http://www.w3.org/2001/XMLSchema"/>
    <!-- Attribute from the no namespace -->
    <xs:attribute form="unqualified" name="attr2" type="xs:string"/>
  </xs:complexType>
</a:element>
<!-- included elements from slave3.xsd -->
<!-- slave3 -->
<xs:complexType block="restriction" final="restriction" name="ct1"/>
<xs:complexType block="restriction" final="extension" name="ct2">
  <xs:complexContent>
    <xs:extension base="tns:ct1"/>
  </xs:complexContent>
</xs:complexType>
<xs:simpleType final="union" name="st1">
  <xs:restriction base="xs:integer"/>
</xs:simpleType>
<xs:simpleType final="union" name="st2">
  <xs:restriction base="tns:st1">
    <xs:enumeration value="1"/>
    <xs:enumeration value="2"/>
  </xs:restriction>
</xs:simpleType>
<xs:element block="restriction" final="restriction" name="e1"
      type="tns:c1"/>
<xs:element block="restriction" final="restriction" name="e2ext"
      substitutionGroup="tns:e1"
  type="tns:c2"/>
<xs:complexType block="restriction" final="restriction"
      name="c1">
  <xs:sequence>
    <xs:element ref="tns:e1"/>
  </xs:sequence>
</xs:complexType>
```

```
  <xs:complexType block="restriction" final="restriction"
        name="c2">
    <xs:complexContent>
      <xs:extension base="tns:c1">
        <xs:sequence>
          <xs:element ref="tns:e1"/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <!-- slave1  -->
  <xs:element block="restriction" name="element0"/>
  <xs:element block="restriction" name="element7"/>
  <xs:element block="extension" name="element7Substitute"
        substitutionGroup="tns:element7"/>
  <xs:element block="restriction" name="element6">
    <xs:complexType>
      <xs:sequence>
        <xs:element ref="tns:element7"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:complexType block="restriction" name="type1">
    <xs:sequence>
      <xs:element ref="tns:element0"/>
    </xs:sequence>
  </xs:complexType>
  <!-- slave  -->
  <xs:element name="element2" xmlns:c="x"/>
  <!-- master.xsd -->
  <xs:element name="element1">
    <xs:complexType>
      <xs:sequence>
        <xs:element ref="tns:element2"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
</xs:schema>
```

The case of XML Schema redefinitions is also handled as the example below shows.

Listing of master.xsd

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:redefine schemaLocation="slave1.xsd">
    <xs:complexType name="tp">
      <xs:complexContent>
        <xs:extension base="tp">
          <xs:choice>
            <xs:element name="el2" type="xs:NCName"/>
            <xs:element name="el3" type="xs:string"/>
```

```
          </xs:choice>
        </xs:extension>
      </xs:complexContent>
    </xs:complexType>
  </xs:redefine>
  <xs:element name="el" type="tp"/>
</xs:schema>
```

Listing of slave1.xsd

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:redefine schemaLocation="slave2.xsd">
    <xs:complexType name="tp">
      <xs:complexContent>
        <xs:extension base="tp">
          <xs:attribute name="a"/>
        </xs:extension>
      </xs:complexContent>
    </xs:complexType>
  </xs:redefine>
</xs:schema>
```

Listing of slave2.xsd

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType name="tp">
    <xs:sequence>
      <xs:element name="el" type="xs:string"/>
    </xs:sequence>
  </xs:complexType>
</xs:schema>
```

Listing of master.xsd after it has been flattened>

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType name="tp">
    <xs:complexContent>
      <xs:extension base="tp_Redefined1">
        <xs:choice>
          <xs:element name="el2" type="xs:NCName"/>
          <xs:element name="el3" type="xs:string"/>
        </xs:choice>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="tp_Redefined1">
```

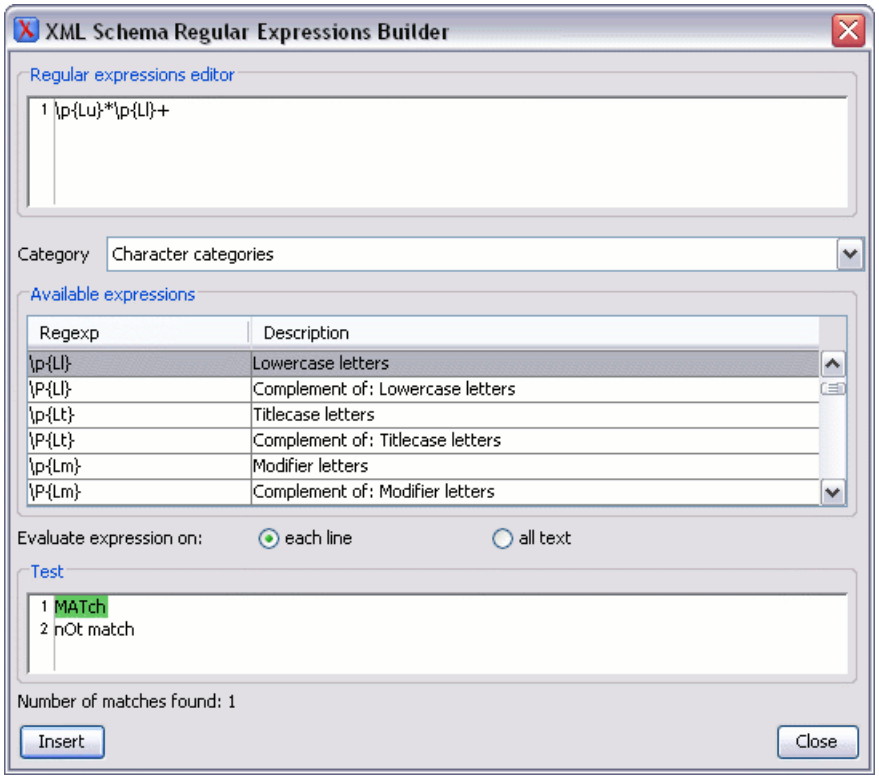
```
    <xs:complexContent>
      <xs:extension base="tp_Redefined0">
        <xs:attribute name="a"/>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="tp_Redefined0">
    <xs:sequence>
      <xs:element name="el" type="xs:string"/>
    </xs:sequence>
  </xs:complexType>
  <xs:element name="el" type="tp"/>
</xs:schema>
```

The references to the included schema files can be resolved through an XML Catalog.

XML Schema regular expressions builder

To generate XML Schema regular expressions use the action Tools → XML Schema Regular Expressions Builder It will open a dialog which allows you to build and test regular expressions.

Figure 4.60. XML Schema regular expressions builder dialog



The dialog contains the following sections:

- *Regular expressions editor* - allows you edit the regular expression to be tested and used. Content completion is available and presents a list with all the predefined expressions. It is accessible by pressing **Ctrl + Space**.

- *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 - it consists of two columns. The first one presents the regular expressions, the second displays a short description of the expressions. The set of expressions depend 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: *\p{Lu}* - Uppercase letters; *\P{Lu}* - Complement of: Uppercase letters.

- *Evaluate expression on* radio buttons - there are available two options: *Evaluate expression on each line* and *Evaluate expression on all text* . If the first option is selected the edited expression will be applied on each line from the *Test* area. If the second option is selected the expression will be applied on the whole text.

- *Test* area - it is a text editor which allows you to enter a text sample on which the regular expression will be applied. The matches of the 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*.

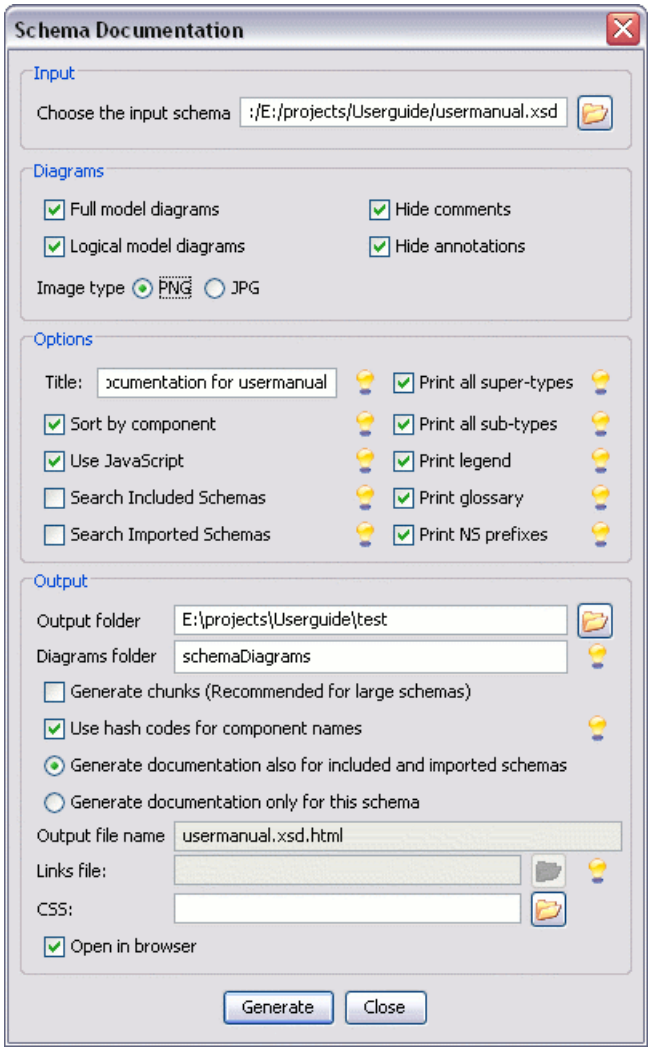
The regular expression builder cannot be used to insert regular expressions in the grid version of a document editor. Accordingly the *Insert* button of the dialog will be disabled if the current document is edited in grid mode.

Generating HTML documentation for an XML Schema

To generate HTML documentation for a XML Schema document similar with the Javadoc documentation for Java classes use the dialog *Schema documentation*. It is opened with the action Tools → Generate Documentation → Schema Documentation... (**Ctrl+Alt+S**). It can be also opened from the Project Tree contextual menu: Generate Documentation → Schema Documentation... The dialog enables the user to configure a large set of parameters of the process of generating the HTML documentation.

The HTML documentation contains images corresponding to the schema definitions as the ones displayed by the schema diagram view. 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. Also 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 preserved in the generated HTML documentation.

Figure 4.61. The XML Schema documentation dialog



The text field of the *Input* panel must contain the full path to the XML Schema (XSD) file, if the schema is composed of only one file, or the full path to the main XSD file of the XML Schema document, that is the file that includes or imports other modules of the document.

<oXygen/> is able to include images of the XML Schema components in the final HTML result. The supported image formats are PNG and JPG. 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/>'s XSD editor panel. The parameters related to images are:

Full model diagrams	Include in the HTML result the representation of each schema component in the <oXygen/>'s *Full Model View* of the schema.
Logical model diagrams	Include in the HTML result the representation of each schema component in the <oXygen/>'s *Logical Model View* of the schema.
Hide comments	When checked the comments are not included in the generated schema documentation.

Hide annotations	When checked the annotations are not included in the generated schema documentation.
Image type	One of the PNG or JPG formats.

The *Options* panel contain parameters for the level of details included in the documentation:

Title	The title displayed at the beginning of the HTML document and in the title bar of the web browser.
Sort by component	If this parameter is set to "true", the schema components are presented sorted by type and name. Otherwise, they are presented in the order that they appear in the schema. By default, this parameter is set to "true."
Use JavaScript	The generated XHTML document uses JavaScript to hide some details like the underlying schema component XML representation, which can be made to appear with a button press. Since some people have ideological objections to JavaScript, this feature can be turned off. If this parameter is set to "true", JavaScript will be used in the generated documentation. Otherwise, it won't. By default, this parameter is set to "true."
Search Included Schemas	If this parameter is set to "true", xs3p will search for components in "included" schemas when creating links and generating the XML Instance Representation table. When this parameter is set to "true", the "linksFile" parameter must also be set, which is described below. Otherwise, an error will be raised. This search is recursive, so schemas "included" in the current schema's "included" schemas will also be searched.
Search Imported Schemas	If this parameter is set to "true", xs3p will search for components in "imported" schemas when creating links and generating the XML Instance Representation table. The above discussion for the "searchIncludedSchemas" parameter also applies to this parameter. Also, when this parameter is set to "true", the "linksFile" parameter must also be set.
Print all super-types	The type hierarchy of a global type definition is displayed in its section. If this parameter is set to "true", all super-types of the current type are shown in the type hierarchy. Otherwise, only the immediate parent type is displayed. By default, this parameter is set to "true."
Print all sub-types	This parameter has a similar concept as printAllSuperTypes. If it is set to "true", all sub-types of the current type are shown in the type hierarchy. Otherwise, only the direct sub-types are displayed. By default, this parameter is set to "true."
Print legend	If this parameter is set to "true", the Legend section is included. Otherwise, it isn't. By default, this parameter is set to "true."
Print glossary	If this parameter is set to "true", the Glossary section is included. Otherwise, it isn't. By default, this parameter is set to "true."
Print NS prefixes	If this parameter is set to "true", namespace information is provided when displaying sample instances and references. This is done by

providing a prefix in front of tags and references, which when clicked, will take the user to the declared namespace. The prefix matches the prefix in the namespace declaration in the schema. If not set to "true", namespace prefixes are not displayed. By default, this parameter is set to "true."

The *Output* panel contains parameters for the output folder and output file:

Output folder	The path of the folder containing the HTML result and the image files.
Diagrams folder	The folder where the images are going to be saved relative to the output file. If there is no folder specified, the images will be saved in the same directory as the output file.
Generate chunks (Recommended for large schemas)	If it is true the HTML result is organized as a main file containing only a table of contents with links to other HTML documents containing descriptions of the schema components. If it is false all the documentation will be stored in one HTML file.
Use hash codes for component names	If enabled then the anchors and links will be generated using the hashcode of the component identifier instead of using the identifier itself. This is useful when the schema component names contain characters that are not directly supported by the browsers or by the file system.
Generate documentation also for included and imported schemas	It will be generated HTML documentation also for the XML Schemas included or imported by the schema specified in the *Input* panel. The documentation can be navigated from a schema to the included/imported ones and back to the first schema following HTML hyperlinks.
Generate documentation only for this schema	It will not be generated HTML documentation for the XML Schemas included or imported by the schema specified in the *Input* panel.
Output file name	The name of the HTML file containing the documentation of the XML Schema
Links file	the file which maps from file locations of "included" and "imported" schemas to the file locations of their xs3p-generated documentation. This file must be provided if either "searchIncludedSchemas" or "searchImportedSchemas" is set to true. If relative addresses are used to specify the location of external xs3p-generated documentation, they must be relative to documentation file currently generated.

Note

The external documentation files does not need to exist at the time of generating the documentation for the current schema. The mapping is specified in XML. The dtd and schema for this mapping syntax are "links.dtd" and "links.xsd" respectively.

Note

The "xmlns" namespace attribute with the correct namespace must be provided in the mapping file for the xs3p stylesheet to work.

CSS file	The path to a CSS file which will be referred from the result HTML. This is useful for specifying a custom CSS stylesheet to be used in the generated HTML documentation instead of the default one.
Open in browser	If it is true the HTML result will be opened with the default Internet browser set in Preferences or with the system application for HTML files.

The same HTML documentation can be generated for an XML Schema from the command line by running the script `schemaDocumentation.bat` *(on Windows) /* `schemaDocumentation.sh` *(on Mac OS X / Unix / Linux) located in the <oXygen/> installation folder. The script can be integrated in an external batch process launched from the command line. The command line parameters of the script are the same as the parameters that can be set in the dialog described above and are also explained inside the script file.*

XML Schema editor specific actions

The list of actions specific for the XML Schema editor of <oXygen/> is:

- Document+XML Document → Show Definition (also available on the contextual menu of the editor panel) : move the cursor to the definition of the current element in this XSD schema.

Search References and Declarations

All the following actions can be applied on *xs:element, xs:attribute, xs:attributeGroup, xs:complexType, xs:simpleType, xs:group, xs:key, xs:unique* or *xs:notation* parameters only.

- Document+References+  → References in Project (**Ctrl+Shift+R**): Searches in the project all references of the item found at current cursor position.

  Note

  This action and the following ones can also be accessed from XSD editor's *contextual menu -> Search*.

- Document+References → References in File: Searches in the current file all references of the item found at the current cursor position.
- Document+References → References Starting from File: Searches all references of the item at the cursor position in the current edited file and all its included and imported files.
- Document+References → References Starting from...: Opens a dialog that allows the user to specify the list of files used to start searching from. Pressing OK begins searching all references of the item at the cursor position in the selected files and their included and imported files.

- Document+References+ → Declarations in Project (**Ctrl+Shift+D**): Searches in the project all declarations of the item found at current cursor position.

  Note

  This action and the following ones can also be accessed from XSD editor's *contextual menu -> Search*.

- Document+References → Declarations in File: Searches in the current file all declarations of the item at the current cursor position.
- Document+References → Declarations Starting from File: Searches all declarations of the item at the cursor position in the current edited file and all its included and imported files.
- Document+References → Declarations Starting from...: Opens the Start locations dialog that allows the user to specify the list of files used to start searching from. Pressing OK begins searching all declarations of the item at the cursor position in the selected files and all their included and imported files.
- Document+References → Occurrences in File (**Ctrl+Shift+U**): Searches all occurrences of the item at the caret position in the currently edited file.

XML Schema actions

- Document+Schema → Show definition (**Ctrl + Shift + ENTER**): Move the cursor to the definition of the referenced XML Schema item - element, group, simple or complex type. The same action is executed on a double click on a component name in the Logical Model View of the schema or in the Schema Components view.

Note

The actions are available when the current editor is of XML Schema type.

Editing Relax NG schemas

<oXygen/> 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 a graphical view of the schema components.

Relax NG schema diagram

Introduction

<oXygen/> 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 and BMP images. It helps both schema authors in developing the schema and content authors that are using the schema to understand it.

<oXygen/> is the only XML Editor to provide a side by side source and diagram presentation and have them synchronized in real-time:

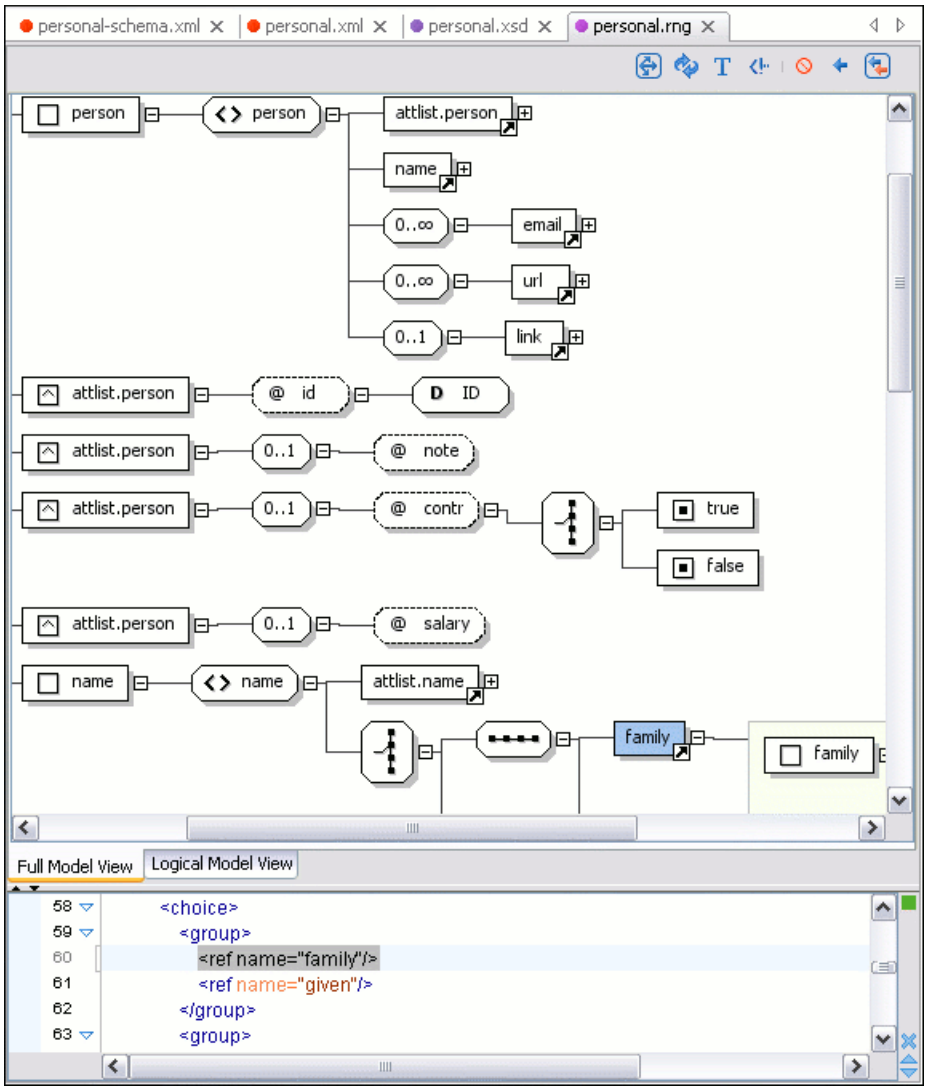
- the changes you make in the Editor will immediately be visible in the Diagram (no background parsing).

- changing the selected element in the diagram will select the underlaying 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 4.62. Relax NG schema editor - full model view

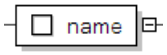


The following references can be expanded in place: patterns, includes and external references. This coupled with the synchronization support makes the schema navigation easy.

All the element and attribute names are editable: double-click on any name to start editing it.

The symbols used in the schema diagram

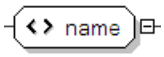
The Full Model View renders all the Relax NG Schema patterns with intuitive symbols:



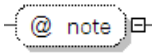
a *define* pattern with the *name* attribute having the value equal to the string from the rectangle

a *define* pattern with the *combine* attribute having the value *interleave* and the *name* attribute having the value equal to the string from the rectangle

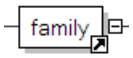
a *define* pattern with the *combine* attribute having the value *choice* and the *name* attribute having the value equal to the string from the rectangle



an *element* pattern with the *name* attribute having the value equal to the string from the rectangle



an *attribute* pattern with the *name* attribute having the value equal to the string from the rectangle



a *ref* pattern with the *name* attribute having the value equal to the string from the rectangle

a *oneOrMore* pattern

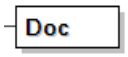
a *zeroOrMore* pattern

an *optional* pattern

a *choice* pattern

a *value* pattern, used for example inside a *choice* pattern

a *group* pattern



a 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

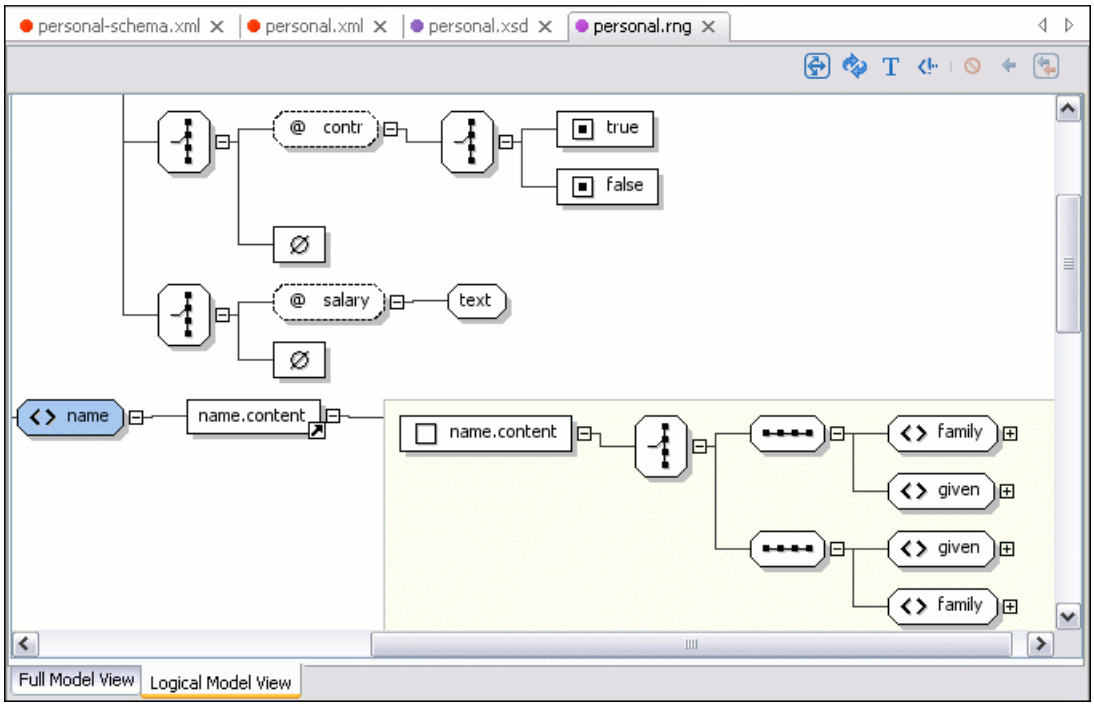
a *text* pattern

an *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 a top level pattern with a generated name. The name is generated depending of the name class of the elements.

Figure 4.63. Logical Model View for a Relax NG schema



Actions available in the diagram view

At the top of the diagram view there are buttons corresponding to the following actions:

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 make a refresh, the diagram will be expanded until it reaches referred components. If this 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.
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)
Show/Hide Annotations	Depending on its state (selected/not selected), the documentation nodes are shown or hidden.
Show/Hide Comments	Depending on its state (selected/not selected), the comment nodes are shown or hidden.

The contextual menu offers quick access to the Collapse children, Expand children, Print, Save as Image, Save Selection as Image and Refresh actions. The diagram can be saved as JPEG, PNG and BMP image.

If the schema is not valid you will see an error message in the Logical Model View instead of the diagram.

Schema components view

The Schema Components 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 knowing its name. It can be opened from Perspective → Show View → Schema Components

Figure 4.64. Schema components view for Relax NG

Relax NG editor specific actions

The list of actions specific for the Relax NG (full syntax) editor of <oXygen/> is:

- Document+XML Document → Show Definition (also available on the contextual menu of the editor panel) : move the cursor to the definition of the current element in this Relax NG (full syntax) schema.

Search References and Declarations

All the following actions can be applied on *ref* and *parentRef* parameters only.

- Document+References+ → References in Project (**Ctrl+Shift+R**): Searches in the project all references of the item found at current cursor position.

> **Note**
>
> This action and the following ones can also be accessed from RNG editor's *contextual menu -> Search*.

- Document+References → References in File: Searches in the current file all references of the item found at the current cursor position.
- Document+References → References Starting from File: Searches all references of the item at the cursor position in the current edited file and all its included and imported files.
- Document+References → References Starting from...: Opens a dialog that allows the user to specify the list of files used to start searching from. Pressing OK begins searching all references of the item at the cursor position in the selected files and their included and imported files.

All the following actions can be applied on named *define* parameters only.

- Document+References+  → Declarations in Project (**Ctrl+Shift+D**): Searches in the project all declarations of the item found at current cursor position.

  Note

  This action and the following ones can also be accessed from RNG editor's *contextual menu -> Search*.

- Document+References → Declarations in File: Searches in the current file all declarations of the item at the current cursor position.
- Document+References → Declarations Starting from File: Searches all declarations of the item at the cursor position in the current edited file and all its included and imported files.
- Document+References → Declarations Starting from...: Opens the Start locations dialog that allows the user to specify the list of files used to start searching from. Pressing OK begins searching all declarations of the item at the cursor position in the selected files and all their included and imported files.
- Document+References → Occurrences in File (**Ctrl+Shift+U**): Searches all occurrences of the item at the caret position in the currently edited file.

Editing NVDL schemas

When a complex XML document is composed by combining elements and attributes from different namespaces and the schemas which define these namespaces are not even developed in the same schema language then 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 offering content completion when the document is edited. In this case a NVDL (Namespace Validation Definition Language) schema can be used which allows to combine and interleave multiple schemas of different types (W3C XML Schema, RELAX NG schema, Schematron schema) in the same XML document.

<oXygen/> 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 a graphical view of the schema components.

NVDL schema diagram

Introduction

<oXygen/> 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.

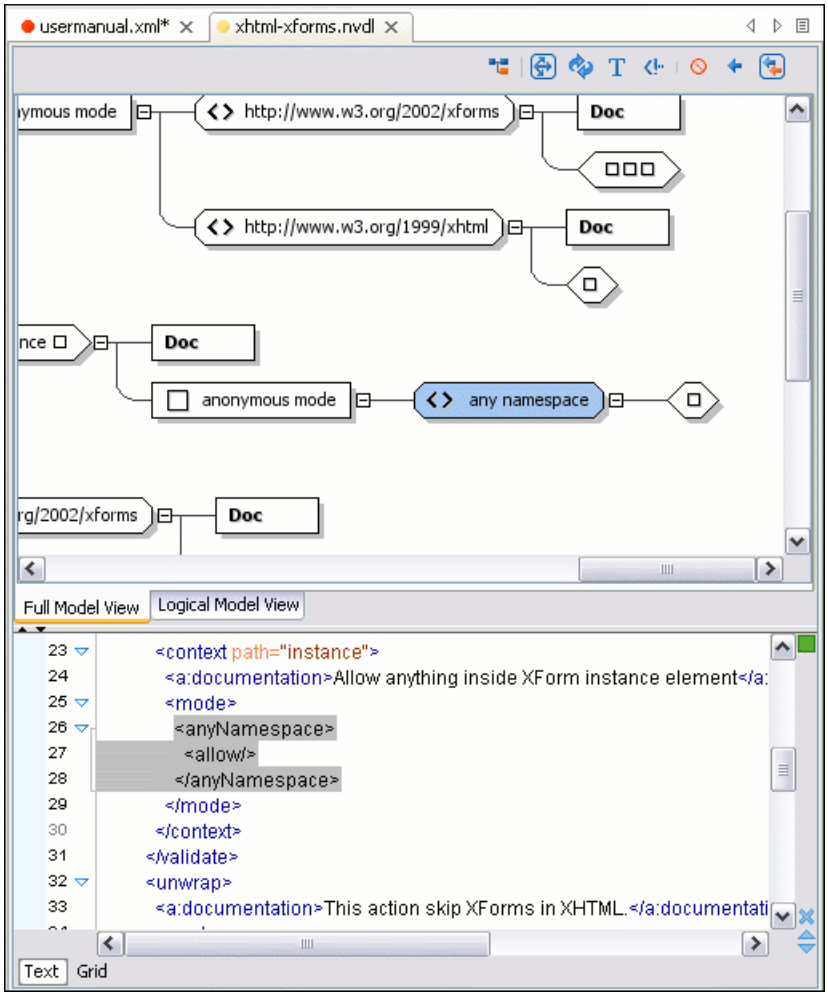
<oXygen/> is the only XML Editor to provide a side by side source and diagram presentation and have them synchronized in real-time:

- the changes you make in the Editor will immediately be visible in the Diagram (no background parsing).
- changing the selected element in the diagram will select the underlaying 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. The Logical Model View is not available for NVDL.

Figure 4.65. NVDL schema editor - full model view



The Full Model View renders all the NVDL elements with intuitive icons. This 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

At the top of the diagram view there are buttons corresponding to the following actions:

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 make a refresh, the diagram will be expanded until it reaches referred components. If this 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.
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)
Show/Hide Annotations	Depending on its state (selected/not selected), the documentation nodes are shown or hidden.
Show/Hide Comments	Depending on its state (selected/not selected), the comment nodes are shown or hidden.

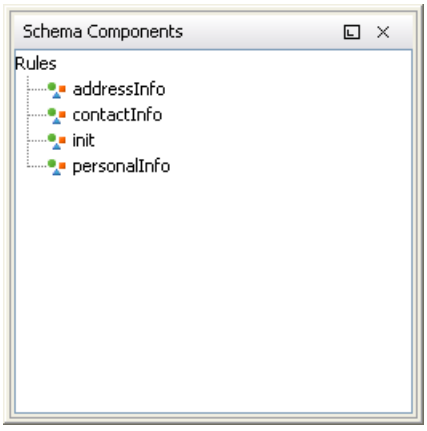
The contextual menu offers quick access to the Collapse children, Expand children, Print, Save as Image, Save Selection as Image and Refresh actions. The diagram can be saved as JPEG, PNG and BMP image.

If the schema is not valid you will see an error message in the Logical Model View instead of the diagram.

Schema components view

The NVDL Schema Components View presents a list with the named or anonymous rules that appear in the diagram. It allows a quick access to a rule by knowing its name. It can be opened from Perspective → Show View → Schema Components

Figure 4.66. Schema components view for NVDL



NVDL editor specific actions

The list of actions specific for the NVDL editor of <oXygen/> is:

- Document+XML Document → Show Definition (also available on the contextual menu of the editor panel) : move the cursor to its definition in the schema used by NVDL to validate it.

Search References and Declarations

All the following actions can be applied on mode *name*, *useMode* and *startMode* attributes only.

- Document+References+  → References in Project (**Ctrl+Shift+R**): Searches in the project all references of the item found at current cursor position.

  ### Note

  This action and the following ones can also be accessed from NVDL editor's *contextual menu -> Search*.

- Document+References → References in File: Searches in the current file all references of the item found at the current cursor position.
- Document+References → References Starting from File: Searches all references of the item at the cursor position in the current edited file and all its included and imported files.
- Document+References → References Starting from...: Opens a dialog that allows the user to specify the list of files used to start searching from. Pressing OK begins searching all references of the item at the cursor position in the selected files and their included and imported files.

All the following actions can be applied on named *define* parameters only.

- Document+References+  → Declarations in Project (**Ctrl+Shift+D**): Searches in the project all declarations of the item found at current cursor position.

  ### Note

  This action and the following ones can also be accessed from NVDL editor's *contextual menu -> Search*.

- Document+References → Declarations in File: Searches in the current file all declarations of the item at the current cursor position.
- Document+References → Declarations Starting from File: Searches all declarations of the item at the cursor position in the current edited file and all its included and imported files.
- Document+References → Declarations Starting from...: Opens the Start locations dialog that allows the user to specify the list of files used to start searching from. Pressing OK begins searching all declarations of the item at the cursor position in the selected files and all their included and imported files.
- Document+References → Occurrences in File (**Ctrl+Shift+U**): Searches all occurrences of the item at the caret position in the currently edited file.

Editing XSLT stylesheets

<oXygen/> provides special support for developing XSLT 1.0 / 2.0 stylesheets.

Validating XSLT stylesheets

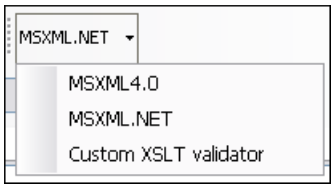
Validation of XSLT stylesheets documents is performed with the help of an XSLT processor configurable from user preferences according to the XSLT version: 1.0 or 2.0. For XSLT 1.0 the options are: Xalan, Saxon 6.5.5, Saxon 9 B, Saxon 9 SA (if the user installs it as additional package), MSXML 4.0, MSXML.NET, a JAXP transformer specified by the main Java class. For XSLT 2.0 the options are: Saxon 9 B, Saxon 9 SA (if the user installs it as additional package), a JAXP transformer specified by the main Java class.

The *Validate* toolbar provides a button Validation options for quick access to the XSLT options in the <oXygen/> user preferences.

Custom validation of XSLT stylesheets

If you need to validate an XSLT stylesheet with other validation engine than the built-in ones you have the possibility to configure external engines as custom XSLT validation engines in <oXygen/>. After such a custom validator is properly configured in Preferences it can be applied on the current document with just one click on the External Validation toolbar. The document is validated against the schema declared in the document.

Figure 4.67. External validation toolbar



There are two validators configured by default:

MSXML 4.0 included in <oXygen/> (Windows edition). It is associated to the XSL Editor type in Preferences.

MSXML.NET included in <oXygen/> (Windows edition). It is associated to the XSL Editor type in Preferences.

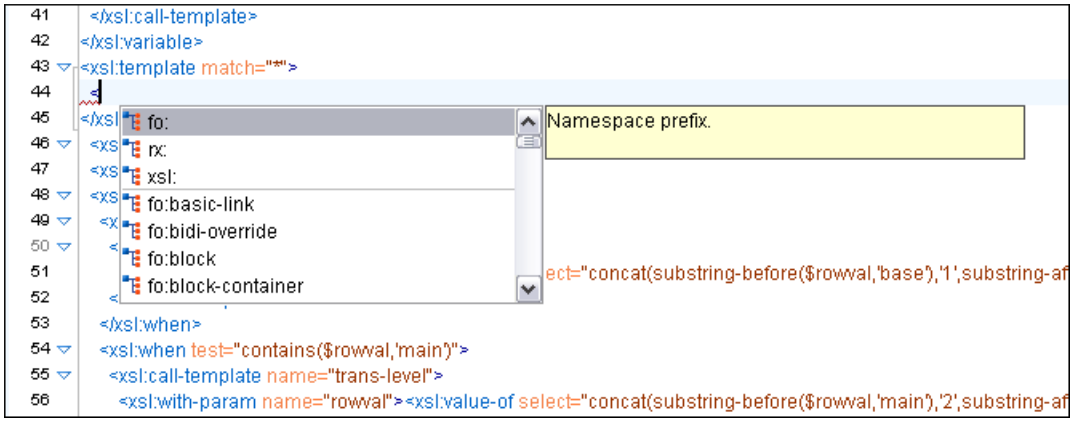
Content Completion in XSLT stylesheets

The content completion assistant adds special features for editing XSLT stylesheets.

Inside XSLT templates of an XSLT stylesheet the content completion presents also all the elements allowed in any context by the schema associated to the result of applying the edited stylesheet. That schema is defined by the user in the Content Completion / XSL preferences. There are presented all the elements because in a template there is no context defined for the result document so the user is allowed to insert any element defined by the schema of the result document.

Namespace prefixes in scope for the current context are presented at the top of the content completion window to speed the insertion of prefixed elements into the document.

Figure 4.68. Namespace prefixes in the content completion window



Content Completion in XPath expressions

In XSLT stylesheets the content completion assistant provides all the features available in the editor for XML documents and also adds some enhancements. In XPath expressions used in attributes of XSLT stylesheets elements like *match*, *select* and *test* it offers XPath functions, XSLT functions, XSLT axes and user defined functions. 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 and on 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 is detected as the first character of the attribute value
- on request if the combination CTRL + Space is pressed inside an edited XPath expression

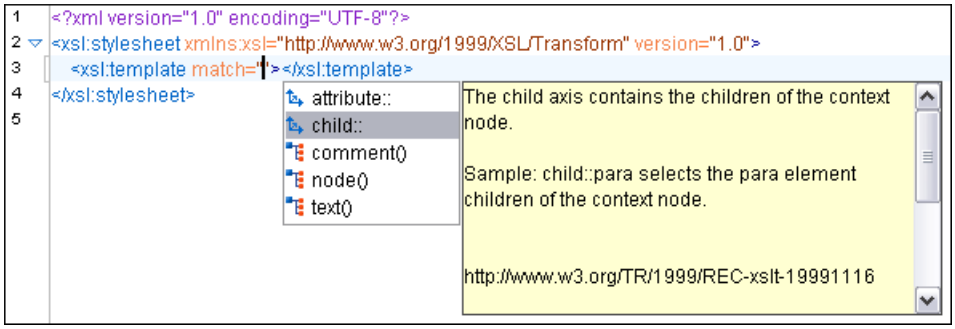
The items presented in the content completion window are dependent on the context of the current XSLT element, the XML document associated with the edited stylesheet in the transformation scenario of the stylesheet and the XSLT version of the stylesheet (1.0 or 2.0). For example if the document associated 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>
```

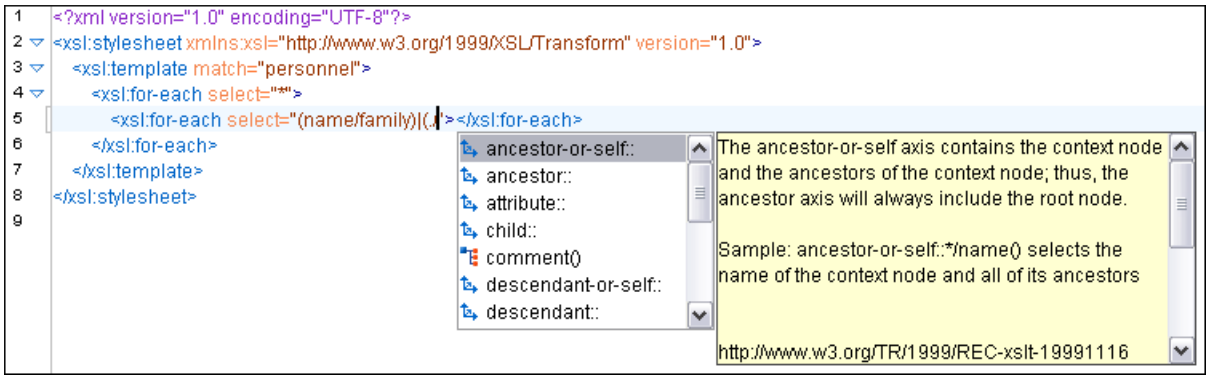
and you enter an element *xsl:template* using the content completion assistant the *match* attribute is inserted automatically, the cursor is placed between the quotes and the XPath content completion assistant automatically displays a popup window with all the XSLT axes, XPath functions and elements 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 or 2.0).

Figure 4.69. Content Completion in the *match* attribute



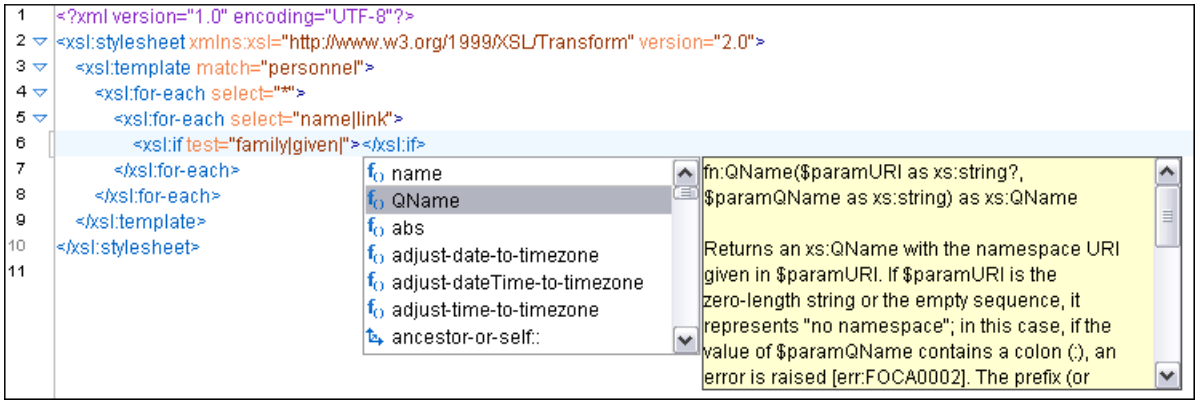
If the cursor is inside the *select* attribute of an *xsl:for-each*, *xsl:apply-templates*, *xsl:value-of* or *xsl:copy-of* element the content completion proposals are dependent of the path obtained by concatenating the XPath expressions of the parent XSLT elements *xsl:template* and *xsl:for-each* like the following figure shows:

Figure 4.70. Content Completion in the *select* attribute



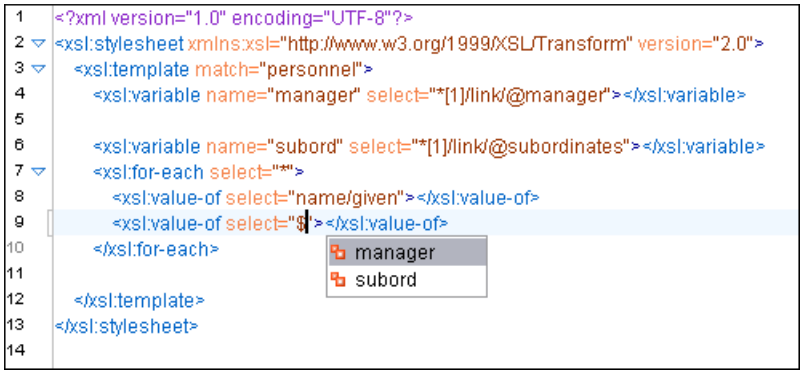
Also XPath expressions typed in the *test* attribute of an *xsl:if* or *xsl:choose / xsl:when* element benefit of the assistance of the content completion.

Figure 4.71. Content Completion in the *test* attribute



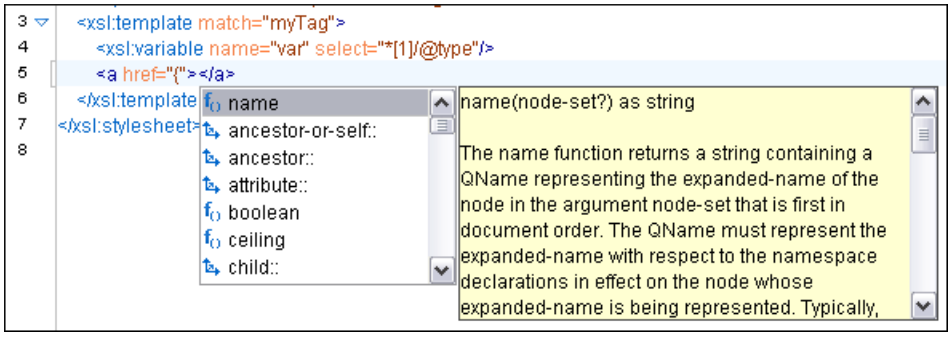
XSLT variable references are easier to insert in XPath expressions with the help of the content completion popup triggered by the $ character which signals the start of such a reference in an XPath expression.

Figure 4.72. Content Completion in the *test* attribute



The same content completion assistant is available also in attribute value templates of non XSLT elements if the '{' character is the first one in the value of the attribute.

Figure 4.73. Content Completion in attribute value templates



Tooltip Helper for the XPath Functions Arguments

When editing the arguments of an XPath/XSLT function, <oXygen/> keeps track of the current entered argument by displaying a tooltip above the function containing the function signature. The currently edited argument is displayed in bold.

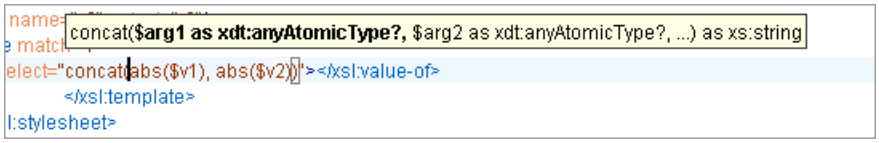
When moving the caret through the expression, the tooltip is updated to reflect the argument that is found at the caret position.

Let's consider the following example. We are concatenating the absolute value of two variables: v1 and v2.

```
<xsl:template match="/">
    <xsl:value-of select="concat(abs($v1), abs($v2))"></xsl:value-of>
</xsl:template>
```

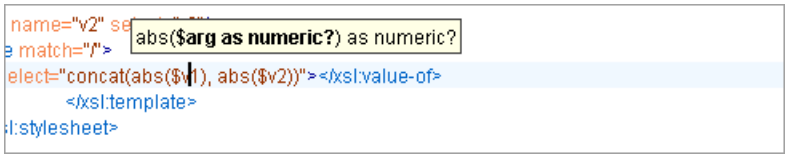
When moving the caret before the first "abs" function, the editor will identify that it represent the first argument of the "concat" function, and will show in bold that the first argument is named "$arg1" and is of type "xdt:anyAtomicType" and it is optional. The function takes also other arguments, having the same type, and returns a "xs:string".

Figure 4.74. XPath Tooltip Helper - Identify the concat function first argument



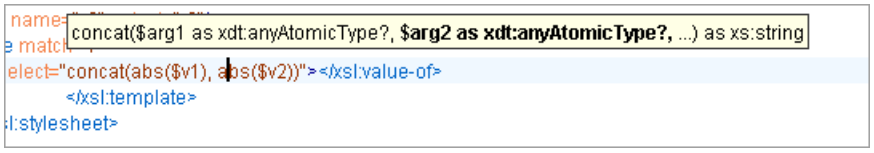
Moving the caret on the first variable "$v1", the editor identifies the "abs" as context function and shows its signature:

Figure 4.75. XPath Tooltip Helper - Identify the abs function argument



Further, clicking on the second "abs" function name, the editor detects that it represents the second argument of the "concat function". It redisplays the correct tooltip, displaying the second argument in bold.

Figure 4.76. XPath Tooltip Helper - Identify the concat function second argument



The tooltip helper is present also in the XPath Toolbar and the XPath Builder.

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/> comes with a large set of ready-to use templates for XSL and XML Schema documents.

Example 4.5. The XSL code template called Template-Match-Mode

Typing **t** in an XSL document and selecting **tmm** in the content assistant pop-up window will insert the following template at the caret position in the document:

```
<xsl:template match="" mode="">

</xsl:template>
```

Other templates can be easily defined by the user. Also the code templates can be shared with other users.

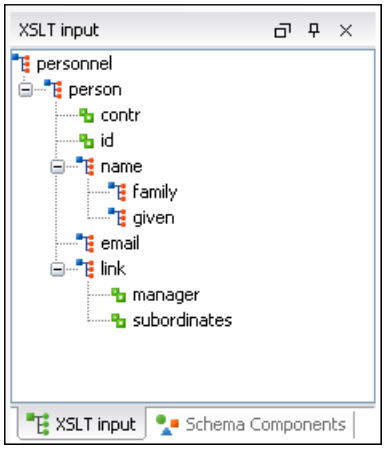
The XSLT/XQuery Input View

The structure of the XML document associated to the edited XSLT stylesheet , or 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 on a node, the corresponding template from the stylesheet will be highlighted. A node can be dragged and dropped in the editor area for quickly inserting *xsl:template*, *xsl:for-each* or other XSLT elements with the *match / select / test* attribute already filled with the correct XPath expression referring to the dragged tree node and based on the current editing context of the drop spot.

Figure 4.77. XSLT input view



For example for the following XML document

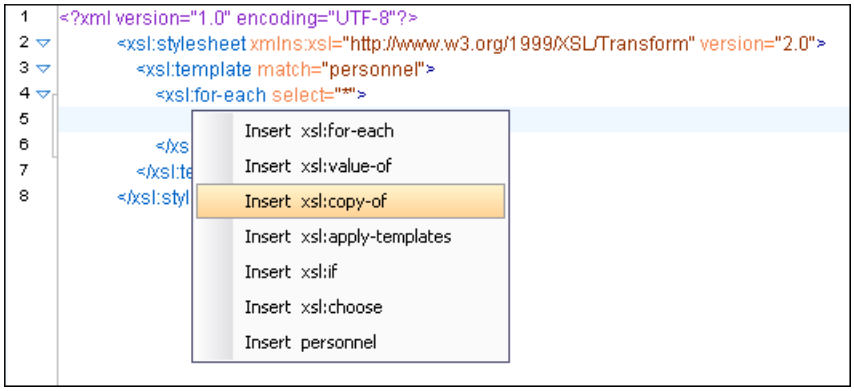
```
<personnel>
    <person id="Big.Boss">
        <name>
            <family>Boss</family>
            <given>Big</given>
        </name>
        <email>chief@oxygenxml.com</email>
        <link subordinates="one.worker"/>
    </person>
    <person id="one.worker">
        <name>
            <family>Worker</family>
            <given>One</given>
        </name>
        <email>one@oxygenxml.com</email>
        <link manager="Big.Boss"/>
    </person>
</personnel>
```

and 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>
```

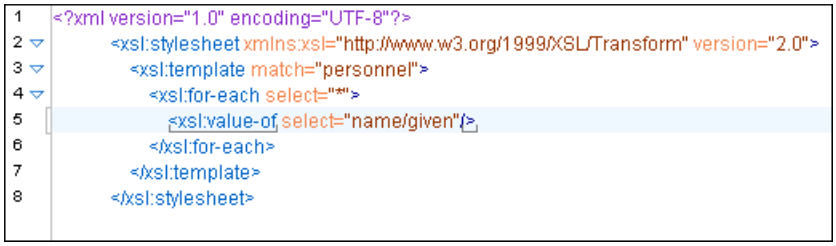
if you drag the *given* element and drop it inside the *xsl:for-each* element a popup menu will be displayed.

Figure 4.78. XSLT Input drag and drop popup menu



Select for example *Insert xsl:value-of* and the result document will be:

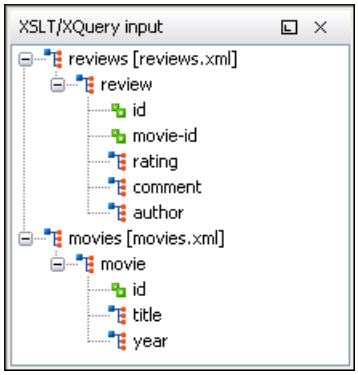
Figure 4.79. XSLT Input drag and drop result



The Query Input View

A node can be dragged and dropped in the editor area for quickly inserting *doc()* or other XQuery expressions.

Figure 4.80. XQuery input view



For example 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>
```

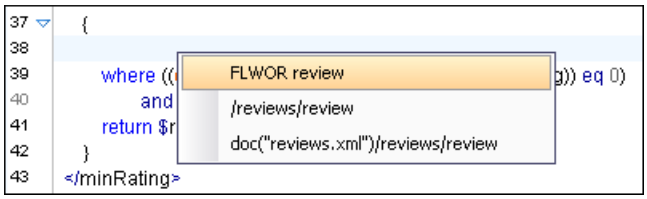
```
 <review id="101" movie-id="1">
   <rating>3</rating>
   <comment>Tom Hanks does a really nice acting.</comment>
   <author>Beatrice</author>
 </review>
 <review id="104" movie-id="2">
    <rating>4</rating>
    <comment>Robert De Niro is my favorite actor.</comment>
    <author>Maria</author>
 </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>
```

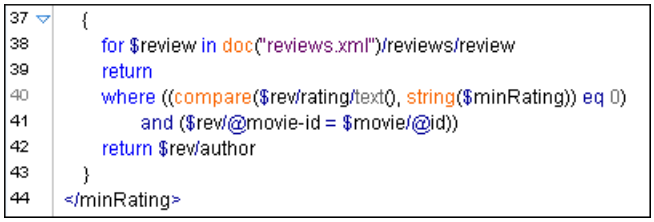
if you drag the *rating* element and drop between the braces a popup menu will be displayed.

Figure 4.81. XQuery Input drag and drop popup menu



Select for example *FLWOR rating* and the result document will be:

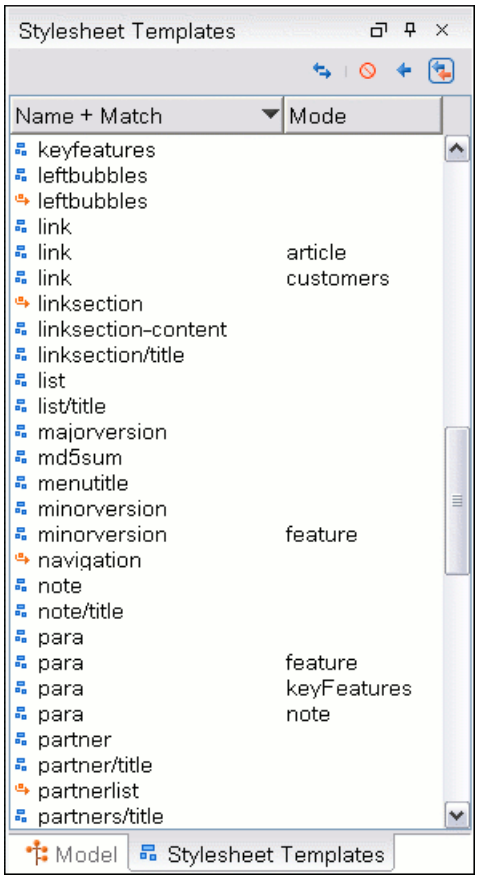
Figure 4.82. XQuery Input drag and drop result



The Stylesheet Templates View

The list of all templates of the edited stylesheet is presented in the view called *Stylesheet Templates.*

Figure 4.83. The Stylesheet Templates View



It has two operation modes: the *name* and *match* attributes of templates presented in separate columns of the table, and the *name* and *match* attributes presented in the same column. In the second case the entry in the *Name + Match* column is composed of the value of the *name* attribute followed by a space character and the value of the *match* attribute. The operation mode is switched from the action *Join/Split name and match columns* available on the toolbar of the view.

The view provides three levels of synchronization with the editor panel:

No selection update	The templates list selection is not synchronized with the caret position in the editor panel.
Selection update on document change	The templates list selection is synchronized with the caret position in the editor panel when the document is modified by an editing action.
Selection update on caret move	The templates list selection is synchronized with the caret position in the editor panel in real time, that is the list selection is updated for every move of the caret in the editor panel.

All the columns of the table with the templates are sortable in ascending and descending order. The first click on the column name sorts the rows of the table in ascending order after the clicked column, the second click sorts the table in descending order and the third click returns to the unsorted state, that is the order of the templates in the stylesheet.

A template can be located easily in the list using only the keyboard. If the focus is in the *Name* column, type the first characters of the template name and the selection moves to that template in the list. In a similar way if the focus is in the *Match* or *Mode* column, typing the first characters of the value of the *match* attribute or the *mode* attribute moves the selection to that template in the list.

When a template in the list is selected, the corresponding template fragment from the editor is selected allowing the user to easily navigate between the different templates in the editor

Finding XSLT references and declarations

Note

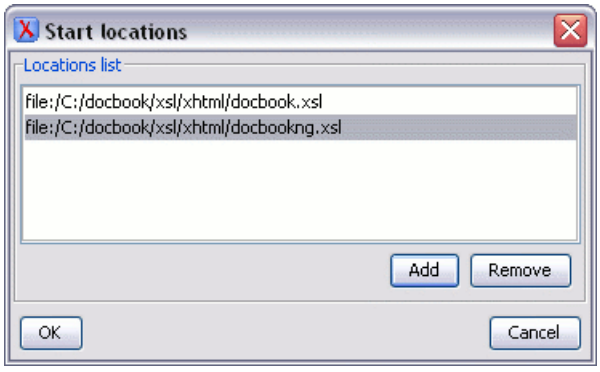
All the following actions can be applied on named templates, attribute sets, functions, decimal formats, keys, variables or parameters only. In case they are applied on other items, a warning message will pop-up.

- Document+XSL References+ → References in project (**Ctrl+Shift+R**): Searches in the project all references of the item found at current cursor position.

  ### Note

  For faster access, a shortcut to this action is also added in the XSL References toolbar.

- Document+XSL References → References in file: Searches in the current file all references of the item at the current cursor position.
- Document+XSL References → References starting from file: Searches all references of the item at the cursor position in the current edited file and all its included and imported files.
- Document+XSL References → References starting from...: Opens a dialog that allows the user to specify the list of files used to start searching from. Pressing OK begins searching all references of the item at the cursor position in the selected files and their included and imported files.



- Document+XSL References+ → Declarations in project (**Ctrl+Shift+D**): Searches in the project all declarations of the item found at current cursor position.

Note

For faster access, a shortcut to this action is also added in the XSL References toolbar.

- Document+XSL References → Declarations in file: Searches in the current file all declarations of the item at the current cursor position.
- Document+XSL References → Declarations starting from file: Searches all declarations of the item at the cursor position in the current edited file and all its included and imported files.
- Document+XSL References → Declarations starting from...: Opens the Start locations dialog that allows the user to specify the list of files used to start searching from. Pressing OK begins searching all declarations of the item at the cursor position in the selected files and all their included and imported files.
- Document+XSL References → Occurrences in file (**Ctrl+Shift+U**): Searches all occurrences of the item at the caret position in the currently edited file.

XSLT refactoring actions

- Document+XSL Refactoring+ → Create template from selection...: Opens a dialog that allows the user to specify the name of the new template to be created. After pressing OK, the template is created and the selection is replaced by a

  `xsl:call-template`

  instruction referring the just created template.

  ### Note

  The selection must contain wellformed elements only.

- Document+XSL Refactoring+ → Create stylesheet from selection...: Creates a separate stylesheet and replaces the selection with a

  `xsl:include`

  instruction referring the just created stylesheet.

  ### Note

  The selection must contain a well formed top level element.

- Document+XSL 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

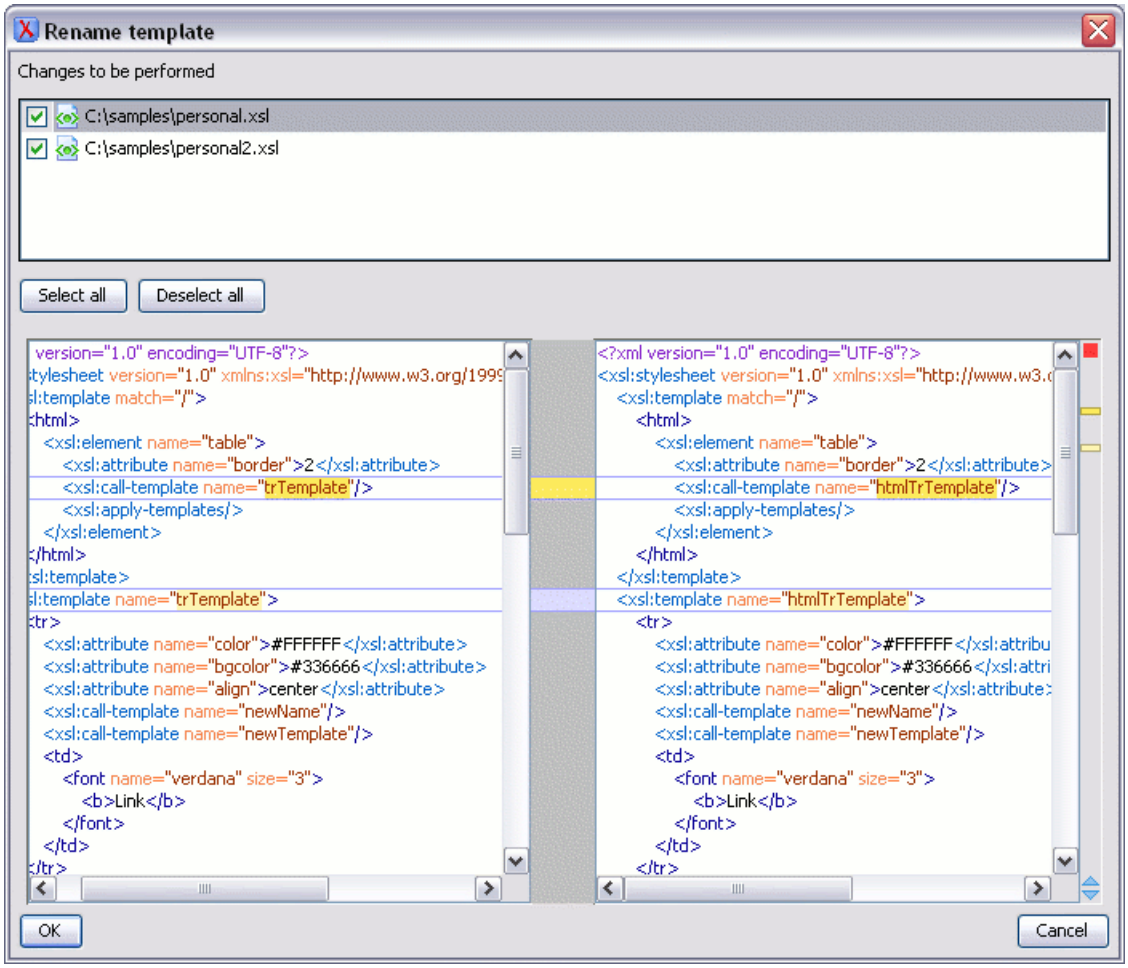
```
<person id="Big{test}Boss"/>
```

you would obtain

```
<person>
    <xsl:attribute name="id">
        <xsl:text>Big</xsl:text>
        <xsl:value-of select="test"/>
        <xsl:text>Boss</xsl:text>
    </xsl:attribute>
</person>
```

- Document+XSL Refactoring+ → Rename occurrences in project...: Renames all occurrences of the item at current cursor position in the entire project. The possible changes to be performed on the documents can be previewed prior to documents altering.

  In the upper part of the Rename template dialog there are displayed all the project files in which the item was found, while in the central part of the dialog it can be seen where the replacements will be performed. The user has the possibility to allow or deny the altering of a file.



- Document+XSL Refactoring → Rename occurrences in file...: Renames all occurrences of the item at current cursor position in the entire file. The possible changes to be performed on the current file can be previewed prior to document altering.
- Document+XSL Refactoring → Rename occurrences starting from file...: Renames all occurrences of the item at current cursor position in the currently edited file and all its included and imported files. The possible changes to be performed can be previewed prior to document(s) altering.
- Document+XSL Refactoring → Rename occurrences starting from ...: Opens a dialog that allows the user to select the files to begin searching from, then renames all occurrences of the item at current cursor position in the selected files and all their included and imported files. The possible changes to be performed can be previewed prior to document(s) altering.

Editing XQuery documents

Folding in XQuery documents

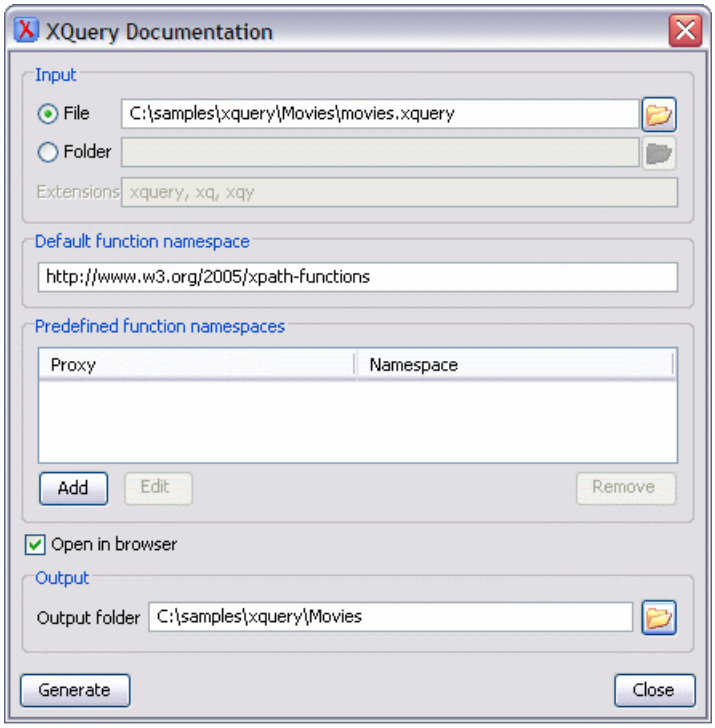
In a large XQuery document the instructions enclosed in the '{' and '}' characters can be collapsed so that only the needed instructions remain in focus. The same folding features available for XML documents are also available in XQuery documents.

Figure 4.84. Folding in XQuery documents

Generating HTML Documentation for an XQuery Document

To generate HTML documentation for an XQuery document similar with the Javadoc documentation for Java classes use the dialog *XQuery Documentation*. It is opened with the action Tools → Generate Documentation → XQuery Documentation... (**Ctrl+Alt+Q**). It can be also opened from the Project Tree 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 4.85. 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 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's hypertext linking if the predefined modules have been loaded into the local xqDoc XML repository.
Open in browser	When checked, the generated documentation will be opened in an external browser.
Output	Allows the user to specify where the generated documentation will be saved on disk.

Editing CSS stylesheets

<oXygen/> provides special support for developing CSS stylesheet documents.

Validating CSS stylesheets

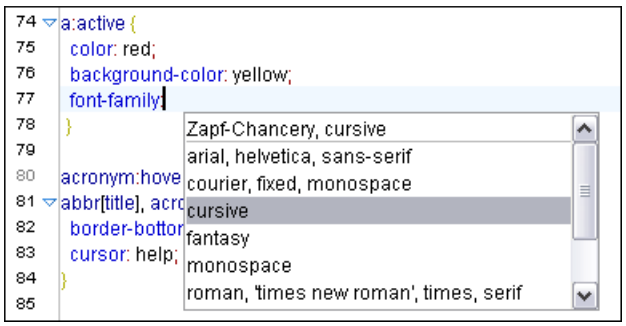
<oXygen/> includes a built-in CSS validator integrated with the general validation support. This brings the usual validation features to CSS stylesheets.

When the current editor is of CSS type the *Validate* toolbar provides a button Validation options for quick access to the CSS validator options in the <oXygen/> user preferences.

Content Completion in CSS stylesheets

A content completion assistant similar to the one of 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 it is invoked for the value of a property.

Figure 4.86. Content Completion in CSS stylesheets

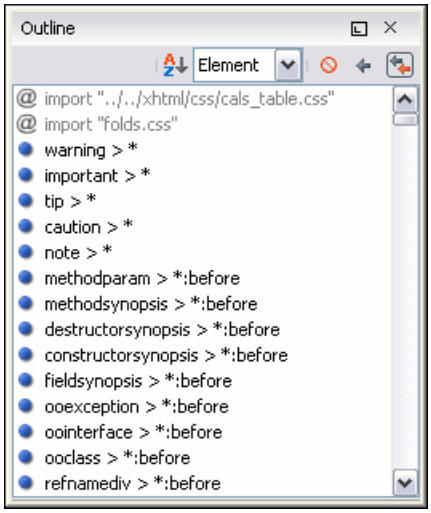


The properties and the values offered as proposals are dependent on the CSS Profile selected in the Options → Preferences+CSS Validator page, Profile combo box. The CSS 2.1 set of properties and property values is used for most of the profiles, excepting CSS 1 and CSS 3 for which specific proposal sets are used.

CSS Outline View

The *CSS Outline View* presents the import declarations of other stylesheet files and all the selectors defined in the current CSS document. The selector entries can be presented in the order they appear in the document or sorted by element name used in the selector or the entire selector string representation. The selection in the outline view can be synchronized with the caret moves or the changes made in the stylesheet document. When selecting an entry from the outline view the corresponding import or selector will be highlighted in the CSS editor.

Figure 4.87. CSS Outline View

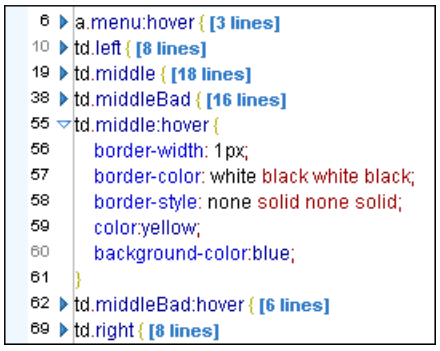


The selectors presented in the *CSS Outline View* can be quickly found using *key search*. When you press a sequence of character keys while the focus is in the outline view the first selector that starts with that sequence will be selected.

Folding in CSS stylesheets

In a large CSS stylesheet document some styles may 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.

Figure 4.88. Folding in CSS stylesheets



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

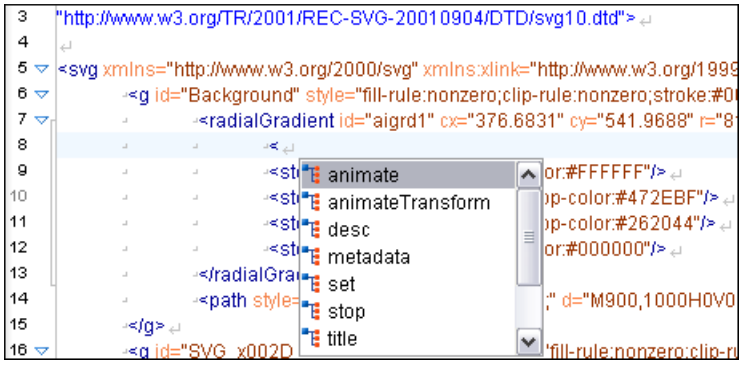
The CSS editor type offers a reduced version of the popup menu available in the XML editor type, that means only the split actions,the folding actions,the edit actions and a part of the source actions (only the actions *To lower case*, *To upper case*, *Capitalize lines*).

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 means of defining the graphics directly in the document.

Figure 4.89. SVG Content Completion



<oXygen/> XML Editor adds SVG support by using the Batik [http://xml.apache.org/batik/] package, an open source project developed by the Apache Software foundation. The SVG DTD is solved by <oXygen/>'s default XML catalog.

Tip

To render SVG images which use Java scripting you have to copy the "js.jar" library from the Batik distribution to the <oXygen/> "lib" directory and restart the application.

There are many navigation shortcuts which can be used for navigation in the SVG Viewer like:

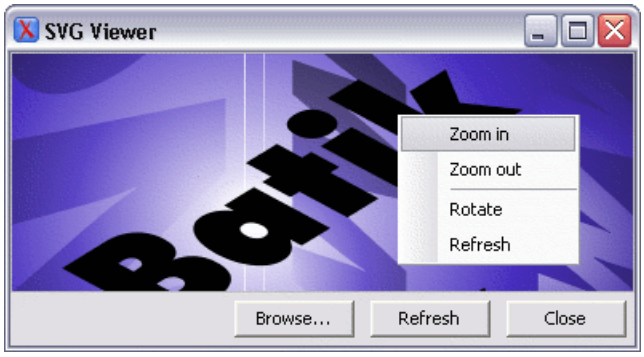
- The arrow keys or Shift and Click move the image
- Ctrl + Right Click rotates the image
- Ctrl + I and Ctrl + O or Ctrl and Click to Zoom in or out
- Ctrl + T to reset the transform

<oXygen/> can render SVG by two means:

The Standalone SVG Viewer.

You may use the action Tools → SVG Viewer ... to browse and open any SVG file having the extension `.svg` or `.svgz`. 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

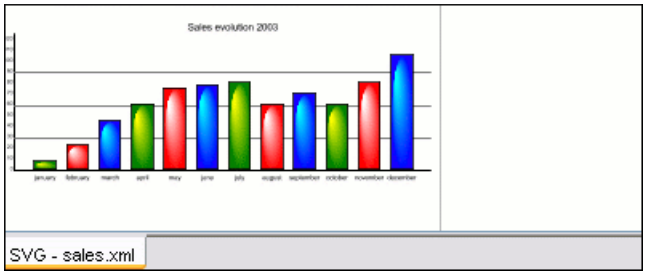
Figure 4.90. SVG Viewer



The Preview Result Pane.

This panel can render the result of an XSL transformation that generates SVG documents.

Figure 4.91. Integrated SVG Viewer



The basic use-case of <oXygen/> consists in the development of the XSL stylesheets capable of producing rich SVG graphics. For example when you have an XML document describing the evolution of a parameter over time and you need to create a graphic from it. You can start with a static SVG, written directly in <oXygen/> 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.

Integrating external tools

When your XML project requires to run an external tool different than a FO processor and which can be launched from the command line <oXygen/> offers you the option of integrating the tool by specifying just the command line for starting the executable file of the tool 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/> you should enable the option for saving all edited files automatically when an external tool is applied.

Integrating the Ant tool

As example let us integrate the Ant build tool [http://ant.apache.org/] in <oXygen/>. The procedure for this purpose is:

1. Download [http://ant.apache.org/bindownload.cgi] and install [http://ant.apache.org/manual/install.html] Ant on your computer.

2. Test your Ant installation from the command line in the directory where you want to use Ant from <oXygen/>, for example run the clean target of your `build.xml` file `C:\projects\XMLproject\build.xml`: **ant clean**

3. Go to Options → Preferences+External Tools

4. 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`

5. 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
```

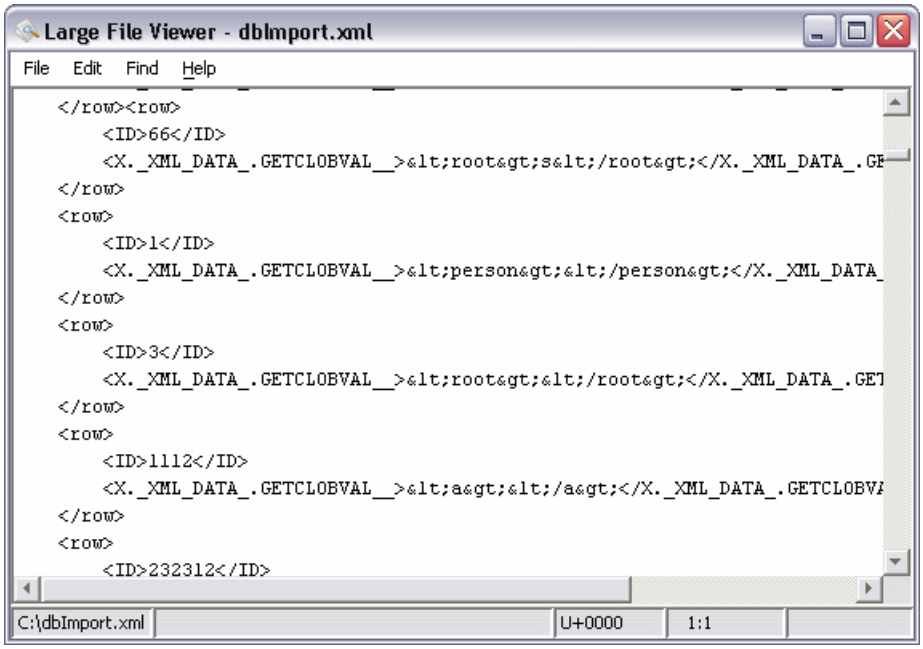
Large File Viewer

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 of the necessity that 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 high for files consisting of short lines (up to few thousands characters) and may degrade for long lines.

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 is capable of opening very large files, up to two gigabytes. If the opened file is XML, the encoding used to display the text is detected from the XML prolog of the file. In case of other files, the encoding is taken from the oXygen options. See Encoding for non XML files

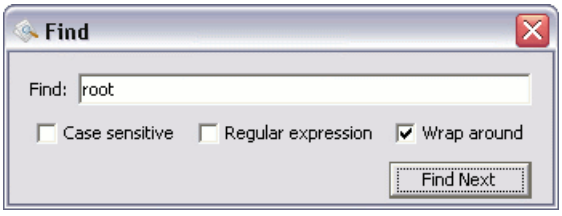
Figure 4.92. The Large File Viewer



Large File Viewer components:

- The menu bar provides menu driven access to all the features and functions available in Large File Viewer.
  - File → Open provides access for opening files in the viewer (also available in the contextual pop-up menu).
  - File → Close provides access for closing the viewer.
  - Edit → Copy provides means to copy the selected text to clipboard (also available in the contextual pop-up menu).
  - Find → Find provides access to the Find Dialog.

Figure 4.93. The Find Dialog



The find dialog provides 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.

Warning

For faster computation the Large File Viewer uses a fixed font (plain, monospace font of size 12) for displaying characters. The font is *not* configurable from the <oXygen/> Preferences.

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.

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: Cut, Copy, Paste a. o.

Changing the user interface language

<oXygen/> comes with the user interface translated in English, French, German, Italian, Japanese and Dutch. If you want to use <oXygen/> in other language you have to translate all the messages and labels available in the user interface (menu action names, button names, checkbox texts, view titles, error messages, status bar messages, etc.) and provide a text file with all the translated messages to <oXygen/> in the form of a Java properties file. Such a file contains pairs of the form message key - translated message displayed in the user interface. In order to install the new set of translated messages you must copy this file to the [oXygen-install-folder]/lib folder, restart <oXygen/> and set the new language in the <oXygen/> preferences. You can get the keys of all the messages that must be translated from the properties file containing the English translation used in <oXygen/>. To get this file contact us at support@oxygenxml.com.

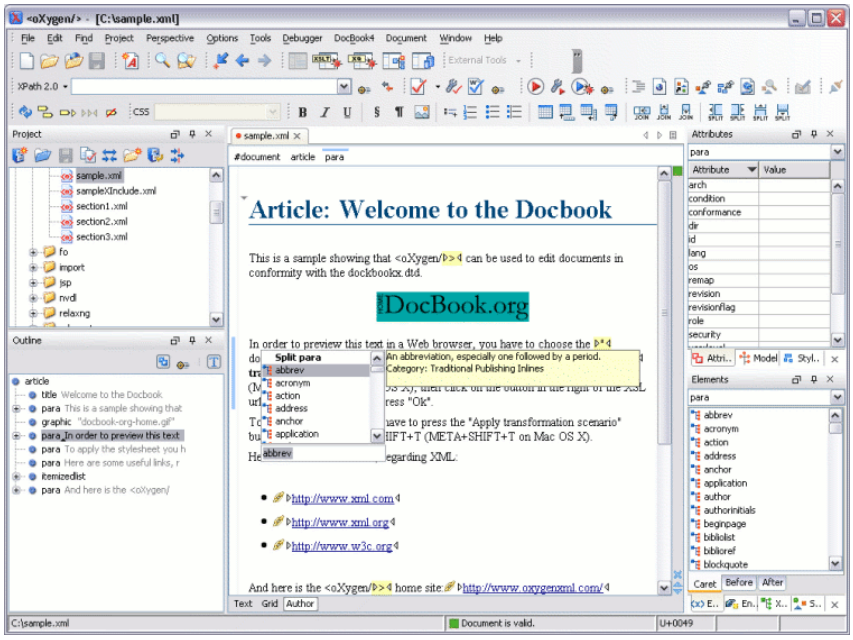
Chapter 5. Authoring in the tagless editor

Authoring XML documents without the XML tags

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 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 the text mode are also available in Author mode.

Figure 5.1. oXygen Author Editor



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 [http://www.w3.org/TR/CSS21/] 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 very easy to develop and edit in &oxy; as it is a plain text file with a simple syntax.

The association of such a stylesheet with an XML document is also straightforward: an *xml-stylesheet* XML processing instruction with the attribute *type="text/css"* must be inserted at the beginning of the XML document.

There are two main types of users of the Author mode: *developers* and *content authors*. A *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. He 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 of the tagless editor.

The tagless editor comes with some ready to use predefined document types for XML frameworks largely used today like DocBook, DITA, TEI, XHTML.

The Content Author role

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 *frameworks* subfolder of the application's install 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 files 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"?>
```

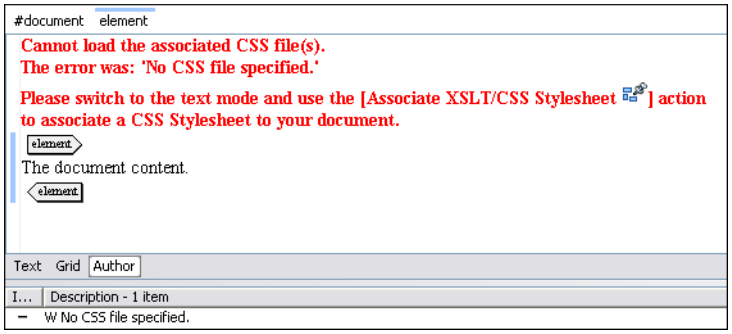
You can read more about associating a CSS to a document, the syntax and the use of the *xml-stylesheet* processing instruction in the section Author CSS Settings.

When the document has no CSS association or the referred stylesheet files cannot be loaded a default one will be used. A warning message will also be displayed at the beginning of the document presenting the reason why the CSS cannot be loaded.

Note

In general it is recommended to associate a CSS while in Text mode so that the whitespace normalization rules specified in the stylesheets will be properly applied when switching to Author mode.

Figure 5.2. Document with no CSS association default rendering



Author views

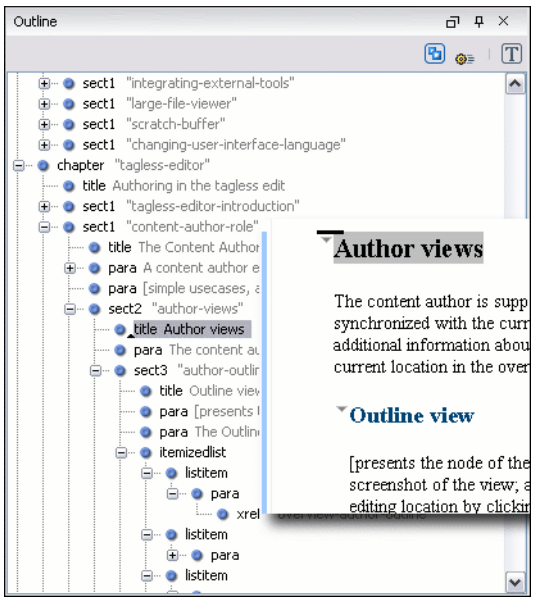
The content author is supported by special views which are automatically synchronized with the current editing context of the editor panel and which present additional information about this context thus helping the author to see quickly the current location in the overall document structure and the available editing options.

Outline view

The Outline view has the following available functions:

- the section called “XML Document Overview”
- the section called “Modification Follow-up”
- the section called “Document Structure Change”

Figure 5.3. 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, making it easier for the user to be aware of the document's structure and the way tags are nested. It also allows the user to insert or delete nodes using pop-up menu actions.

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 a better insight on location inside the document and how the structure of the document is affected by one's modifications.

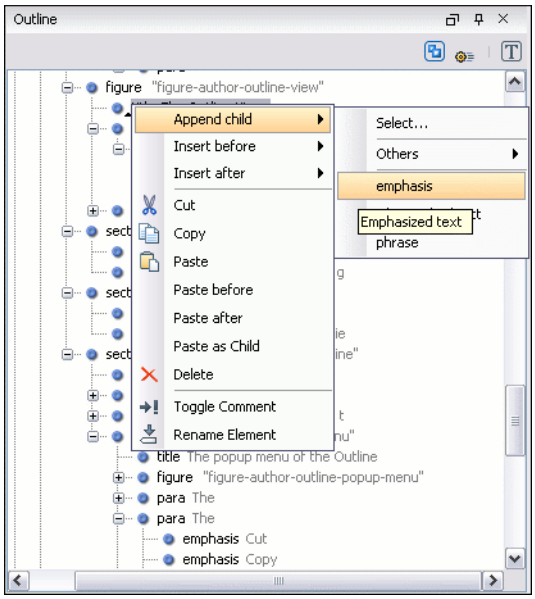
Document Structure Change

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. 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 element will be expanded first and the dragged element will be moved inside the drop one after its opening tag. 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.

The popup menu of the Outline tree

Figure 5.4. 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 correctly 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 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.

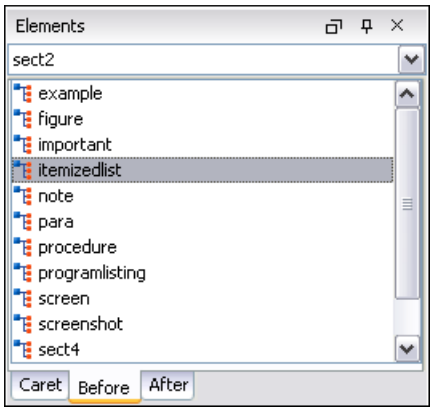
The *Cut*, *Copy* and *Delete* items of the popup menu execute the same actions as the Edit menu items with the same name on the elements currently selected in the outline tree. You can insert a well-formed element before, after or as a child of the currently selected element by accessing the *Paste before*, *Paste after* or *Paste as Child* actions.

The *Toggle Comment* item of the outline tree popup menu 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.

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.

Elements view

Figure 5.5. The Elements View



Presents a list of all defined elements that you can insert in your document. 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 will update the list of the allowed elements in *Before* and *After* tabs.

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 will insert 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 will insert 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 will insert that element after the element at the caret position.

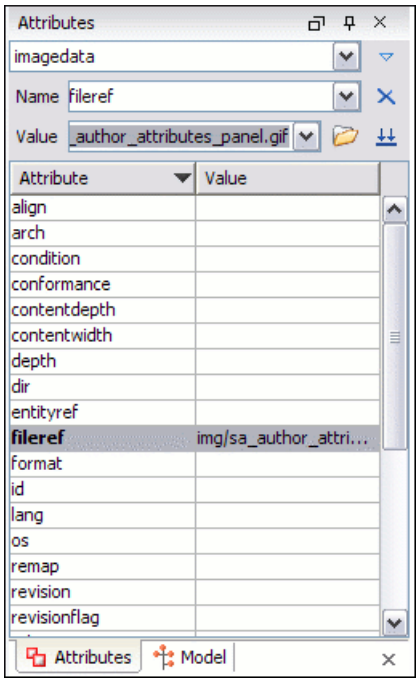
Double clicking an element name in the list surrounds the current selection in the editor panel with the start tags and end tags of the element. If there is no selection just an empty element is inserted in the editor panel at the cursor position.

Attributes view

The Attributes panel presents all the possible attributes of the current element allowed by the schema of the document and allows to insert attributes in the current element or change the value of the attributes

already used in the element. The attributes already present in the document are painted with a bold font. Default values are painted with an italic font. Clicking on the Value column of a table row will start editing the value of the attribute from the selected row. If the possible values of the attribute are specified as list in the schema associated with the edited document the Value column works as a combo box where you can select one of the possible values to be inserted in the document. The attributes table is sortable by clicking on the column names. Thus the table's contents can be sorted in ascending order, in descending order or in a custom order, where the used attributes are placed 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 5.6. The Attributes View

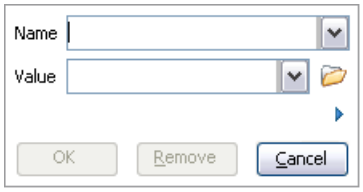


A combo box located in the upper part of the view allows you to edit the attributes of the ancestors of the current element.

The contextual menu of the view allows you to insert a new element (*Add* action) or delete an existing one (*Delete* action). Delete action can be invoked on a selected table entry by pressing *DEL* or *BACKSPACE*.

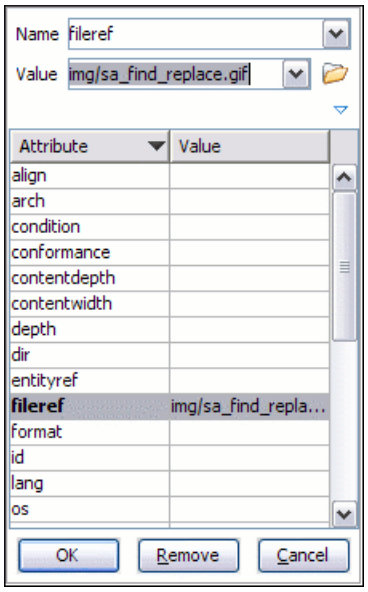
The attributes of an element can be edited also in place in the editor panel by pressing the shortcut Alt + Enter which pops up a small window with the same content of the Attributes view. In the initial form of the popup only the two text fields Name and Value are displayed, the list of all the possible attributes is collapsed.

Figure 5.7. Edit attributes in place



The small arrow button next to the Cancel button expands the list of possible attributes allowed by the schema of the document as in the Attributes panel.

Figure 5.8. Edit attributes in place - full version

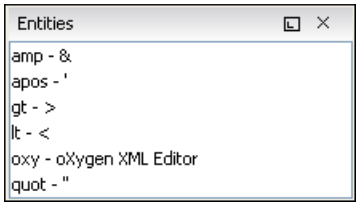


The Name field auto-completes the name of the attribute: the complete name of the attribute is suggested based on the prefix already typed in the field as the user types in the field.

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.

Figure 5.9. The Entities View



The Author editor

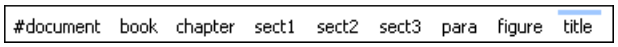
In order to view the XML file in Author view, the XML document must be associated with a CSS file that defines the way the XML file is rendered. The document can be edited as text, the XML markup being hidden by default.

Navigating the document content

Fast navigating the document content can be done using the **Tab**/**Shift** + **Tab** for advancing forward / backwards. The caret will be moved to the next/previous editable position. Entities and hidden elements will be skipped.

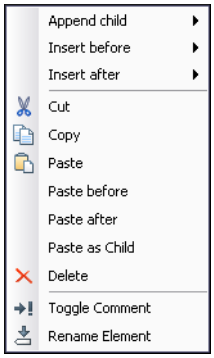
A left-hand side stripe paints a vertical thin light blue bar indicating the vertical span of the element found at caret position. Also a top stripe indicates the path from document root to the current element.

Figure 5.10. Top stripe 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.

Figure 5.11. The top stripe pop-up menu



The *Append child*, *Insert before* and *Insert after* submenus allow to quickly 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 styles of the copied content is preserved by the *Cut* and *Copy* operations, for example the *display:block* property or the tabular format of the data from a set of table cells. 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 uncomments it 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.

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.

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 4 dedicated actions:

- Full Tags - displays full name tags both for block level as well as inline level elements.
- Block Tags - displays block-level elements with full name, while the inline level elements are displayed without names.
- Partial Tags - all in-line XML element tags are displayed without names.
- No Tags - none of the XML 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, in-line 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 for easy navigation in a large document or for working on more than one document at a moment 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 or with the menu item Edit → Bookmarks → Bookmarks Quick Creation or with the keyboard shortcuts associated with these meu 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.

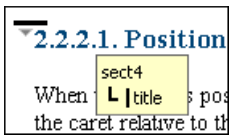
Position information tooltip

When the caret is positioned next to an element tag, 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:

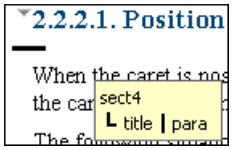
- The caret is positioned before the first children of the current node.

Figure 5.12. Before first child



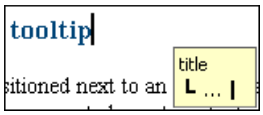
- The caret is positioned between the start and end of two sibling nodes.

Figure 5.13. Between two siblings



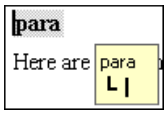
- The caret is positioned after the last child of the current node.

Figure 5.14. After last child



- The caret is positioned in an empty node.

Figure 5.15. Empty node



The nodes in the previous cases are displayed in the tooltip window using their names. When one of them is a text node it will be presented using "..." sequence.

You can deactivate this feature by unchecking Options → Preferences+Editor / Author+Show caret positioned info checkbox. Even if this option is disabled, you can trigger the display of the position tooltip by pressing Shift+F2.

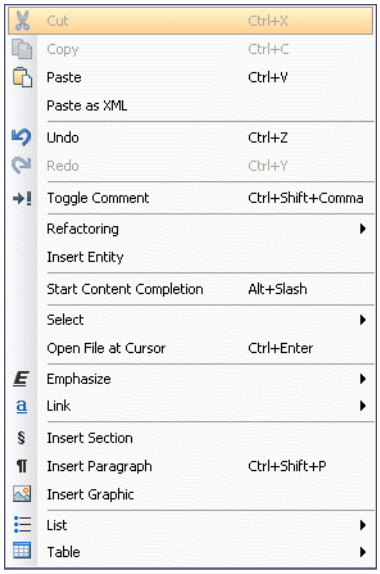
Note

The position information tooltip is not displayed if the *Full Tags* mode is selected.

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 5.16. Contextual menu



The generic actions are:

- **Cut**, **Copy**, **Paste**, **Undo**, **Redo** - 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.
- **Toggle Comment** - encloses the currently selected text in an XML comment, or uncomments it if it is commented.
- **Refactoring** - contains a series of actions designed to alter the document's structure:
  - **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 tag.
  - **Surround with '<Tag name>'** - selected text in the editor is marked with start and end tags of 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.
- **Insert Entity** - allows the user to insert a predefined entity.

- **Start Content Completion** - displays the Content Completion window.
- **Select** - contains the following actions:
  - **Select -> Select Element** - selects the entire element from caret's current position.
  - **Select -> Select Content** - selects the content of the element from caret's current position.
  - **Select -> Select Parent** - selects the parent of the element from caret's current 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.

- **Open File at Cursor** - opens in a new editor panel the file with the name under the current position of the caret in the current document. If the file does not exist at the specified location the error dialog that is displayed contains a Create action which tries to create a new empty file in the specified location. If the action succeeds the file 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.

Document type actions are specific to some document type. Examples of such actions can be found in section Predefined document types [author-predefined-doc-types].

Editing XML in oXygen Author

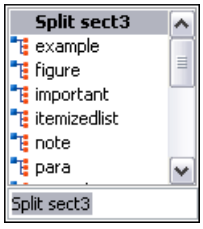
Editing the XML markup

One of the most useful feature in Author editor is the content completion support. The fastest way to invoke it is to press Alt+/ (on *Mac OS X* the shortcut is Meta + Alt + /).

Content completion window offers the following types of actions:

- inserting allowed elements for the current context according to the associated schema, if any;
- inserting new undeclared elements by entering their name in the text field;
- inserting CDATA sections, comments, processing instructions.

Figure 5.17. Content completion window



If you press *Enter* the displayed content completion window will contain as first entry the *Split <Element name>* item. Selecting it 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.

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.

Joining two elements. You can choose to join the content of two sibling elements with the same name by using the Join elements action from the editor contextual menu.

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.

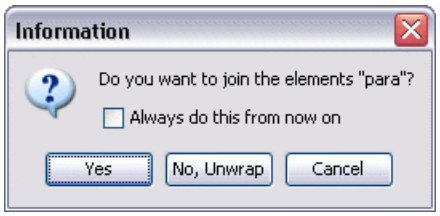
The same action can be triggered in the next situations:

- 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 a dialog will be displayed allowing you to choose between *Join* or *Unwrap* operations. If the current element is empty, no dialog will be presented and the element tags will be deleted.

Figure 5.18. Join/Unwrap dialog



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.

Editing the XML content

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 will be 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 will be transferred as it is.
- the text dropped from another text editor or another application into the Author page will be 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:

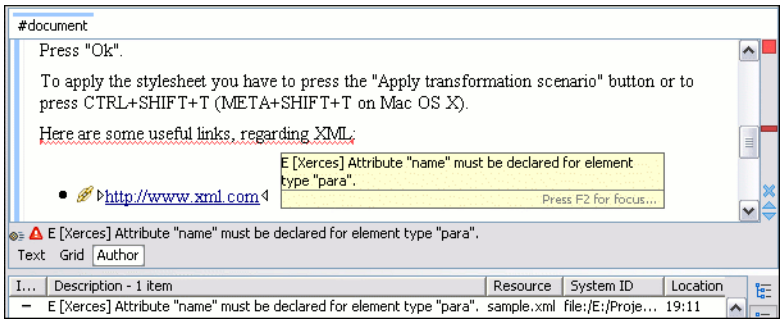
Ctrl + NumPad+ or Ctrl + mouse wheel	increase font size
Ctrl + NumPad- or Ctrl + mouse wheel	decrease font size
Ctrl + 0	restore font size to the size specified in Preferences

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.

Validation and error presenting

You can validate or check the XML form of the documents while editing them in Author Editor. Validate as you type as well as validate on request operations are available. Author editor offers validation features and configuring possibilities similar to text editor. You can read more about checking the XML form of documents in section Checking XML form. A detailed description of the document validation process and its configuration is described in section Validating Documents.

Figure 5.19. Error presenting in oXygen Author editor



A fragment 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 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:

- 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 tool tip. In case there are errors, only the first three of them will be presented in the tool tip;

- middle area where 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.

- 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 Document → Validate as you type (**Ctrl + .**)-> Next error and Document → Validate as you type (**Ctrl + ,**)-> Previous error.

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/> 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 Author editor when opening documents or switching to Author mode, saving documents or switching from Author mode to another one and editing documents.

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.

Note

CDATA sections, *comments*, *processing instructions* have by default the *white-space* CSS property set to *"pre"* unless overridden in the CSS file you are using. Also they are considered to be *block* nodes.

Predefined document types

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 the application.

The DocBook V4 document type

DocBook is a very popular set of tags for describing books, articles, and other prose documents, particularly technical documentation.

Association rules

A file is considered to be a DocBook document when either of the following occurs:

- root element name is a *book* or *article*;
- public id of the document is *-//OASIS//DTD DocBook XML V4.4//EN*.

Schema

The schema used for DocBook documents is in *${frameworks}/docbook/dtd/docbookx.dtd*, where *${frameworks}* is a subdirectory of the <oXygen/> install directory.

Author extensions

The CSS file used for rendering DocBook content is located in *${frameworks}/docbook/css/docbook.css*.

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

  For all of the above actions if there is no selection then a new 'emphasis' tag with specific role will be inserted. These actions are available in any document context.

  These actions are grouped under the *Emphasize* toolbar actions group.

- link - inserts a hypertext link.
- ulink - inserts a link that address its target by means of an URL (Universal Resource Locator).
- olink - inserts a link that address its target indirectly, through an entity.
- uri - inserts an URI element. The URI identifies a Uniform Resource Identifier (URI) in content.
- xref - inserts a cross reference to another part of the document.

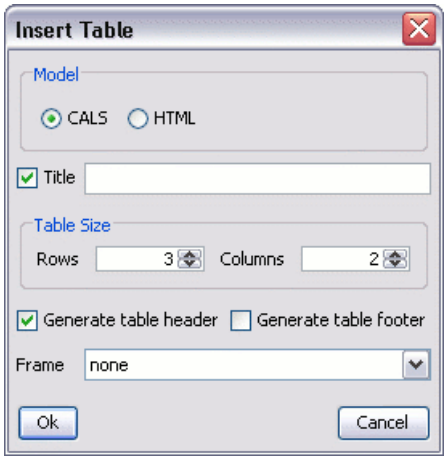
  Note

  These actions are grouped under the *Link* toolbar actions group.

- § 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* will be inserted and so on.
- ¶ Insert Paragraph - inserts a new paragraph depending on the current context. If current context is a paragraph context(one of the ancestors of the element at caret position is 'para') then a new paragraph will be inserted after the paragraph at caret. Otherwise a new paragraph is inserted at caret position.

- Insert Graphic - inserts a graphic object at the caret position. This is done by inserting either <*graphic*> or <*inlinegraphic*> element depending on the current context. The following graphical formats are supported: GIF, JPG, JPEG, BMP, PNG and SVG.
- Insert Ordered List - inserts an ordered list with one list item.
- Insert Itemized List - inserts an itemized list with one list item.
- Insert Variable List - inserts a DocBook variable list with one list item.
- Insert List Item - inserts a new list item for in any of the above three list types.
- Insert Table - opens a dialog that allows you to configure the table to be inserted.

Figure 5.20. Insert Table Dialog



The dialog allows the user to configure the number of rows and columns of the table, if the header and footer will be generated and how the table will be framed. Also, *CALS* or *HTML* table model can be selected.

Note

Unchecking the *Title* checkbox an 'informaltable' element will be inserted.

- 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.
- Insert Cell - inserts a new empty cell depending on the current context. If the caret is positioned between two cells, a new one will be inserted at caret's position. If the caret is inside a cell, then the new one will be created after the current cell.
- Delete Column - deletes the table column where the caret is located.

- Delete Row - deletes the table row where the caret is located.
- 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 cell from current caret position with that of the cell above it. Note that this action works only if both cells have the same column span.
- Join Cell Below - joins the content of cell from current caret position with that of the cell below it. Note that this action works only if both cells have the same column span.
- Split Cell To The Left - splits the cell from current caret position in two, inserting a new empty table cell to the left. Note that this action works only if the current cell spans over more than one column. The column span of the source cell will be decreased with one.
- Split Cell To The Right - splits the cell from current caret position in two, inserting a new empty table cell to the right. Note that this action works only if the current cell spans over more than one column. The column span of the source cell will be decreased with one.
- Split Cell Above - splits the cell from current caret position in two, inserting a new empty table cell above. Note that this action works only if the current cell spans over more than one row. The row span of the source cell will be decreased with one.
- Split Cell Below - splits the cell from current caret position in two, inserting a new empty table cell below. Note that this action works only if the current cell spans over more than one row. The row span of the source cell will be decreased with one.

Note

DocBook v4 supports only CALS table model. HTML table model is supported in DocBook v5.

Caution

Column specifications are required for table actions to work properly.

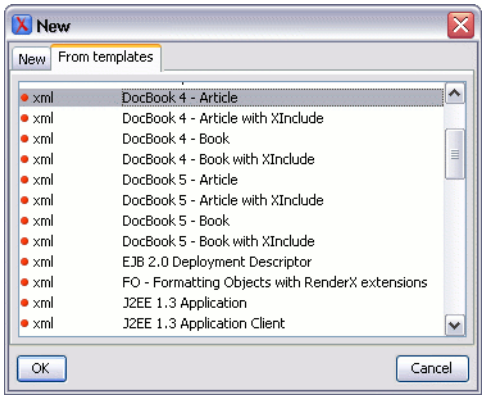
All actions described above are available in the contextual menu, main menu (**Docbook4** submenu) and in the **Author custom actions** toolbar.

Templates

Default templates are available for DocBook 4. They are stored in **${frameworksDir}/docbook/templates/Docbook 4** folder and they can be used for easily creating a book or article with or without XInclude.

These templates are available when creating new documents from templates.

Figure 5.21. New From templates



Catalogs

The default catalog is stored in **${frameworksDir}/docbook/catalog.xml**.

Transformation Scenarios

The following default transformation scenarios are available:

- **DocBook4 -> DocBook5 Conversion** - converts a DocBook4-compliant document to DocBook5;
- **DocBook HTML** - transforms a DocBook document into a HTML document;
- **DocBook PDF** - transforms a DocBook document into a PDF document.

The DocBook V5 document type

Customization for DocBook V.5 is similar with that for DocBook V.4 with the following exceptions:

Association rules

A file is considered to be a DocBook V.5 document when the namespace is 'http://docbook.org/ns/docbook'.

Schema

DocBook v5 documents use a RelaxNG and Schematron schema located in *${frameworks}/docbook/5.0/rng/docbookxi.rng*, where *${frameworks}* is a subdirectory of the <oXygen/> install directory.

Author extensions

DocBook 5 extensions contain all DocBook 4 extensions plus support for HTML table.

Templates

Default templates are available for DocBook 5. They are stored in **${frameworksDir}/docbook/templates/Docbook 5** folder and they can be used for easily creating a book or article with or without XInclude.

These templates are available when creating new documents from templates.

Catalogs

The default catalog is stored in **${frameworksDir}/docbook/5.0/catalog.xml**.

Transformation Scenarios

The following default transformation scenarios are available:

- **DocBook HTML** - transforms a DocBook document into HTML document;
- **DocBook PDF** - transforms a DocBook document into a PDF document.

The DITA document type

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.

Association rules

A file is considered to be a dita document when either of the following occurs:

- root element name is one of the following: *concept*, *task*, *reference*, *map*, *map*, *dita*, *topic*;
- public id of the document is *-//OASIS//DTD DITA*.

Schema

The default schema used for DITA documents is located in *${frameworks}/dita/dtd/ditabase.dtd*, where *${frameworks}* is a subdirectory of the <oXygen/> install directory.

Author extensions

The CSS file used for rendering DocBook content is located in *${frameworks}/dita/css/dita.css*.

Specific actions for DITA documents are:

- **B** Bold - surrounds the selected text with *b* tag.
- *I* Italic - surrounds the selected text with *i* tag.
- U Underline - surrounds the selected text with *u* tag.

  ### Note

  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.

- Cross Reference - inserts an *xref* element with the value of attribute *format* set to "dita", and *type* set to "topic".
- 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.

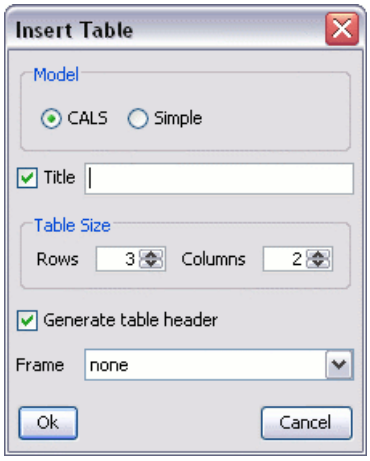
- § Insert Section/Step - inserts a new section/step in the document, depending on the current context. A new section will be inserted in either one of the following contexts:
  - section context, when the value of 'class' attribute of the current element or one of its ancestors contains 'topic' or 'section'.
  - 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 Paragraph - inserts a new paragraph depending on the current context. If current context is a paragraph context (the value of 'class' attribute of the current element or one of its ancestors contains 'topic/p') then a new paragraph will be inserted after this paragraph. Otherwise a new paragraph is inserted at caret position.
- 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's *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*'s *topic*. An empty *task* will be inserted at current caret position.
- topic context, one of the current element ancestors is a *dita*'s *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 Graphic - inserts a graphic object at the caret position. This is done by inserting a <*image*> element. The following graphical formats are supported: GIF, JPG, JPEG, BMP, PNG and SVG.
-  Insert Ordered List - inserts an ordered list with one list item.
-  Insert Unordered List - inserts an unordered list with one list item.
-  Insert List Item - inserts a new list item for in any of the above two list types.
-  Insert Table - opens a dialog that allows you to configure the table to be inserted.

Figure 5.22. Insert Table Dialog



The dialog allows the user to configure the number of rows and columns of the table, if the header will be generated, if the title will be added and how the table will be framed.

- 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.
- Insert Cell - inserts a new empty cell depending on the current context. If the caret is positioned between two cells, a new one will be inserted at caret's position. If the caret is inside a cell, then the new one will be created after the current cell.
- Delete Column - deletes the table column where the caret is located.
- Delete Row - deletes the table row where the caret is located.
- 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 cell from current caret position with that of the cell above it. Note that this action works only if both cells have the same column span.
- Join Cell Below - joins the content of cell from current caret position with that of the cell below it. Note that this action works only if both cells have the same column span.
- Split Cell To The Left - splits the cell from current caret position in two, inserting a new empty table cell to the left. Note that this action works only if the current cell spans over more than one column. The column span of the source cell will be decreased with one.
- Split Cell To The Right - splits the cell from current caret position in two, inserting a new empty table cell to the right. Note that this action works only if the current cell spans over more than one column. The column span of the source cell will be decreased with one.

- Split Cell Above - splits the cell from current caret position in two, inserting a new empty table cell above. Note that this action works only if the current cell spans over more than one row. The row span of the source cell will be decreased with one.

- Split Cell Below - splits the cell from current caret position in two, inserting a new empty table cell below. Note that this action works only if the current cell spans over more than one row. The row span of the source cell will be decreased with one.

Note

DITA supports 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.

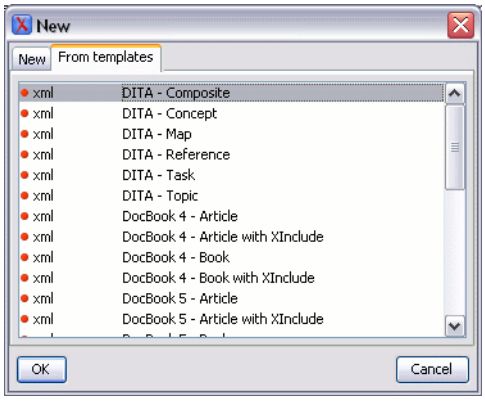
All actions described above are available in the contextual menu, main menu (**DITA** submenu) and in the **Author custom actions** toolbar.

Templates

Default templates available for DITA are stored in **${frameworksDir}/dita/templates** folder. They can be used for easily creating a DITA's *concept*, *map*, *reference*, *task* or *topic*.

These templates are available when creating new documents from templates.

Figure 5.23. New From templates



Catalogs

The default catalog is stored in **${frameworks}/dita/catalog-dita.xml**.

Transformation Scenarios

The following default transformation scenarios are available:

- **DITA Map to HTML** - transforms a DITA map document into HTML document;
- **DITA Topic to DocBook** - converts a DITA topic document into a DocBook document;

- **DITA Topic to HTML** - transforms a DITA topic document into HTML document;
- **DITA to PDF** - transforms a DITA document into a PDF document.

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.

Association rules

A file is considered to be a XHTML document when the root element name is a *html*.

Schema

The schema used for these documents is located in *${frameworks}/xhtml/dtd/xhtml1-strict.dtd*, where *${frameworks}* is a subdirectory of the <oXygen/> install directory.

Author extensions

The CSS file used for rendering XHTML content is located in *${frameworks}/xhtml/css/xhtml.css*.

Specific actions are:

- Bold - changes the style of the selected text to *bold* by surrounding it with *b* tag.
- Italic - changes the style of the selected text to *italic* by surrounding it with *i* tag.
- Underline - changes the style of the selected text to *underline* by surrounding it with *u* tag.

  ### Note

  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.

- Headings - groups actions for inserting *h1*, *h2*, *h3*, *h4*, *h5*, *h6* elements.
- Insert Paragraph - inserts a new paragraph depending on the current context. If current context is a paragraph context (one of the ancestors of the element at caret position is *p*) then a new paragraph will be inserted after the paragraph at caret. Otherwise a new paragraph is inserted at caret position.
- Insert Graphic - 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 and SVG.
- Insert Ordered List - inserts an ordered list (*ol* element) with one list item (*li* child element).
- Insert Unordered List - inserts an unordered list (*ul* element) with one list item (*li* child element).
- Insert Definition List - inserts a definition list (*dl* element) with one list item (a *dt* child element and a *dd* child element).

- Insert List Item - inserts a new list item for in any of the above two list types.
- Insert Table - opens a dialog that allows you to configure the table to be inserted.

Figure 5.24. Insert Table Dialog

The dialog allows the user to configure the number of rows and columns of the table, if the header and footer will be generated and how the table will be framed.

- 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.
- Insert Cell - inserts a new empty cell depending on the current context. If the caret is positioned between two cells, a new one will be inserted at caret's position. If the caret is inside a cell, then the new one will be created after the current cell.
- Delete Column - deletes the table column where the caret is located.
- Delete Row - deletes the table row where the caret is located.
- 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 cell from current caret position with that of the cell above it. Note that this action works only if both cells have the same column span.
- Join Cell Below - joins the content of cell from current caret position with that of the cell below it. Note that this action works only if both cells have the same column span.
- Split Cell To The Left - splits the cell from current caret position in two, inserting a new empty table cell to the left. Note that this action works only if the current cell spans over more than one column. The column span of the source cell will be decreased with one.

- Split Cell To The Right - splits the cell from current caret position in two, inserting a new empty table cell to the right. Note that this action works only if the current cell spans over more than one column. The column span of the source cell will be decreased with one.

- Split Cell Above - splits the cell from current caret position in two, inserting a new empty table cell above. Note that this action works only if the current cell spans over more than one row. The row span of the source cell will be decreased with one.

- Split Cell Below - splits the cell from current caret position in two, inserting a new empty table cell below. Note that this action works only if the current cell spans over more than one row. The row span of the source cell will be decreased with one.

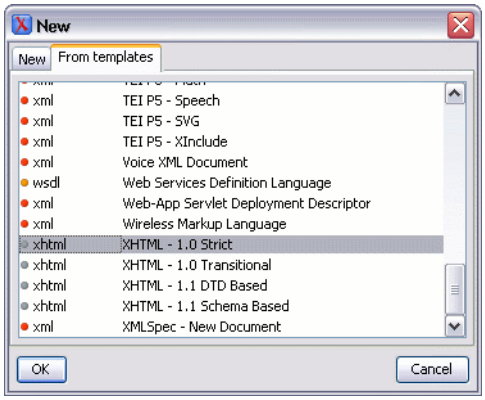
All actions described above are available in the contextual menu, main menu (**XHTML** submenu) and in the **Author custom actions** toolbar.

Templates

Default templates are available for XTHML. They are stored in **${frameworksDir}/xhtml/templates** folder and they can be used for easily creating basic XHTML documents.

These templates are available when creating new documents from templates.

Figure 5.25. New From templates



Catalogs

There are three default catalogs for XHTML document type: *${frameworks}/xhtml/dtd/xhtmlcatalog.xml*, *${frameworks}/xhtml11/dtd/xhtmlcatalog.xml* and *${frameworks}/xhtml11/schema/xhtmlcatalog.xml*.

Transformation Scenarios

No default transformation scenarios are available for XHTML.

The TEI P4 document type

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.

Association rules

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**

Schema

The DTD schema used for these documents is located in *${frameworks}/tei/tei2xml.dtd*, where *${frameworks}* is a subdirectory of the <oXygen/> install directory.

Author extensions

The CSS file used for rendering TEI P4 content is located in *${frameworks}/tei/xml/tei/css/tei_oxygen.css*.

Specific actions are:

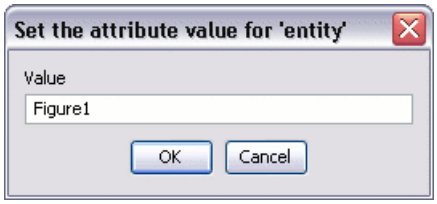
- Bold - changes the style of the selected text to *bold* by surrounding it with *hi* tag and setting the *rend* attribute to *bold*.
- Italic - changes the style of the selected text to *italic* by surrounding it with *hi* tag and setting the *rend* attribute to *italic*.
- Underline - changes the style of the selected text to *underline* by surrounding it with *hi* tag and setting the *rend* attribute to *ul*.

  ### Note

  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.

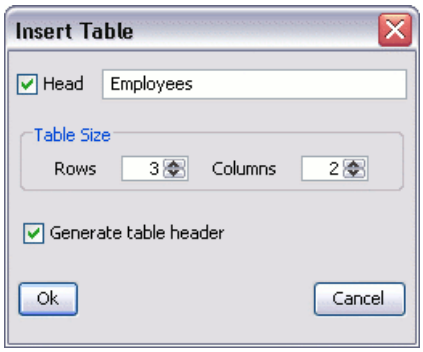
- Insert Section - inserts a new section/subsection, depending on the current context. For example if the current context is *div1* then a *div2* will be inserted and so on.
- Insert Paragraph - inserts a new paragraph depending on the current context. If current context is a paragraph context (one of the ancestors of the element at caret position is *p*) then a new paragraph will be inserted after the paragraph at caret. Otherwise a new paragraph is inserted at caret position.
- Insert Image - inserts a graphic object at the caret position. The following dialog is displayed allowing the user to specify the *entity* that refers the image itself:

Figure 5.26. Insert image entity dialog



- Insert Ordered List - inserts an ordered list (*list* element with *type* attribute set to *ordered*) with one list item (*item* element).
- Insert Itemized List - inserts an unordered list (*list* element with *type* attribute set to *bulleted*) with one list item (*item* element).
- Insert List Item - inserts a new list item for in any of the above two list types.
- Insert Table - opens a dialog that allows you to configure the table to be inserted.

Figure 5.27. Insert Table Dialog



The dialog allows the user to configure the number of rows and columns of the table and if the header will be generated.

- 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.
- Insert Cell - inserts a new empty cell depending on the current context. If the caret is positioned between two cells, a new one will be inserted at caret's position. If the caret is inside a cell, then the new one will be created after the current cell.
- Delete Column - deletes the table column where the caret is located.
- Delete Row - deletes the table row where the caret is located.
- 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 cell from current caret position with that of the cell above it. Note that this action works only if both cells have the same column span.
- Join Cell Below - joins the content of cell from current caret position with that of the cell below it. Note that this action works only if both cells have the same column span.

- Split Cell To The Left - splits the cell from current caret position in two, inserting a new empty table cell to the left. Note that this action works only if the current cell spans over more than one column. The column span of the source cell will be decreased with one.

- Split Cell To The Right - splits the cell from current caret position in two, inserting a new empty table cell to the right. Note that this action works only if the current cell spans over more than one column. The column span of the source cell will be decreased with one.

- Split Cell Above - splits the cell from current caret position in two, inserting a new empty table cell above. Note that this action works only if the current cell spans over more than one row. The row span of the source cell will be decreased with one.

- Split Cell Below - splits the cell from current caret position in two, inserting a new empty table cell below. Note that this action works only if the current cell spans over more than one row. The row span of the source cell will be decreased with one.

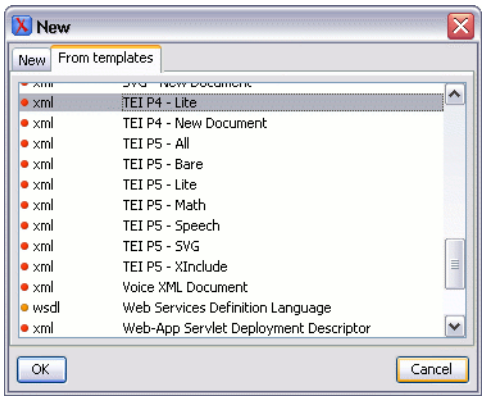
All actions described above are available in the contextual menu, main menu (**TEI P4** submenu) and in the **Author custom actions** toolbar.

Templates

Default templates are available for XTHML. They are stored in **${frameworksDir}/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.

Figure 5.28. New From templates



Catalogs

There are two default catalogs for TEI P4 document type: *${frameworks}/tei/xml/teip4/schema/dtd/catalog.xml* and *${frameworks}/tei/xml/teip4/custom/schema/dtd/catalog.xml*.

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.

The TEI P5 document type

Customization for TEI P5 is similar with that for TEI P4 with the following exceptions:

Association rules

A file is considered to be a TEI P5 document when the namespace is *http://www.tei-c.org/ns/1.0*.

Schema

The RNG schema used for these documents is located in *${frameworks}/tei/xml/tei/custom/schema/relaxng/tei_allPlus.rng*, where *${frameworks}* is a subdirectory of the <oXygen/> install directory.

Author extensions

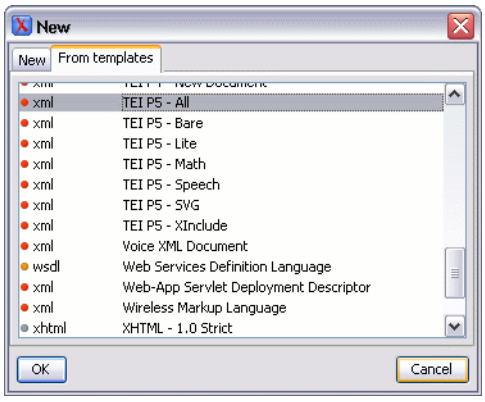
The CSS file used for rendering TEI P5 content and custom actions are the same with those configured for TEI P4.

Templates

Default templates are available for TEI P5. They are stored in **${frameworksDir}/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.

Figure 5.29. New From templates



Catalogs

XML catalogs used for TEI P4 are used also for TEI P5.

Transformation Scenarios

The following default transformations are available:

- **TEI P5(experimental) HTML** - transforms a TEI document into a HTML document;
- **TEI P5(experimental) PDF** - transforms a TEI document into a PDF document.

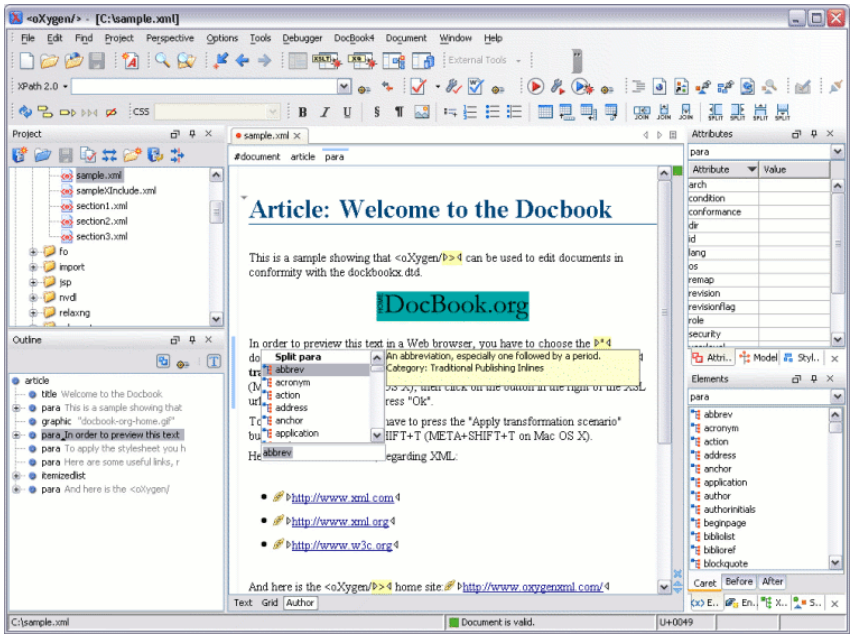
Chapter 6. oXygen XML Editor Developer Guide

Introduction

Starting with version 9, oXygen adds extensive support for customization.

The Author mode from oXygen was designed for bridging 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 the source editing and the intuitive interface of a text editor.

Figure 6.1. oXygen Author Editor



Although oXygen 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. For instance in the case you have a collection of XML document types used to define the structure of the documents that are used in your organisation and you want them visually edited by people who are not experienced in using XML.

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 CSS files, the XML schemes, actions, menus, etc, bundling them and distributing an archive. The CSS and the GUI elements are settings of the oXygen 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).

We will discuss both approaches in the following sections.

Simple Customization Tutorial

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>
```

Our 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.

Writing the CSS

We have to define a set of rules describing how the XML document is to be rendered into the oXygen 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.

Note

For more information regarding CSS, please read the specification http://www.w3.org/Style/CSS/. A tutorial is available here : http://www.w3schools.com/css/css_intro.asp

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 we set its display type to **block**. Additionally we are setting some margins 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. We should use also the **block** display - 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 standout we are changing its background.

```
description {
    display:block;
    background-color:#EEEEFF;
    color:black;
}
```

line

A line of text in the description. We do not define a specific aspect for it, just indicating 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, we will emphasize its text.

```
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, we choose to display it 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. Because we chose the results to be a table, the entry is the 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.

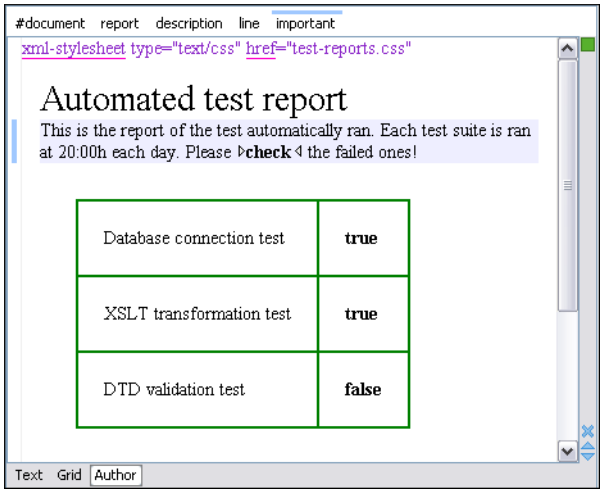
```
test_name, passed{
    display:table-cell;
    border:1px solid green;
    padding:20px;
}

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 6.2. A report opened in the Author



The XML Instance Template

Now we have the XML Schema and the CSS file. Based on these files, the oXygen Author can help the content author in loading, editing and validating the test reports. We have to create an XML file template, 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>Test report title</title>
    <description>
        <line>This is the report
                  <important>description</important>.</line>
    </description>
    <results>
        <entry>
            <test_name>Sample test1</test_name>
            <passed>true</passed>
        </entry>
        <entry>
            <test_name>Sample test2</test_name>
            <passed>true</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 Author 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 a CSS stylesheets, validation schemas, catalog files, templates for new files, transformation scenarios and even custom actions. This is called a **Document Type Association**.

Creating the Basic Association

In this section we will create a **Document Type Association** for a set of documents. As an example we will create a light documentation framework, similar to DocBook and create a complete customization of the Author editor.

You can find the complete files that were used in this tutorial in the Example Files Listings.

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 our 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 that we defined our XML data structure, let's start styling it...

Second step. The CSS.

If you read the Simple Customization Tutorial then you already have some basic notions about creating simple styles. Our document contains elements from different namespaces, so we will use CSS Level 3 extensions supported by the oXygen layout engine to associate specific properties with that element.

Note

Please note that the CSS Level 3 is a standard under development, and has not been released yet by the W3C. However, it addresses several important issues like selectors that are namespace aware and values for the CSS properties extracted from the attributes of the XML documents. Although not (yet) conforming with the current CSS standard these are supported by the oXygen Author.

Defining the General Layout.

We are now creating the basic layout of the rendered documents.

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 {
    display:block;
}

/* Horizontal flow */
b,i {
    display:inline;
}
```

Important

Having `block` display children in an `inline` display parent, makes oXygen 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 we have to create a sequence of CSS rules. The `*` operator matches any element, so we can use it 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;
}
```

Note

CSS rules are combined as follows:

- All the rules that match an element are kept as a list. The more specific the rule is, the further it will be placed to the end of the list.
- If there is no difference in the specificity of the rules, they are placed in the list in the same order as they appear in the CSS document.
- The list is then iterated, and all the properties from the rules are collected, overwriting the already collected values from the previous rules. That is why the font-size is changed depending on the depth of the element, while the font-weight property remains unchanged - no other rule is overwriting it.

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. To achieve we have to use the `:before` and `:after` pseudo elements, plus the CSS counters.

We 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 the a direct child of a `book` or an `article` element.

```
book > section,
article > section{
    counter-increment:sect;
}
```

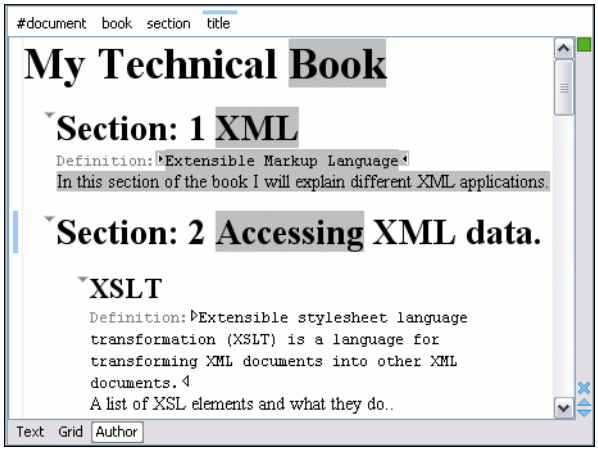
The "static" text that will prefix the section title is composed of the constant "Section ", followed by the decimal value of the `sect` counter and a dot.

```
book > section > title:before,
article > section > title:before{
    content: "Section " counter(sect) ". ";
}
```

To make the documents easy to read, we will 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 6.3. A sample of nested sections and their titles.



In the above screenshot you can see a sample XML document rendered by our CSS. 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 `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 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;
}

tr, header{
    display:table-row;
}

header{
    background-color: silver;
    color:inherit
}

td{
  display:table-cell;
  border:1px solid navy;
  padding:1em;
}
```

Note

Children elements with `block` or `table-caption` display placed at the beginning or the end of an element displayed as a `table`, will be grouped and presented as blocks at the top or the bottom of the table.

Note

Mixing elements having `table-cell`, `table-group`, `table-row`, etc.. display type with others that have `block` or `inline` display or with text content breaks the layout of the table. In such cases the table is shown as a `block`.

Note

Having child elements that do not have `table-cell` or `table` display in a parent with `table-row` display breaks the table layout. In this case the `table` display is supported for the children of the `table-row` element in order to allow sub-tables in the parent table.

Note

oXygen Author can automatically detect the spanning of a cell, without the need to write a Java extension for this.

This happens if the span of the cell element is specified using the **colspan** and **rowspan** attributes, just like in HTML, or **cols** and **rows** attributes.

For instance, the following XML code:

```
<table>
      <tr>
          <td>Cell 1.1</td>
          <td>Cell 1.2</td>
          <td>Cell 1.3</td>
      </tr>
      <tr>
          <td>Cell 2.1</td>
          <td colspan="2" rowspan="2">
          Cell spanning 2 rows and 2 columns.
          </td>
      </tr>
      <tr><td>Cell 3.1</td></tr>
</table>
```

using the CSS:

```
table{
   display: table;
}
tr{
   display: table-row;
}
td{
   display: table-cell;
}
```

is rendered correctly:

Table 6.1. Built-in Cell Spanning

Cell 1.1	Cell 1.2	Cell 1.3
Cell 2.1	Cell spanning 2 rows and 2 columns	
Cell 3.1		

Because in our schema the `td` tag has the attributes **row_span** and **column_span** that are not automatically recognized by oXygen Author, we will implement a Java extension which will provide information about the cell spanning. See the section Configuring a Table Cell Span Provider.

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 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 Author supports this CSS Level 3 functionality. For more information see the Namespace Selectors section.

To match our `def` element we will declare its namespace, 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;
}
```

Styling images

The CSS 2.1 does not specify how an element can be rendered as an image. To overpass this limitation, oXygen 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.

Note

oXygen Author recognizes the following image file formats: JPEG, GIF, PNG and SVG. The oXygen Author for Eclipse does not render the SVG files.

```
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)
```

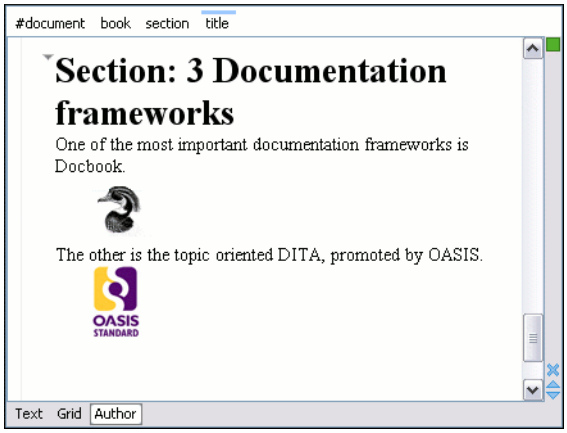
Important

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 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 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.

Figure 6.4. Samples of images in Author

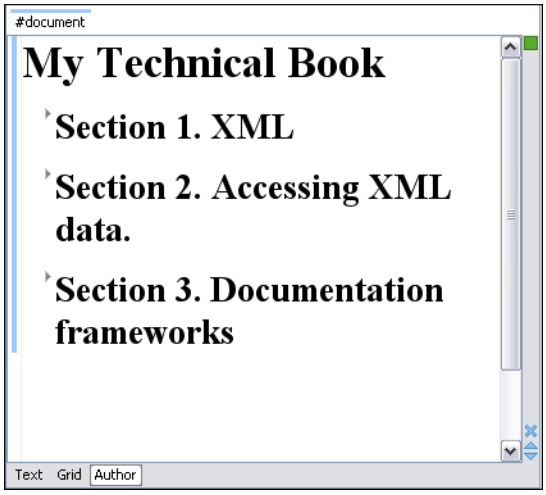


Marking elements as foldable

You can specify what elements are collapsible. The collapsible elements are rendered having a small triangle icon in the top left corner. Clicking on this icon hides or shows the children of the element. In our case, we will mark the `section` elements as foldable. We will leave only the `title` child elements visible.

```
section{
    foldable:true;
    not-foldable-child: title;
}
```

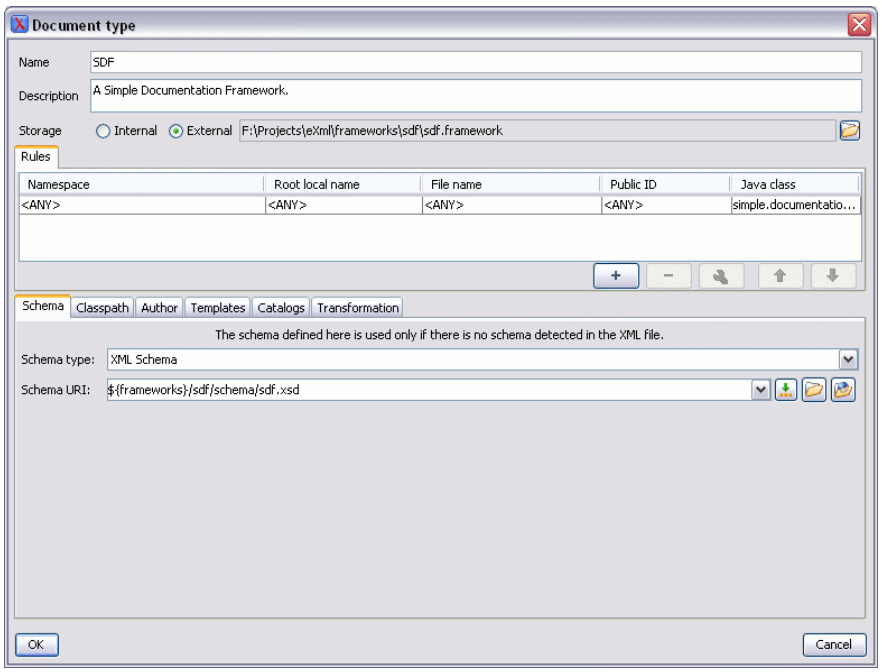
Figure 6.5. Folded Sections



Third Step. The Association.

Now that we have the XML Schema and the CSS stylesheet for the documents we intend to edit, we can proceed to create a distributable framework package for our content authors.

Figure 6.6. The Document Type Dialog



Organizing the Framework Files

First create a new folder called `sdf` (from "Simple Documentation Framework") in `{oXygen_installation_directory}/frameworks`. We will use this folder to store all files related to our documentation framework. Let's organise it a bit, by creating the following folder structure:

```
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, CSS files, etc.

Distributing a framework means delivering a framework directory.

Important

We assume 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.

We 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.

Association Rules

We must specify when oXygen should use the files created in the previous section by creating a document type association. Open the Document Type dialog by following the procedure:

1. Open the Options Dialog, and select the Document Types Association option pane.
2. Select the **Developer** user role from the **User role** combo box at the top of the dialog. This is important, because it will allow us to save the document type association in a file on disk, instead of oXygen options.
3. Click on the **New** button.

In the displayed dialog, fill in the following data:

Name — Enter **SDF** - This is the name of the document type.

Description — Enter **Simple Documentation Framework** - This is a short description helping the other users understand the purpose of the Document Type.

Storage

The storage refers to the place where the Document Type settings are stored. Internal means the Document Types are stored in the default oXygen preferences file. Since we want to share the Document Type to other users, we must select External, and choose a file.

The file must be in the `{oXygen_installation_directory}/frameworks/sdf` directory. A possible location is **/Users/{user_name}/Desktop/oxygen/frameworks/sdf/sdf.framework**. The framework directory structure will be:

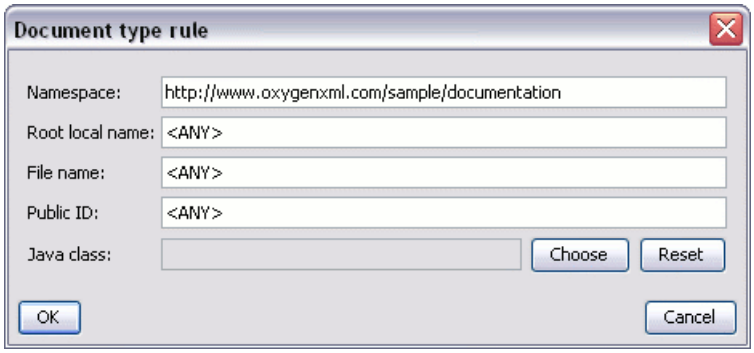
```
oxygen
  frameworks
     sdf
       sdf.framework
       schema
         sdf.xsd
       css
         sdf.css
```

Rules

If a document opened in oXygen matches one of the rules defined for the Document Type, then it is activated.

Press the + Add button from the Rules section. Using the newly displayed dialog, we add a new rule that matches documents with the root from the namespace: `http://www.oxygenxml.com/sample/documentation`. The root name, file name or PublicID are not relevant.

Figure 6.7. Editing a rule



Beside the **Namespace**, **Root local name**, **File name** and **Public ID**, optionally, you can specify the name of a Java class. This class has access to all root element attributes and the above values in order to decide if the document matches the rule.

Java API: Rules implemented in Java

An alternative to the rule we defined for our association is to write the entire logic in Java.

1. Create a new Java project, in your IDE.

   Create the `lib` directory in the Java project directory and copy there the `oxygen.jar` file from the `{oXygen_installation_directory}/lib`. The `oxygen.jar` contains the Java interfaces we have to implement and the available Author API needed to access its features.

2. Create the class `simple.documentation.framework.CustomRule`. This class must implement the `ro.sync.ecss.extensions.api.DocumentTypeCustomRuleMatcher` interface.

   The interface defines two methods: `matches`, and `getDescription`.

   1. The `matches` method is the one that is invoked when the edited document must be checked against the document type association. It takes as arguments the root local name, its namespace, the document location URI, the PublicID and the root element attributes. It must return `true` when the document matches the association.

   2. The `getDescription` method returns a description of the rule.

   Here is the implementation of these two methods. The implementation of `matches` is just a Java equivalent of the rule we defined earlier.

```
public boolean matches(
  String systemID,
  String rootNamespace,
  String rootLocalName,
  String doctypePublicID,
  Attributes rootAttributes) {

 return "http://www.oxygenxml.com/sample/documentation"
  .equals(rootNamespace);
}

public String getDescription() {
 return "Checks if the current Document Type Association"
 + " is matching the document.";
}
```

   The complete source code is found in the Example Files Listings, the Java Files section.

3. Package the compiled class into a *jar* file. Here is an example of an ANT script that packages the `classes` directory content into a *jar* archive named `sdf.jar`:

```
<?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` directory.

5. Add the `sdf.jar` to the Author classpath. To do this select **SDF** Document Type from the **Document Type Association** options page and press the Edit button.

   Select the Classpath tab in the lower part of the dialog.

Press the + Add button . In the displayed dialog enter the location of the jar file, relative to the oXygen `frameworks` directory:

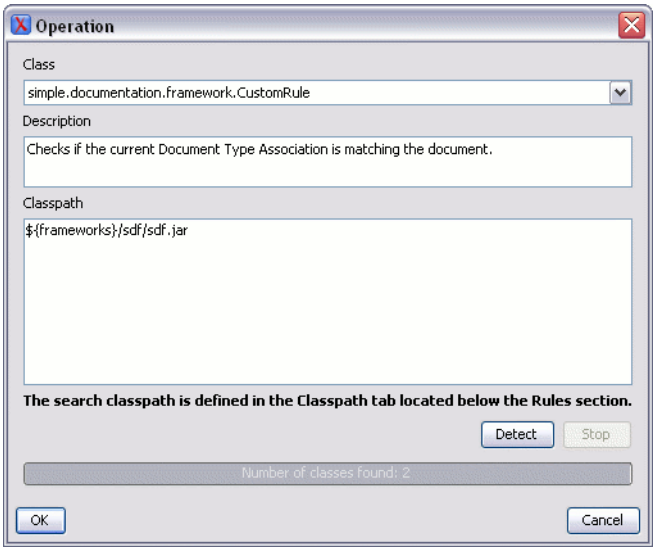
Figure 6.8. Adding a classpath entry

6. Clear the rules we defined before by using the − Remove button.

   Press the + Add button from the Rules section.

   Press the Choose button that follows the Java class value. The following dialog is displayed:

Figure 6.9. Selecting a Java association rule.



To test the association, open the `sdf.xml` sample and validate it.

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.

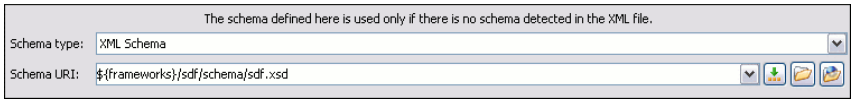
Schema Type — Select from the combo box the value **XML Schema**.

Schema URI — Enter the value `${frameworks}/sdf/schema/sdf.xsd`. We should use the `${frameworks}` editor variable in the schema URI path instead of a full path in order to be valid for different oXygen installations.

Important

The `${frameworks}` variable is expanded at the validation time into the absolute location of the directory containing the frameworks.

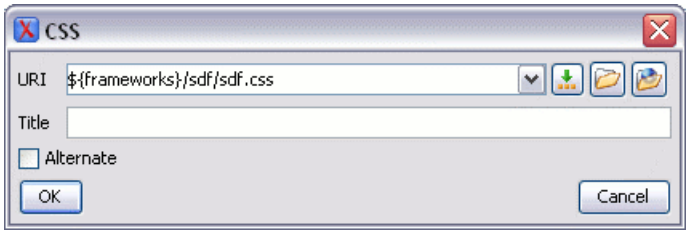
Figure 6.10. The Schema panel



Author CSS Settings

Select the Author tab from the Document Type edit dialog. By clicking on the CSS label in the right part of the tab the list of associated CSS files is shown. Add the URI of the CSS file `sdf.css` we already defined. We should use the `${frameworks}`editor variable in the file path.

Figure 6.11. CSS settings dialog



The Title text field refers to a symbolic name for the stylesheet. When adding several stylesheets with different titles to a Document Type association, the content author can select what CSS will be used for editing from the **Author CSS Alternatives** toolbar.

This combo-box from the toolbar is also populated in case your XML document refers CSS files directly using `xml-stylesheet` processing instructions, and the processing instructions define titles for the CSS files.

Note

The CSS settings dialog allows to create a *virtual*`xml-stylesheet` processing instructions. The CSS files defined in the Document Type Association dialog and the `xml-stylesheet` processing instructions from the XML document are processed together, as being all a list of processing instructions.

oXygen Author fully implements the W3C recommendation regarding "Associating Style Sheets with XML documents". For more information see: http://www.w3.org/TR/xml-stylesheet/http://www.w3.org/TR/REC-html40/present/styles.html#h-14.3.2

Testing the Document Type Association

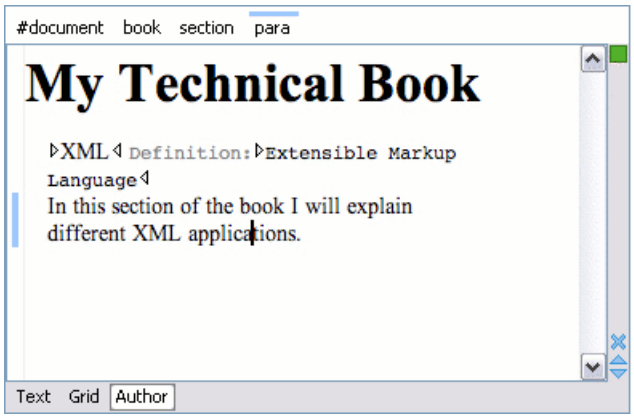
To test the new Document Type create an XML instance that is conforming with our Simple Document Format. We will not specify an XML Schema location directly in the document, using an `xsi:schemaLocation` attribute; oXygen will detect instead its associated document type and use the specified schema.

```
<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 should load the CSS from the document type association and create a layout similar to this:



Packaging and Deploying

Using a file explorer, go to the oXygen `frameworks` directory. Select the `sdf` directory and make an archive from it. Move it to another oXygen installation (eventually on another computer). Extract it in the `frameworks` directory. Start oXygen 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 all platforms distribution. Add your framework files to it, repackage it and send it to the content authors.

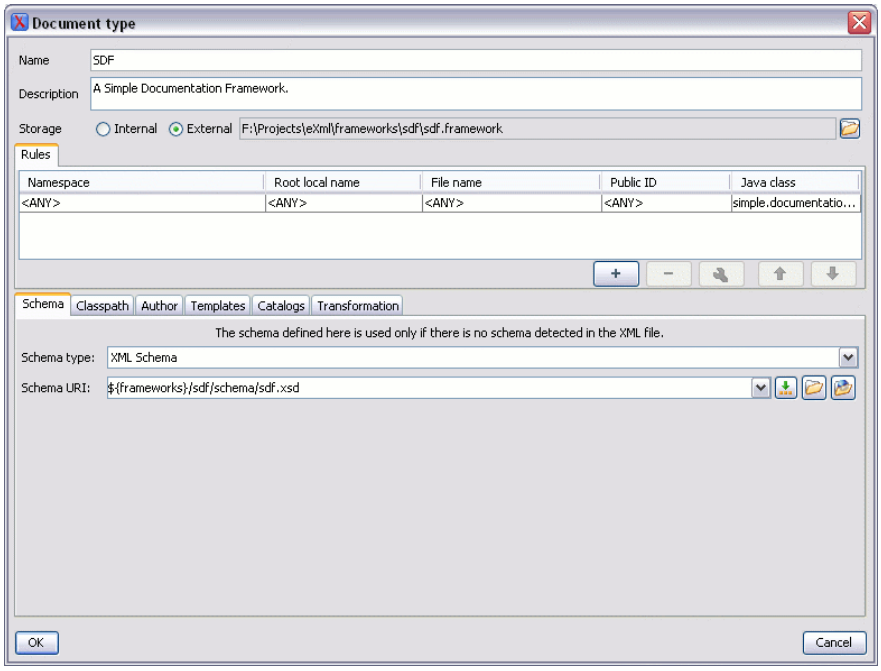
Warning

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/> will not be able to update the Document Type Association options automatically on the deployed computers.

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 6.12. The Document Type Dialog



Configuring Actions, Menus and Toolbars

The oXygen 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.

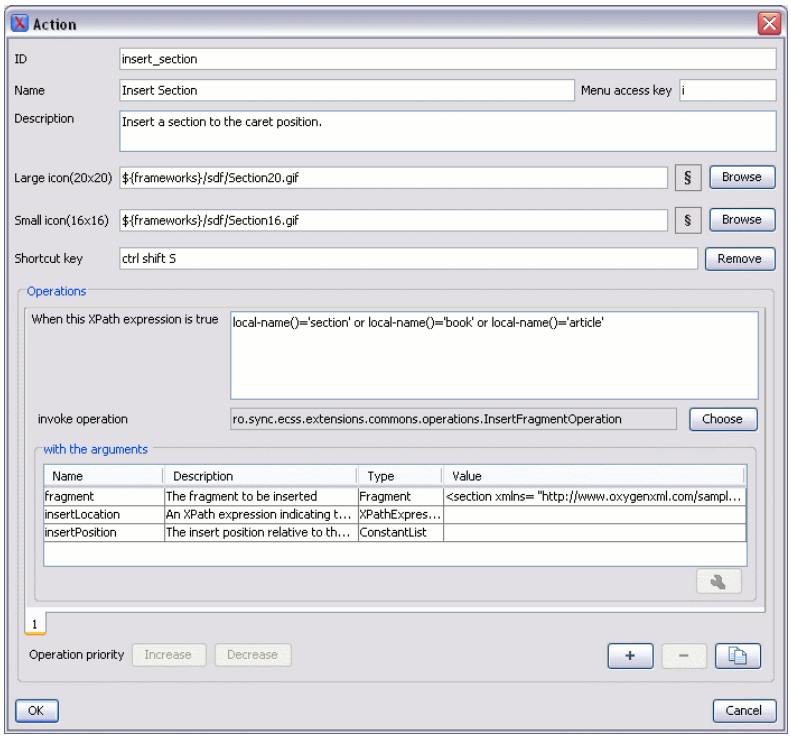
In our example, the `sdf` framework, we created the stylesheet and the validation schema. Now let's add some actions for inserting a `section` and a `table`. To add a new action, follow the procedure:

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.

The Insert Section Action

This paragraph describes how you can define the action for adding a section. We assume the icon files `Section16.gif` for the menu item and `Section20.gif` for the toolbar, are already available. Although we could use the same icon size for both menu and toolbar, usually the icons from the toolbars are larger than the ones placed in the menus. These files should be placed in the `frameworks/sdf` directory.

Figure 6.13. The Action Edit Dialog



ID	An unique identifier for the action. You can use **insert_section**.
Name	The name of the action. It is displayed as a tooltip when the action is placed in the toolbar, or as the menu item name. Use **Insert section**.
Menu access key	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. Since the name is **Insert section**, we can use as a menu access key the letter **s**.
Description	You can add a short description for the action. In our case **Adds a section element** will suffice.
Toolbar icon	The path to the file that contains the toolbar image for the action. A good practice is to store the image files inside the framework directory. This way we can use the editor variable`${frameworks}` to make the image file relative to the framework location. Insert **${frameworks}/sdf/Section20.gif**

Note

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 classpath.

If the image file `Section20.gif` is located in the directory `images` inside the jar archive, you can refer to it by using **/images/Section20.gif**. The jar file must be added into the Classpath list.

Menu icon — The path to the file that contains the menu image. Insert **${frameworks}/sdf/Section16.gif**

Shortcut key — A shortcut key combination for triggering the action. To define it, click in the text field and press the desired key combination. We can choose **Ctrl+Shift+s**.

At this time the action has no functionality added to it. Next we 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.

Note

The XPath expression of an operation mode is evaluated relative to the **current element**. The current element is the one where the caret is positioned. In fact there is hierarchy of elements containing the caret position, but we are considering only the closest one. A simple expression like:

```
title
```

is a relative one and checks if the current element has a "title" child element. To check that the current element is a "section" we can use the expression:

```
local-name()='section'
```

Note

oXygen Author determines the operation to be executed by iterating through the defined operation modes. The first operation whose XPath expression "matched" the current document context gets executed, while the others are being ignored. Make sure you order correctly your operations by placing the ones with more specific XPath selectors before the ones having more generic selectors.

For instance the expression

```
person[@name='Cris' and @age='24']
```

is more specific than

```
person[@name='Cris']
```

The action mode using the first expression must be placed before the one using the second expression in the action modes list.

We decide that we can add sections only if the current element is either a `book`, `article`, or another `section`.

XPath expression — Set the value to:

```
local-name()='section' or local-name()='book' or local-name()='ar
```

Invoke operation — A set of built-in operations is available. A complete list is found in the Author Default Operations section. To this set you can add your own Java operation implementations. In our case, we'll use the **InsertFragmentOperation** built-in operation, that inserts an XML fragment at the caret position.

Configure the arguments by setting the following values:

fragment

```
<section xmlns=
"http://www.oxygenxml.com/sample/documentation">
     <title/>
</section>
```

insertLocation — Leave it empty. This means the location will be the element at the caret position.

insertPosition — Select "Inside".

The Insert Table Action

We 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, we will use the **InsertFragmentOperation**.

We assume the icon files  `Table16.gif` for the menu item and  `Table20.gif` for the toolbar, are already available. We place these files in the `frameworks/sdf` directory.

The action properties:

ID — You can use **insert_table**.

Name — Insert **Insert table**.

Menu access key — Enter the **t** letter.

Description — We can use **Adds a section element**.

Toolbar icon — Use **${frameworks}/sdf/Table20.gif**

Menu icon — Insert **${frameworks}/sdf/Table16.gif**

Shortcut key — We can choose **Ctrl+Shift+t**.

Now let's set up the operation the action uses.

XPath expression — Set it to the value

```
true()
```

Note

true() is equivalent with leaving this field empty.

Invoke operation

We'll use **InsertFragmentOperation** built-in operations that inserts an XML fragment at the caret position.

Configure its arguments by setting the values:

fragment

```
<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

In our example will always add tables at the end of the section that contains the caret position. Use:

```
ancestor::section/*[last()]
```

insertPosition

Select "After".

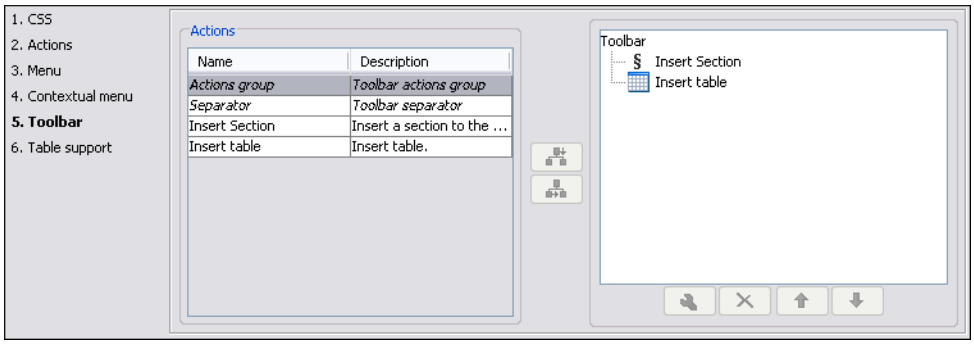
Configuring the Toolbar

Now that we have defined the two actions we can add them to the toolbar.

The first thing to check is that the toolbar Author custom actions should be displayed when switching to the **Author** mode: Right click in the application window upper part, in the area that contains the toolbar buttons and check Author custom actions in the displayed menu if it is unchecked.

Open the Document Type edit dialog for the **SDF** framework and select on the Author tab. Next click on the Toolbar label.

Figure 6.14. Configuring the Toolbar



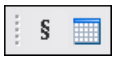
The panel is divided in two sections: the left side contains a list of actions, while the right one contains an action tree, displaying the list of actions added in the toolbar. The special entry called *Separator* allows you to visually separate the actions in the toolbar.

Select the Insert section action in the left and the Toolbar label in the right, then press the Add as child button.

Now select the Insert table action in the left and the Insert section in the right. Press the Add as sibling button.

When opening a **Simple Documentation Framework** test document in Author mode, the toolbar below will be displayed at the top of the editor.

Figure 6.15. Author Custom Actions Toolbar



Configuring the Main Menu

Defined actions can be grouped into customized menus in the oXygen menu bar. For this open the Document Type dialog for the **SDF** framework and click on the Author tab. Next click on the Menu label.

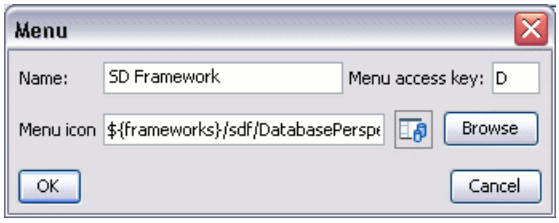
In the left side we have the list of actions and some special entries:

Submenu — Creates a submenu. You can nest an unlimited number of menus.

Separator — Creates a separator into a menu. In this way you can logically separate the menu entries.

In the right side we have the menu tree, having the 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.

Figure 6.16. Changing the Name of the Menu

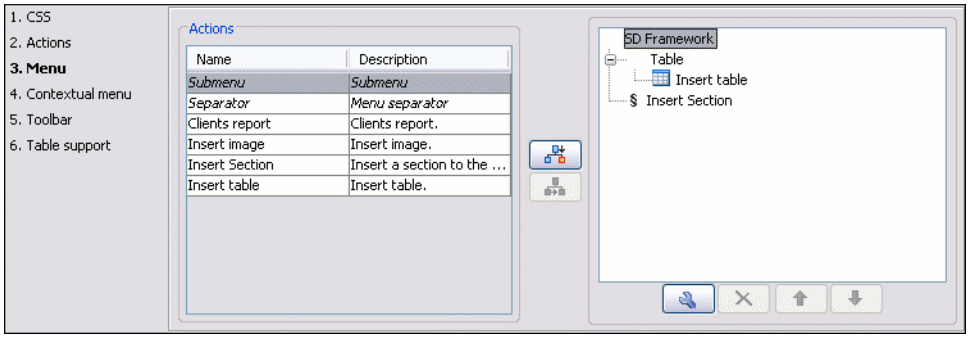


Select the Submenu label in the left an the SD Framework label in the right, then press the Add as child button. Change the submenu name to Table, using the Edit button.

Select the Insert section action in the left and the Table label in the right, then press the Add as sibling button.

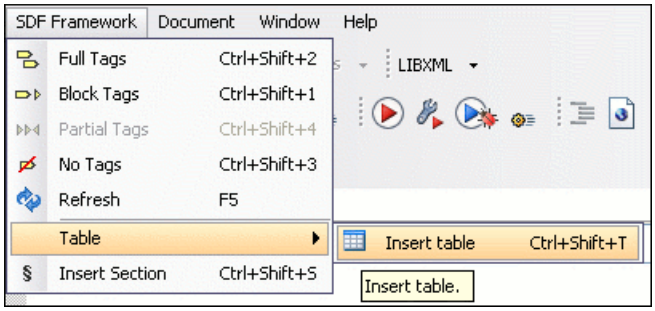
Now select the Insert table action in the left and the Table in the right. Press the Add as child button.

Figure 6.17. Configuring the Menu



When opening a **Simple Documentation Framework** test document in Author mode, the menu we created is displayed in the editor menu bar, between the Debugger and the Document menus. The menu contains at the top the Author actions that are not dependent on the current document type, that is the generic actions. In the menu we find the Table submenu and the two actions:

Figure 6.18. Author Menu



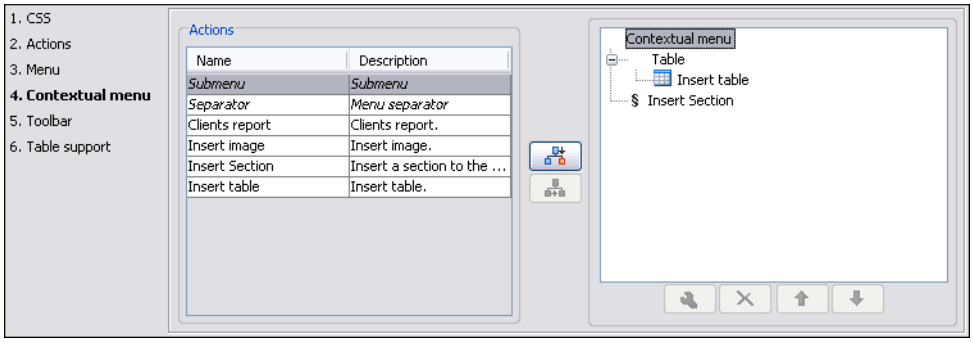
Configuring the Contextual Menu

The contextual menu is shown when you right click (on Mac OS X it is used the combination **ctrl** and mouse click) in the Author editing area. In fact we 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..

Open the Document Type dialog for the **SDF** framework and click on the Author tab. Next click on the Contextual Menu label.

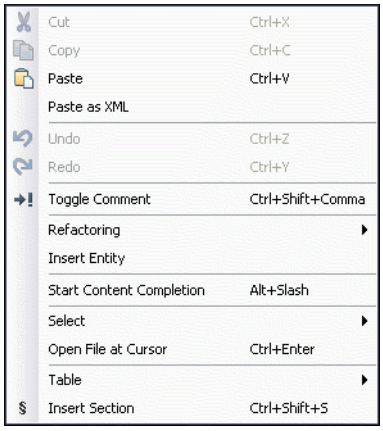
Follow the same steps as explained above in the Configuring the Main Menu, except changing the menu name - the contextual menu has no name.

Figure 6.19. Configuring the Contextual Menu



To test it, open the test file, and click to open the contextual menu. In the lower part there is shown the Table sub-menu and the Insert section action:

Figure 6.20. Author Contextual Menu



Author Default Operations

Below are listed all the operations and their arguments.

InsertFragmentOperation — Inserts an XML fragment at the current caret position. The selection - if there is one, remains unchanged. The arguments are described here.

InsertOrReplaceFragmentOperation — Similar to **InsertFragmentOperation**, except it removes the selected content before inserting the fragment.

InsertOrReplaceTextOperation — Inserts a text. It removes the selected content before inserting the text section.

- text — The text section to insert.

SurroundWithFragmentOperation — Surrounds the selected content by a fragment. Since the fragment can have multiple nodes, the surrounded content will be always placed in the first leaf element. If there is no selection, the operation will simply insert the fragment at the caret position. The arguments are described here.

SurroundWithTextOperation — The surround with text operation takes two arguments, two text values that will be inserted before and after the selected content. If there is no selected content, the two sections will be inserted at the caret position. The arguments of the operation are:

- header — The text that will be placed before the selection.
- footer — The test that will be placed after the selection.

The arguments of `InsertFragmentOperation`

fragment — The value for this argument is a text. This is parsed by the oXygen Author as it was already in the document at the caret position. You can use entities references declared in the document and it is namespace aware. The fragment may have multiple roots.

Note

You can use even undeclared namespace prefixes, if they are declared in the document where the insertion is done. For clarity, we recommend always to prefix and declare namespaces for the elements in the fragment!

Note

If there are namespace declarations in the fragment that are identical to the in the document insertion context, the namespace declaration "attributes" are removed from the fragment elements.

Example 6.1. 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:item id="dty3"/>
</x:root>
```

Example 6.2. 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.

The arguments of `SurroundWithFragmentOperation`

fragment — The XML fragment that will surround the selection.

Example 6.3. Surrounding with a fragment

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 that is 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.

Java API - Extending Author Functionality through Java

oXygen Author has a built-in set of operations covering the insertion of text and XML fragments, see the Author Default Operations. However, there are situations in which we 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.

In the following sections we are presenting the Java programming interface (API) available to the developers. The next Java examples are making use of AWT classes. If you are developing extensions for the <oXygen/> XML Editor plugin for Eclipse you will have to use their SWT counterparts.

We assume you already read the Configuring Actions, Menus, Toolbar section and you are familiar with the oXygen Author customization. You may find the XML schema, CSS and XML sample in the Example Files Listings.

Example 1. Step by Step Example. Simple Use of a Dialog from an Author Operation.

Let's start adding functionality for inserting images, in our **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 our Java implementation we 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.

   Create the directory `lib` in the Java project directory and copy in it the `oxygen.jar` file from the `{oXygen_ installation_directory}/lib` directory. The `oxygen.jar` contains the Java interfaces we have to implement and the API needed to access the Author features.

2. Create the class `simple.documentation.framework.InsertImageOperation`. This class must implement the `ro.sync.ecss.extensions.api.AuthorOperation` interface.

   The interface defines three methods: `doOperation`, `getArguments` and `getDescription`.

   1. The `doOperation` method is invoked when the action is performed either by pressing the toolbar button, selecting the menu item or through the shortcut. It takes as arguments an object of type `AuthorAccess` and a map or argument names and values.

   2. The `getArguments` method is used by oXygen when the action is configured, it returns the list of arguments (name and type) that are accepted by the operation.

   3. The `getDescription` method is also used by Oxygen when the operation is configured and its return value describes what the operation does.

   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.";
}
```

The complete source code of our operation is found in the Example Files Listings, the Java Files section.

Important

Make sure you always specify the namespace of the inserted fragments.

3. Package the compiled class into a jar file. An example of an ANT script that packages the `classes` directory 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` directory.

5. Add the `sdf.jar` to the Author class path. To do 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.

   Press the + Add button . In the displayed dialog enter the location of the jar file, relative to the oXygen `frameworks` directory:

Figure 6.21. Adding a classpath entry

6. Let's create now the action which will use the defined operation. Click on the Actions label.

   We assume the icon files `Image16.gif` for the menu item and `Image20.gif` for the toolbar are already available. Place these files in the `frameworks/sdf` directory.

   Define the action properties:

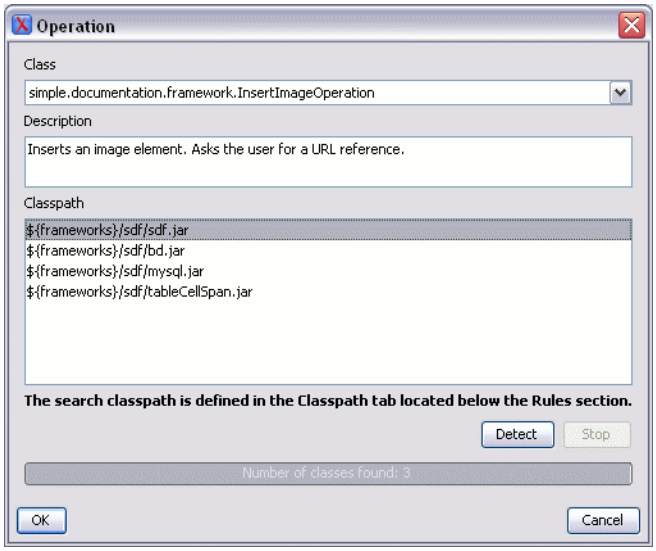
ID	An unique identifier for the action. Use **insert_image**.
Name	The name of the action. Use **Insert image**.
Menu access key	Use the **i** letter.
Description	Enter the text **Inserts an image**.
Toolbar icon	Enter here: **${frameworks}/sdf/Image20.gif**
Menu icon	Enter here: **${frameworks}/sdf/Image16.gif**
Shortcut key	We will use: **Ctrl+Shift+i**.

   Now let's set up the operation.

   We are adding images only if the current element is a `section`, `book` or `article`.

XPath expression	Set the value to: `local-name()='section' or local-name='book' or local-name='ar`
Invoke operation	In this case, we'll use our Java operation we defined earlier. Press the Choose button, then select `simple.documentation.framework.InsertImageOperation`.

Figure 6.22. Selecting the Operation

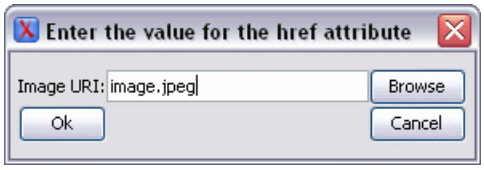


This operation has no arguments.

7. Add the action to the toolbar, using the Toolbar panel.

To test the action, you can open the `sdf.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.

Figure 6.23. Dialog Displayed by the Insert Image Operation



Example 2. Operations with Arguments. Report from Database Operation.

In this example we 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 IDE.

   Create the directory `lib` in the Java project directory and copy in it the `oxygen.jar` file from the `{oXygen_ installation_directory}/lib` directory.

2. Create the class `simple.documentation.framework.QueryDatabaseOperation`. This class must implements 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{
```

Let's define the arguments of the operation. For each of them we 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";
```

We 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.

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);
  }
 }
```

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 '<' and '&' 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();
    }
```

The complete source code of our operation is found in the Example Files Listings, the Java Files section.

3. Package the compiled class into a jar file.

4. Copy the jar file and the JDBC driver files into the `frameworks/sdf` directory.

5. 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.

6. Click on the Actions label.

   The action properties are:

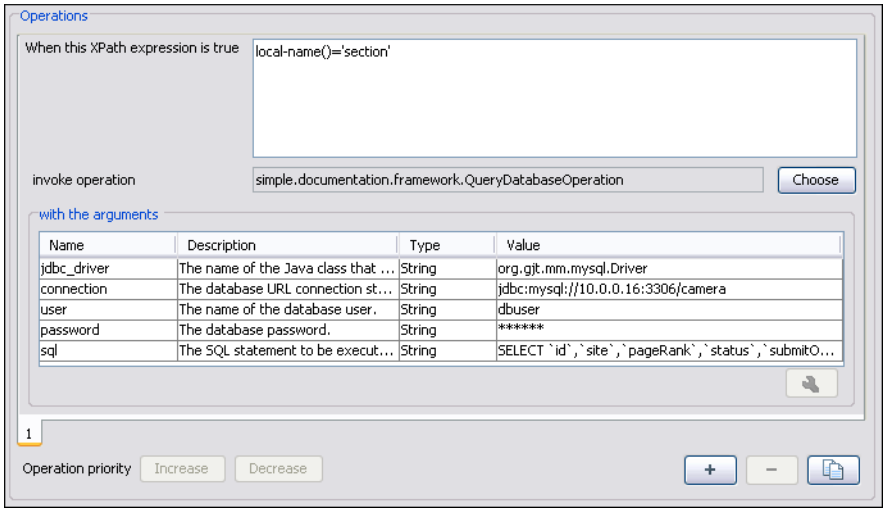
ID	An unique identifier for the action. Use **clients_report**.
Name	The name of the action. Use **Clients Report**.
Menu access key	Use the letter **r**.
Description	Enter the text **Connects to the database and collects the list of clients**.
Toolbar icon	Enter here: **${frameworks}/sdf/TableDB20.gif** We assume the image  `TableDB20.gif` for the toolbar action is already present in the `frameworks/sdf` directory.
Menu icon	Leave empty.
Shortcut key	We will use: **Ctrl+Shift+c**.

   Let's set up the operation. The action will work only if the current element is a `section`.

XPath expression	Set the value to: `local-name()='section'`
Invoke operation	In this case, we'll use our Java operation we defined earlier. 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 is: `SELECT userID, email FROM users` but it can be any valid SELECT expression which can be applied to the database.

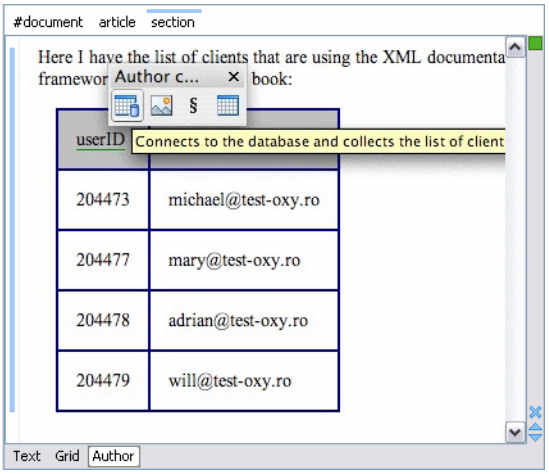
7. Add the action to the toolbar, using the Toolbar panel.

Figure 6.24. Java Operation Arguments Setup



To test the action you can open the `sdf.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 6.25. Table Content Extracted from the Database



Configuring a Table Cell Span Provider

In our 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, we need to indicate oXygen Author a method to determine the cell spanning. If we use the cell element attributes **rowspan** and **colspan** or **rows** and **cols**, oXygen 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. We will need to implement a Java extension class for defining the cell spanning.

1. Create a new Java project, in your IDE.

Create the `lib` directory in the Java project directory and copy in it the `oxygen.jar` file from the `{oXygen_ installation_directory}/lib` directory.

2. Create the class `simple.documentation.framework.TableCellSpanProvider`. This class must implements the `ro.sync.ecss.extensions.api.AuthorTableSpanSupport` 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 {
```

The method `init` is taking as argument the `AuthorElement` that represents the XML `table` element. In our case the cell span is specified for each of the cells so we 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) {
}
```

The method `getColSpan` 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;
}
```

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;
    }
```

The complete source code of our operation is found in the Example Files Listings, the Java Files section.

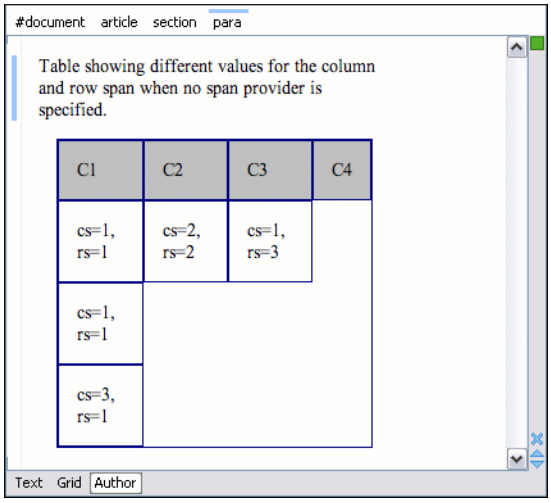
3. Package the compiled class into a jar file.
4. Copy the jar file into the `frameworks/sdf` directory.
5. Add the jar file to the Author class path.
6. Register the Java class by clicking on the Table support label. Press the Choose button and select from the displayed dialog the name of the class: `TableCellSpanProvider`.

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>
```

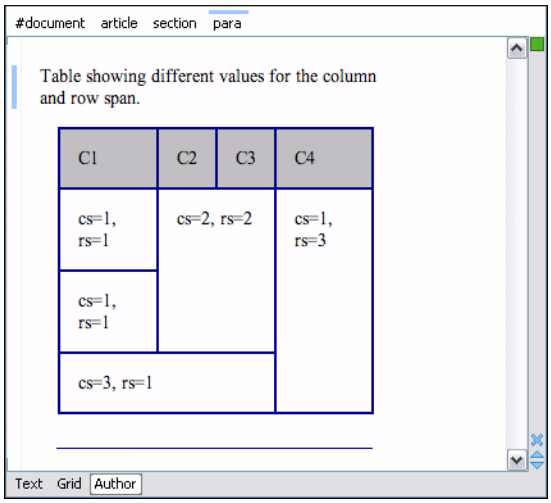
When no table cell span provider is specified, the table has the following layout:

Figure 6.26. Table layout when no cell span provider is specified



When the above implementation is configured, the table has the correct layout:

Figure 6.27. Cells spanning multiple rows and columns.



Configuring New File Templates

We 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 the files that are found here are considered templates for the respective document type. The template name is taken from the name of the file, and the template kind is detected from the file extension.

Create the `templates` directory into the `frameworks/SDF` directory. The directory tree for our documentation framework is now:

```
oxygen
  frameworks
```

```
 sdf
   schema
   css
   templates
```

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:

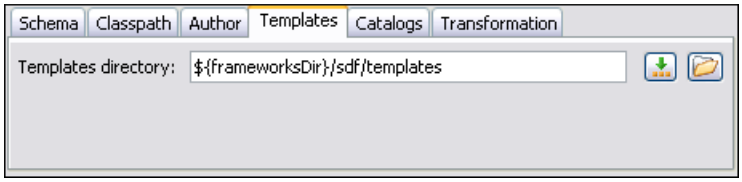
```
<?xml version="1.0" encoding="UTF-8"?>
<book xmlns="http://www.oxygenxml.com/sample/documentation"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:abs="http://www.oxygenxml.com/sample/documentation/abstracts">
    <title>Book Template Title</title>
    <section>
        <title>Section 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>
```

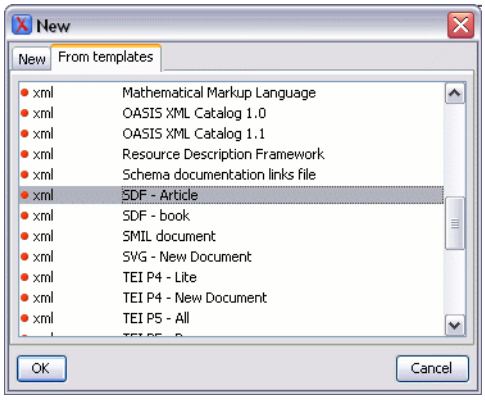
Open the Document Type dialog for the **SDF** framework and click on the Templates tab. Enter in the Templates directory text field the value `${frameworksDir}/sdf/templates`. As we already seen before, it is recommended that all the file references made from a Document Type Association to be relative to the `${frameworks}` directory. Binding a Document Type Association to an absolute file (e.g: "C:\some_dir\templates") makes the association difficult to share between users.

Figure 6.28. Setting the templates directory



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.

Figure 6.29. Templates displayed in the New Dialog.



Configuring XML Catalogs

You can add catalog files to your Document Type Association using the Catalogs tab from the Document Type dialog.

Important

oXygen XML Editor collects all the catalog files listed in the installed frameworks. No matter what the Document Type Association matches the edited file, all the catalog mappings are considered when resolving external references.

Important

The catalog files settings are available for all editing modes, not only for the **Author** mode.

In the XML sample file for **SDF** we did not used a `xsi:schemaLocation` attribute, but instead we let the editor use the schema from the association. However there are cases in which we must refer for instance the location of a schema file from a remote web location. In such cases the catalog may be used to map the web location to a local file system entry.

In the following section we will present an use-case for the XML catalogs, by modifying our `sdf.xsd` XML Schema file from the Example Files Listings.

The `sdf.xml` file refers the other file `abs.xsd` through an `import` element:

```
<xs:import namespace=
 "http://www.oxygenxml.com/sample/documentation/abstracts"
 schemaLocation="abs.xsd"/>
```

The `schemaLocation` attribute references the `abs.xsd` file located in the same directory. What if the file was on the web, at the `http://www.oxygenxml.com/SDF/abs.xsd` location for instance? In this case the attribute value will be:

```
<xs:import namespace=
 "http://www.oxygenxml.com/sample/documentation/abstracts"
 schemaLocation="http://www.oxygenxml.com/SDF/abs.xsd"/>
```

There is a problem with this approach. What happens if an Internet connection is not available? How will we check our document for errors if a part of the schema is not available? The answer is to create a catalog file that will help the parser locate the missing piece containing the mapping:

```
http://www.oxygenxml.com/SDF/abs.xsd -> ../local_path/abs.xsd
```

To do this 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">
    <system
      systemId="http://www.oxygenxml.com/SDF/abs.xsd"
      uri="schema/abs.xsd"/>
</catalog>
```

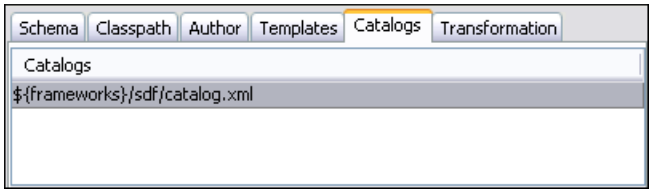
This means that all the references to `http://www.oxygenxml.com/SDF/abs.xsd` must be resolved to the `abs.xsd` file located in the `schema` directory.

Note

The references in the XML catalog files are relative to the directory that contains the catalog.

Save the catalog file and modify the `sdf.xsd` file by changing its `import` element, then add the catalog to the Document Type association. You can do this in the **Catalogs** tab by pressing the New button. Enter `${frameworks}/sdf/catalog.xml` in the displayed dialog.

Figure 6.30. Adding Catalogs to the Document Type Association



To test the catalog settings, restart oXygen and try to validate a new sample **Simple Documentation Framework** document. There should be no errors.

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.

In the following section we will create a transformation scenario for our framework.

Create the directory `xsl` in the directory `frameworks/sdf`. The directory structure for our documentation framework should be:

```
oxygen
  frameworks
     sdf
       schema
       css
       templates
       xsl
```

Create the `sdf.xsl` file in the `xsl` directory. The complete content of the `sdf.xsl` file is found in the Example Files Listings.

Open the Options/Preferences/Document Type Associations. Open the Document Type dialog for the **SDF** framework then choose the Transformation tab. Click on the New. In the Edit Scenario dialog, fill the following fields:

Name — The name of the transformation scenario. Enter *SDF to HTML*.

XSL URL — `${frameworks}/sdf/xsl/sdf.xsl`

Transformer — Saxon 9B.

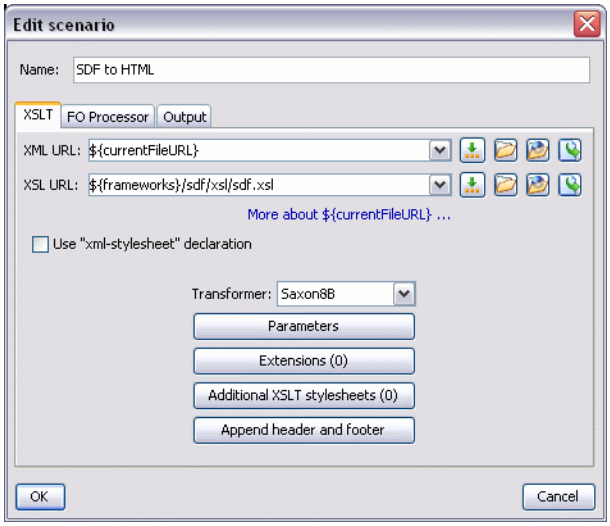
Change to the Output tab. Change the fields:

Save as — `${cfd}/${cfn}.html` This means the transformation output file will have the name of the XML file and the *html* extension and will be placed in the same directory.

Open in browser — Enable this option.

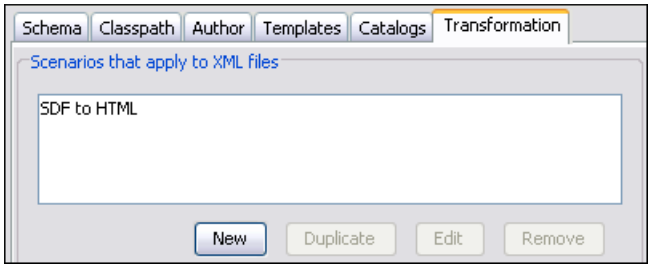
Saved file — Enable this checkbox.

Figure 6.31. Configuring a transformation scenario



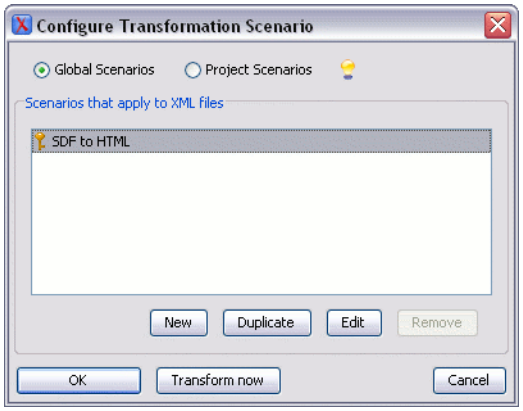
Now the scenario is listed in the Transformation tab:

Figure 6.32. The transformation tab



To test the transformation scenario we created, open the **SDF** XML sample from the Example Files Listings. Click on the Apply Transformation Scenario button. The Configure Transformation Dialog is displayed. Its scenario list contains the scenario we defined earlier *SDF to HTML*. Click on it then choose Transform now. The HTML file should be saved in the same directory as the XML file and opened in the browser.

Figure 6.33. Selecting the predefined scenario



Note

The key symbol indicates that the scenario is read-only. It has this state because the scenario was loaded from a Document Type Association. The content authors can still change parameters and other settings if they are duplicating the scenario and edit the duplicate. In this case the copy of the scenario is created in the user local settings.

CSS support in oXygen Author

CSS 2.1 features

Supported selectors

The following CSS level 2.1 selectors are supported by the oXygen Author:

Table 6.2. Supported CSS 2.1 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)
E F	Descendant selector	Matches any F element that is a descendant of an E element.
E > F	Child selectors	Matches any F element that is a child of an element E.
E:first-child	The :first-child pseudo-class	Matches element E when E is the first child of its parent.
E:lang(c)	The :lang() pseudo-class	Matches element of type E if it is in (human) language c (the document language specifies how language is determined).
E + F	Adjacent selector	Matches any F element immediately preceded by a sibling element E.
E[foo]	Attribute selector	Matches any E element with the "foo" attribute set (whatever the value).
E[foo="warning"]	Attribute selector	Matches any E element whose "foo" attribute value is exactly equal to "warning".
E[foo~="warning"]	Attribute selector	Matches any E element whose "foo" attribute value is a list of space-separated values, one of which is exactly equal to "warning".
E[lang|="en"]	Attribute selector	Matches any E element whose "lang" attribute has a hyphen-separated list of values beginning (from the left) with "en".
E:before and E:after	Pseudo elements	The ':before' and ':after' pseudo-elements can be used to insert generated content before or after an element's content.

Unsupported selectors

The following CSS level 2.1 selectors are **not supported** by the oXygen Author:

Table 6.3. Unsupported CSS 2.1 selectors

Expression	Name	Description/Example
E#myid	ID selectors	Matches any E element with ID equal to "myid".
E:link, E:visited	The link pseudo-class	Matches element E if E is the source anchor of a hyperlink of which the target is not yet visited (:link) or already visited (:visited).
E:active, E:hover, E:focus	The dynamic pseudo-classes	Matches E during certain user actions.
E:first-line	The :first-line pseudo-class	The :first-line pseudo-element applies special styles to the contents of the first formatted line of a paragraph.
E:first-letter	The :first-letter pseudo-class	The :first-letter pseudo-element must select the first letter of the first line of a block, if it is not preceded by any other content (such as images or inline tables) on its line. The :first-letter pseudo-element may be used for "initial caps" and "drop caps", which are common typographical effects.

Properties Support Table

All the properties belonging to the *aural* and *paged* categories are **not supported** in oXygen Author. The properties from the table below belong to the *visual* category.

Table 6.4. CSS Level 2.1 Properties and their support in oXygen Author

Name	Supported Values	Not Supported Values
'background-attachment'		ALL
'background-color'	<color> | inherit	transparent
'background-image'		ALL
'background-position'		ALL
'background-repeat'		ALL
'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> || '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

Name	Supported Values	Not Supported Values
'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	
'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 | 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	
'margin-top' 'margin-bottom'	<margin-width> | inherit	
'margin'	<margin-width> | inherit	
'max-height'		ALL
'max-width'	<length> | <percentage> | none | inherit - supported only for tables	
'min-height'		ALL
'min-width'	<length> | <percentage> | inherit - supported only for tables	
'outline-color'		ALL
'outline-style'		ALL
'outline-width'		ALL
'outline'		ALL
'overflow'		ALL

Name	Supported Values	Not Supported Values
'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	collapse
'white-space'	normal | pre | nowrap | pre-wrap | pre-line	
'width'	<length> | <percentage> | auto | inherit - Used only for tables	
'word-spacing'		ALL
'z-index'		ALL

oXygen CSS Extensions

Media Type oxygen

The style sheets can specify how a document is to be presented on different media: on the screen, on paper, speech synthesiser, etc. You can specify that some of the features of your CSS stylesheet should be taken into account only in the oXygen 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 who does not recognize `@media oxygen` and bold and underlined in oXygen Author.

You can use this media type to group specific oXygen CSS features and also to hide them when opening the documents with other viewers.

Supported Features from CSS Level 3

Namespace Selectors

In the current 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 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 the 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.

Example 6.4. 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:

sync|A	represents the name A in the `http://sync.example.org` namespace.
|B	represents the name B that belongs to NO NAMESPACE.
*|C	represents the name C in ANY namespace, including NO NAMESPACE.
D	represents the name D in the `http://example.com/foo` namespace.

Example 6.5. Defining only prefixed namespaces

Given the namespace declaration:

```
@namespace sync "http://sync.example.org";
```

Then:

sync|A represents the name A in the `http://sync.example.org` namespace.

|B represents the name B that belongs to NO NAMESPACE.

*|C represents the name C in ANY namespace, including NO NAMESPACE.

D represents the name D in ANY namespace, including NO NAMESPACE.

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 Author the use of `attr()` function is not available only for the `content` property but 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 ;
attribute_type ;
default_value ;
```

attribute_name The name of the attribute. This argument is required.

attribute_type The type of the attribute. This argument is optional. If it is missing the type of the argument is considered `string`. This argument indicates what is the meaning of the attribute value and helps to perform conversions of this value. oXygen Author accepts one of the following types:

color The value represents a color. The attribute may specify a color in different formats. oXygen Author supports colors specified either by name: `red`, `blue`, `green`, etc. or as an RGB hexa-decimal value `#FFEEFF`.

	url	The value is an URL pointing to a media object. oXygen Author supports only images. The attribute value can be a complete URL, or a relative one to the XML document.
	integer	The value must be interpreted as an integer.
	number	The value must be interpreted as a float number.
	length	The value must be interpreted as an integer.
	percentage	The value must be interpreted relative to another value (length, size) expressed in percents.
	em	The value must be interpreted as a size. 1 em is equal to the *font-size* of the relevant font.
	ex	The value must be interpreted as a size. 1 ex is equal to the *height* of the **x** character of the relevant font.
	px	The value must be interpreted as a size expressed in pixels relative to the viewing device.
	mm	The value must be interpreted as a size expressed in millimeters.
	cm	The value must be interpreted as a size expressed in centimeters.
	in	The value must be interpreted as a size expressed in inches. 1 inch is equal to 2.54 centimeters.
	pt	The value must be interpreted as a size expressed in points. The points used by CSS2 are equal to 1/72th of an inch.
	pc	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.	

Example 6.6. 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`. We 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);
```

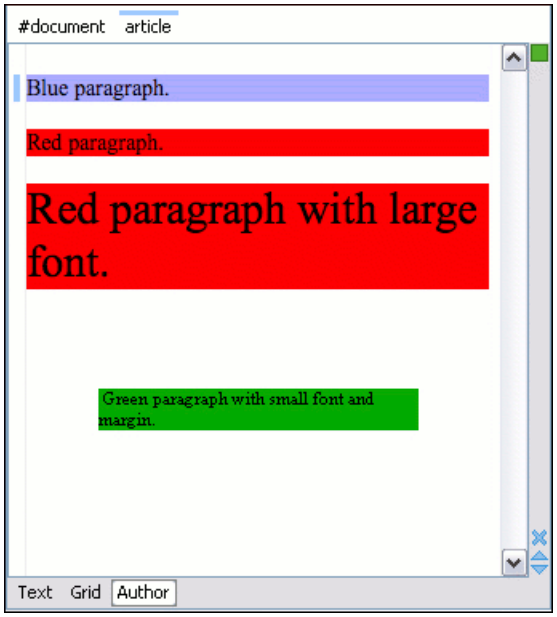
The attribute `font_size` represents the font size in *em* units. We can use this value to change the style of the element:

```
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:



Additional Custom Selectors

Oxygen Author provides support for selecting additional types of nodes. These custom selectors apply to: *document*, *doctype sections*, *processing-instructions*, *comments*, *CDATA sections*, and *entities*. In order for the custom selectors to work in your CSS files you will have to declare the Author extensions namespace at the beginning of the stylesheet documents:

```
@namespace oxy url('http://www.oxygenxml.com/extensions/author');
```

Example rules:

- *document*

```
oxy|document {
    display:block;
}
```

- *doctype sections*

```
oxy|doctype {
    display:block;
    color:blue;
    background-color:transparent;
}
```

- *processing-instructions*

```
oxy|processing-instruction {
    display:block;
    color:purple;
    background-color:transparent;
}
```

- *comments*

```
oxy|comment {
    display:block;
    color:green;
    background-color:transparent;
}
```

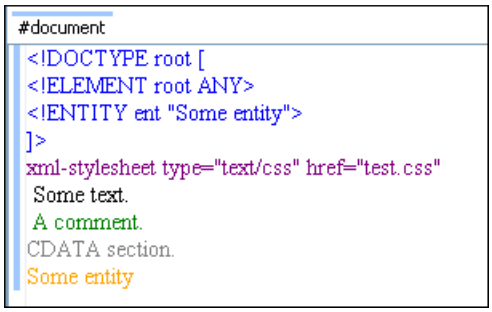
- *CDATA sections*

```
oxy|cdata{
    display:block;
    color:gray;
    background-color:transparent;
}
```

- *entities*

```
oxy|entity {
    display:morph;
    editable:false;
    color:orange;
    background-color:transparent;
}
```

A sample document rendered using these rules:



Additional Properties

Folding elements: `foldable` and `not-foldable-child` properties

oXygen 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.

To define the element whose content can be folded by the user, you must use the property: `foldable:true;`.

When collapsing an element, it is useful to keep some of its content visible, like a short description of the collapsed region. The property `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.

Note

Both `foldable` and `not-foldable-child` are non standard properties and are recognized only by oXygen Author.

Example 6.7. Folding DocBook Elements

All the elements below can have a `title` child element and are considered to be logical sections. We 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 {
    foldable:true;
    not-foldable-child: title;
}
```

Example Files Listings

The Simple Documentation Framework Files

XML Schema files

`sdf.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"
  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: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:choice>
</xs:complexType>

<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="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>

</xs: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>
```

CSS Files

sdf.css

```
/* 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{
    display:block;
}

/* Horizontal flow */
b,i {
    display:inline;
}
```

```
section{
    margin-left:1em;
    margin-top:1em;
}

section{
    foldable:true;
    not-foldable-child: title;
}


/* 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;
}

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

```
<?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>
                <header>
                    <td>XSLT Elements</td>
                    <td>Description</td>
                </header>
```

```
            <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 column_span="2">End of the list</td>
            </tr>
        </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>
            <header>
                <td>Function</td>
                <td>Description</td>
            </header>
            <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>
            </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.gif"/>
        <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

```
<?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">
```

```
    <img src="{@href}"/>
</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>
```

Java Files

InsertImageOperation.java

```
    package simple.documentation.framework;

    import java.awt.GridBagConstraints;
    import java.awt.GridBagLayout;
    import java.awt.event.ActionEvent;
    import java.awt.event.ActionListener;
    import java.awt.event.WindowAdapter;
    import java.awt.event.WindowEvent;
    import java.io.File;
    import java.net.MalformedURLException;

    import javax.swing.BorderFactory;
    import javax.swing.JButton;
    import javax.swing.JDialog;
    import javax.swing.JFileChooser;
    import javax.swing.JFrame;
    import javax.swing.JLabel;
    import javax.swing.JPanel;
    import javax.swing.JTextField;
    import javax.swing.filechooser.FileFilter;

    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 InsertImageOperation implements AuthorOperation {

     //
     // Implementing the Author Operation Interface.
     //

     /**
      * 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.";
}

//
// End of interface implementation.
//

//
// Auxiliary methods.
//

/**
 * Displays the URL dialog.
 *
 * @param parentFrame The parent frame for
 * the dialog.
 * @return The selected URL string value,
 * or the empty string if the user canceled
 * the URL selection.
 */
private String displayURLDialog(JFrame parentFrame) {

 final JDialog dlg = new JDialog(parentFrame,
 "Enter the value for the href attribute", true);
 JPanel mainContent = new JPanel(new GridBagLayout());

 // The text field.
```

```
GridBagConstraints cstr = new GridBagConstraints();
cstr.gridx = 0;
cstr.gridy = 0;
cstr.weightx = 0;
cstr.gridwidth = 1;
cstr.fill = GridBagConstraints.HORIZONTAL;
mainContent.add(new JLabel("Image URI:"), cstr);

cstr.gridx = 1;
cstr.weightx = 1;
final JTextField urlField = new JTextField();
urlField.setColumns(15);
mainContent.add(urlField, cstr);

// Add the "Browse button."
cstr.gridx = 2;
cstr.weightx = 0;
JButton browseButton = new JButton("Browse");
browseButton.addActionListener(new ActionListener() {

 /**
  * Shows a file chooser dialog.
  */
 public void actionPerformed(ActionEvent e) {
  JFileChooser fileChooser = new JFileChooser();

  fileChooser.setMultiSelectionEnabled(false);
  // Accepts only the image files.
  fileChooser.setFileFilter(new FileFilter() {
   public String getDescription() {
    return "Image files";
   }

   public boolean accept(File f) {
    String fileName = f.getName();
    return f.isFile() &&
      ( fileName.endsWith(".jpeg")
      || fileName.endsWith(".jpg")
      || fileName.endsWith(".gif")
      || fileName.endsWith(".png")
      || fileName.endsWith(".svg"));
   }
  });
  if (fileChooser.showOpenDialog(dlg)
          == JFileChooser.APPROVE_OPTION) {
   File file = fileChooser.getSelectedFile();
   try {
    // Set the file into the text field.
    urlField.setText(file.toURL().toString());
   } catch (MalformedURLException ex) {
    // This should not happen.
    ex.printStackTrace();
   }
  }
```

```
  }
 });
 mainContent.add(browseButton, cstr);

 // Add the "Ok" button to the layout.
 cstr.gridx = 0;
 cstr.gridy = 1;
 cstr.weightx = 0;
 JButton okButton = new JButton("Ok");
 okButton.addActionListener(new ActionListener() {
  public void actionPerformed(ActionEvent e) {
   dlg.setVisible(false);
  }
 });
 mainContent.add(okButton, cstr);
 mainContent.setBorder(
    BorderFactory.createEmptyBorder(10, 5, 10, 5));

 // Add the "Cancel" button to the layout.
 cstr.gridx = 2;
 JButton cancelButton = new JButton("Cancel");
 cancelButton.addActionListener(new ActionListener() {
  public void actionPerformed(ActionEvent e) {
   urlField.setText("");
   dlg.setVisible(false);
  }
 });
 mainContent.add(cancelButton, cstr);

 // When the user closes the dialog
 // from the window decoration,
 // assume "Cancel" action.
 dlg.addWindowListener(new WindowAdapter() {
  public void windowClosing(WindowEvent e) {
   urlField.setText("");
  }
 });

 dlg.getContentPane().add(mainContent);
 dlg.pack();
 dlg.setLocationRelativeTo(parentFrame);
 dlg.setVisible(true);
 return urlField.getText();
}

/**
 * Test method.
 *
 * @param args The arguments are ignored.
 */
public static void main(String[] args) {
 InsertImageOperation operation =
         new InsertImageOperation();
 System.out.println("Choosen URL: " +
```

```
            operation.displayURLDialog(new JFrame()));
        }
       }
```

QueryDatabaseOperation.java

```
       package simple.documentation.framework;

       import java.sql.Connection;
       import java.sql.DriverManager;
       import java.sql.ResultSet;
       import java.sql.ResultSetMetaData;
       import java.sql.SQLException;
       import java.util.Properties;

       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{

        private static String ARG_JDBC_DRIVER ="jdbc_driver";
        private static String ARG_USER ="user";
        private static String ARG_PASSWORD ="password";
        private static String ARG_SQL ="sql";
        private static String ARG_CONNECTION ="connection";

        /**
         * @return The array of arguments the developer must specify when
         * configuring the action.
         */
        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;
}

/**
 * @return The operation description.
 */
public String getDescription() {
 return "Executes a database query and puts the result in a table.";
}

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);
 }
}

/**
 * Creates a connection to the database, executes
 * the SQL statement and creates an XML fragment
 * containing a table element that wraps the data
 * from the result set.
 *
 *
 * @param jdbcDriver The class name of the JDBC driver.
 * @param connectionURL The connection URL.
 * @param user The database user.
 * @param password The password.
```

```
     * @param sql The SQL statement.
     * @return The string containing the XML fragment.
     *
     * @throws SQLException thrown when there is a
     * problem accessing the database or there are
     * erors in the SQL expression.
     * @throws ClassNotFoundException when the JDBC
     * driver class could not be loaded.
     */
    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();
        }

        /**
         * Some of the values from the database table
         * may contain characters that must be escaped
         * in XML, to ensure the fragment is well formed.
         *
         * @param object The object from the database.
         * @return The escaped string representation.
         */
        private String xmlEscape(Object object) {
         String str = String.valueOf(object);
         return str.
          replaceAll("&", "&amp;").
          replaceAll("<", "&lt;");
        }
    }
```

TableCellSpanProvider.java

```
package simple.documentation.framework;

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 {


 /**
  * Extracts the integer specifing what is the width
  * (in columns)  of the cell
  * representing in the table layout the cell element.
```

```
 */
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;
}

/**
 * Extracts the integer specifing what is the
 * height (in rows) of the cell
 * representing in the table layout the cell element.
 */
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;
}

/**
 * Ignored. We do not extract data from the
 * <code>table</code> element.
 */
public void init(AuthorElement table) {
}

public String getDescription() {
 return
"Implementation for the Simple Documentation Framework table layout.";
 }
}
```

CustomRule.java

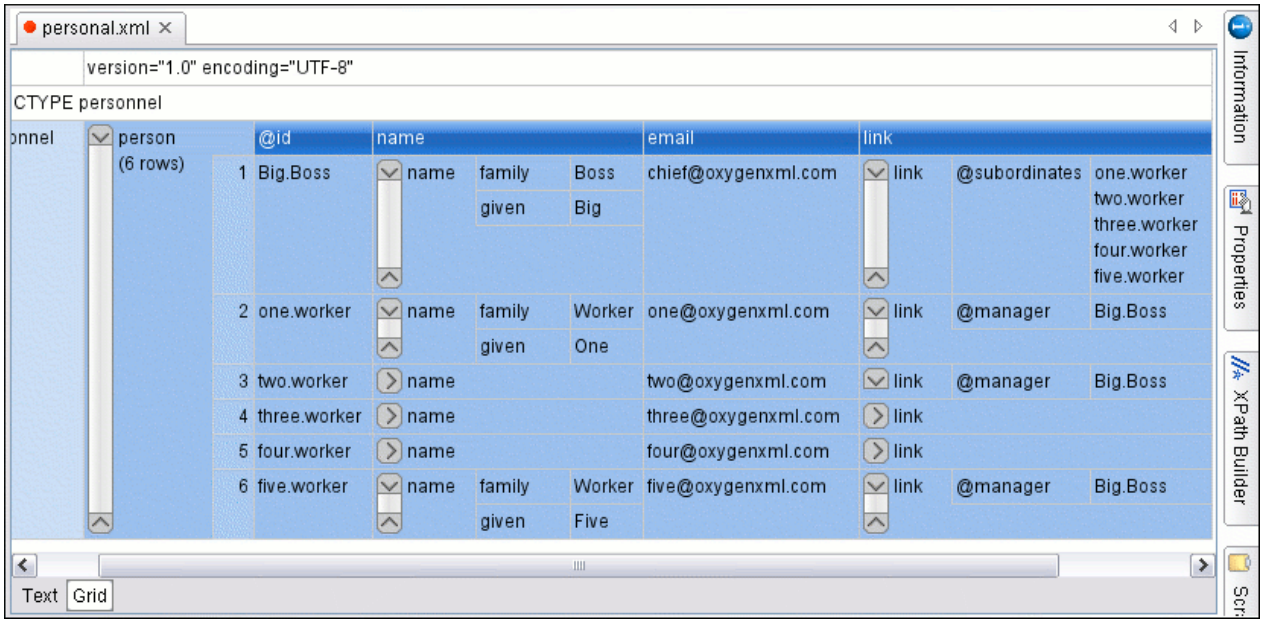
```
package simple.documentation.framework;

import org.xml.sax.Attributes;

import ro.sync.ecss.extensions.api.DocumentTypeCustomRuleMatcher;

public class CustomRule implements
                DocumentTypeCustomRuleMatcher {
 /**
  * Checks if the root namespace is the one
  * of our documentation framework.
  */
 public boolean matches(
   String systemID,
   String rootNamespace,
   String rootLocalName,
   String doctypePublicID,
   Attributes rootAttributes) {

  return "http://www.oxygenxml.com/sample/documentation"
           .equals(rootNamespace);
 }

 public String getDescription() {
  return "Checks if the current Document Type "+
               "Association is matching the document.";
 }
}
```

Chapter 7. Grid Editor

Introduction

In the grid editor the XML document is displayed as a structured grid of nested tables in which the text content can be modified by non technical users 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. Also the document structure can be changed easily with drag and drop operations on the grid components.

Figure 7.1. The Grid Editor

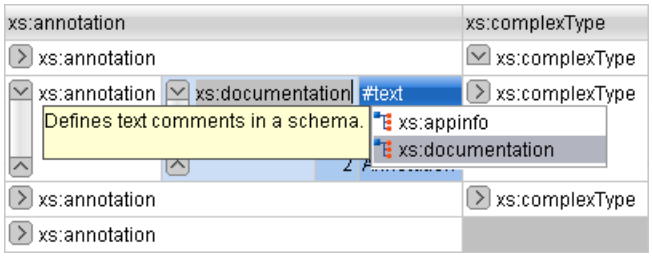


You can switch between the text tab and the grid tab of the editor panel with the two buttons *Text* and *Grid* available at the bottom of the editor panel. Also the switch can be performed with the actions Document+Edit mode → Grid and Document+Edit mode → Text

If the edited document is associated with a schema (DTD, XML Schema, Relax NG, etc.), the editor offers content completion popups for the element and attributes names and values. If you choose to insert an element that has required content, it will be inserted automatically including the subtree of needed elements and attributes.

To display the content completion popup you have to start editing, for example by double clicking the cell. When editing, pressing **CTRL SPACE** redisplays the popup.

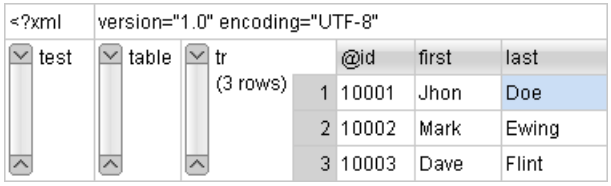
Figure 7.2. Content Completion in Grid Editor



Layouts: Grid and Tree

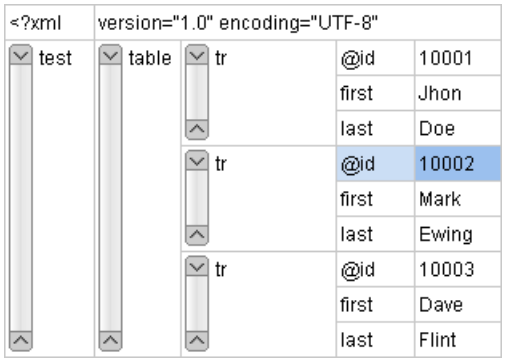
The grid editor has two modes for the layout. The default one is the "grid" layout. This smart layout of the grid editor detects the recurring elements in the XML document and creates tables having as columns the children (including the attributes) of these elements. In this way it is possible to have tables nested in other tables, reflecting the structure of your document.

Figure 7.3. Grid Layout



The other layout mode is "tree"-like. This layout does not create any table, it presents the structure of the document directly.

Figure 7.4. Tree Layout

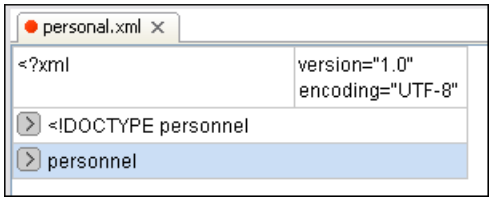


You can switch between the two modes using the menu: Document+Grid Layout → Grid mode/Tree mode

Navigating the grid

When you open a document first in the grid tab, the document is collapsed so that it shows just the root element and its attributes.

Figure 7.5. Initial configuration of grid tab



The grid disposition of the node names and values are very similar to a web form or a dialog. The same set of key shortcuts used to select dialog components are used in the grid. For instance moving to the next editable value in a table row is done using the **TAB** key. Moving to the previous cell employs the **SHIFT+TAB** key. Changing a value assumes pressing the **ENTER** key or start typing directly the new value, and, when the editing is finished, pressing **ENTER** again to commit the data into the document.

The arrows 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** (**COMMAND** on Mac OS X) key.

The following key combination may 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

A left 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 subgrid. The expand/collapse actions can be also invoked by pressing the **NumPad + PLUS** and **NumPad + MINUS** keys.

A set of expand/collapse actions can be accessed from the submenu Expand/Collapse of the contextual menu.

The same actions can be accessed from the menu: Document+Grid Expand/Collapse

Expand All Action

Expands the selection and all its children.

Collapse All Action

Collapses the selection and all its children.

Expand Children Action

Expands all the children of the selection but not the selection.

Collapse Children Action

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 from the contextual menu the item: Table

The same set of actions are available in the menu: Document and the first ones in the grid toolbar: Perspective+Show Toolbar → Grid

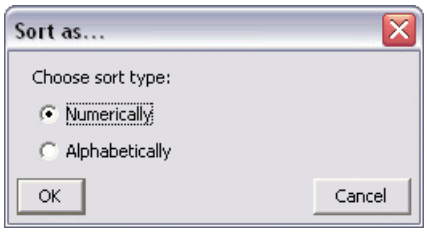
Sorting a Table Column

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 and it can be different in case of number or text information. The editor analyses automatically the content and decides what type of sorting to apply. If there is present a mixed set of values in the column, a dialog will be displayed allowing to choose the correct type.

Figure 7.6. Sort Type Dialog



Inserting a row to a table

You can add a row by either a copy/paste operation over a row, or directly, by invoking the action from the contextual menu: Table → Insert row

The icon is:

A shorter way of inserting a new row is to move the selection over the row header, and then to press ENTER. The row header is the zone in the left of the row that holds the row number. The inserted row will be below the selection.

Inserting a column into a table

You can insert a column after the selected one, using the action from the contextual menu: Table → Insert column

The icon is:

Clearing the content of a column

You can clear all the cells from a column, using the action from the contextual menu: Table → Clear content

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 beforeInsert afterAppend child

Duplicating nodes

A quicker way of creating new nodes is to duplicate the existing ones.

The action is available in the contextual menu: Duplicate

The same actions may be found in the menu: Document+Grid Edit → Duplicate

Refresh layout

When using drag and drop to reorganize the document, the resulted layout may be different from the expected one. For instance, the layout may be contain a set of sibling tables where could be joined together. To force the layout to be recomputed you can use the Refresh action .

The action is available in the contextual menu: Refresh selected

The same action can be found in the menu: Document+Grid Edit → Refresh selected

Start editing a cell value

You can simply press **ENTER** after you have selected the grid cell.

The action is found in the menu: Document+Grid Edit → Start Editing

Stop editing a cell value

You can either press **ENTER** when already in cell editing.

The action is found in the menu: Document+Grid Edit → End Editing

To cancel the editing without saving in the document the current changes, you have to press the **ESC** key.

Drag and Drop(DnD) in the Grid Editor

The DnD features of the grid editor make easy the arrangement of the different sections in your XML document.

Using DnD 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 selection and multiple selection.

Note that when dragging the editor paints guide-lines showing accepted locations where the nodes can be dropped.

Nodes can 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; the editor automatically extends the selection so it contains also all the cells from that column. The current selected cell is painted with a color that is different from the rest of the selection.

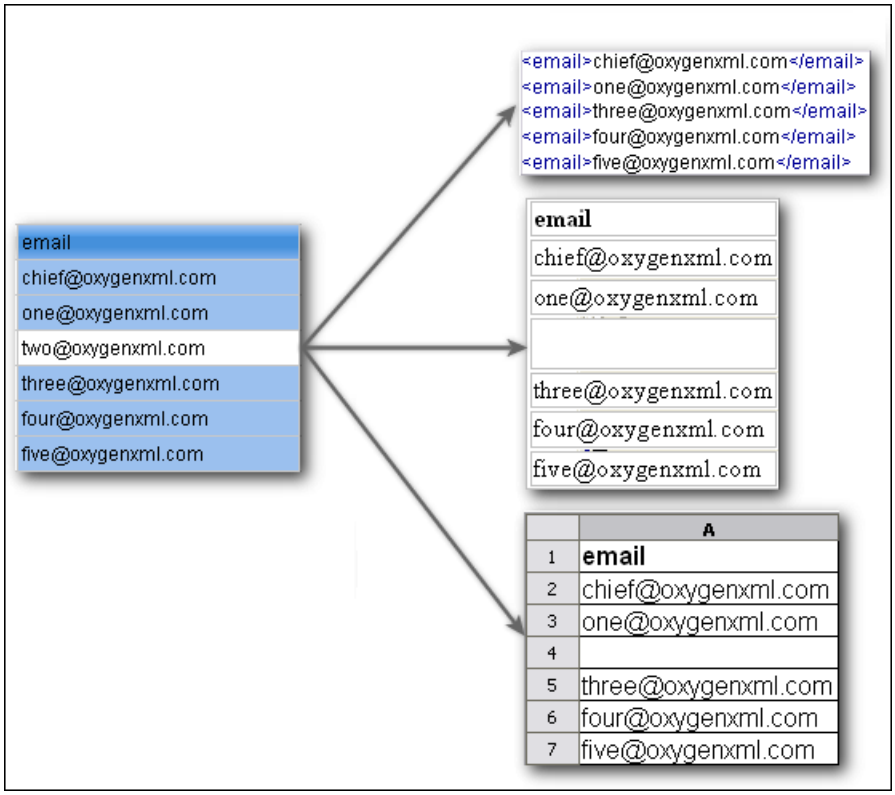
You can select discontinuous regions of nodes and place them in the clipboard using the copy action. Pasting these nodes may be done in two ways, relative to the current selected cell: by default as brother, just below (after) , or as last child of the selected cell.

The paste as child action is available in the contextual menu: Paste as Child

The same action can be found in the menu: Document+Grid Edit → Paste as Child

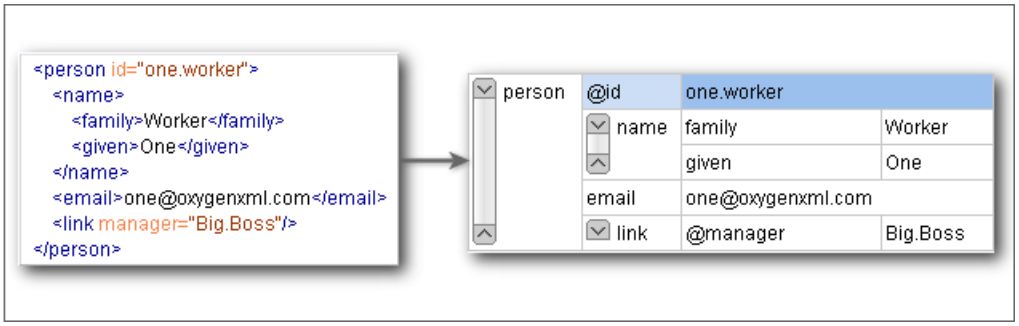
The copied nodes from the grid can be pasted also into the text editor or other applications. When copying from grid into the text editor or other text based applications the inserted string represents the nodes serialization. The nodes from tables can be copied using HTML or RTF in table format. The resulting cells contain only the concatenated values of the text nodes.

Figure 7.7. Copying from grid to other editors



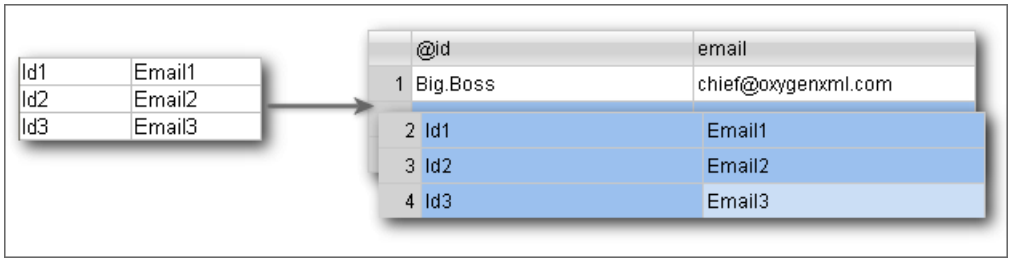
In the grid editor you can paste wellformed xml content or tab separated values from other editors. If you paste xml content the result will be the insertion of the nodes obtained by parsing this content.

Figure 7.8. 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 values from these cells will be overwritten and new ones will be created if needed. This is useful for example when trying to transfer data from Excel like editors into grid editor.

Figure 7.9. 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 text is rendered and edited in the grid cells.

For this, you can use the shortcut **CTRL SHIFT O** to toggle from the default left to right text orientation to the right to left orientation.

Note that this change applies only to the text from the cells, not to the layout of the grid editor.

Figure 7.10. Default left to right text orientation

<?xml		version="1.0" encoding="UTF-8"
sample (9 rows)		#text
	1	عندما يريد العالم أن يتكلم, فهو يتحدّث 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 7.11. Right to left text orientation

<?xml		"version="1.0" encoding="UTF-8
sample (9 rows)		#text
	1	عندما يريد العالم أن يتكلم, فهو يتحدّث 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

Chapter 8. Transforming documents

XML is designed to store, carry, and exchange data, not to display data. When we want to view the data we must either have an XML compliant user agent or transform it to a format that can be read by other user agents. This process is known as transformation.

Status messages generated during transformation are displayed in the Information view.

Output formats

Within the current version of <oXygen/> you can transform your XML documents to the following formats without having to exit from the application. For transformation to formats not listed simply install the tool chain required to perform the transformation and process the xml files created with <oXygen/> in accordance with the processor instructions.

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 [http://www.adobe.com/products/acrobat/readstep.html].

PS
: PostScript is the leading printing technology from Adobe [http://www.adobe.com:80/products/postscript/main.html] 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 [http://www.w3c.org/XML/] 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 [http://www.w3c.org/MarkUp/] 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.

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 [http://www.w3c.org/MarkUp/] 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 [http://msdn.microsoft.com/library/default.asp?url=/library/en-us/htmlhelp/html/vsconHH1Start.asp?frame=true] 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 [http://java.sun.com/products/javahelp/index.html] 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 [http://www.eclipse.org/] 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/> 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 9.0.0.2 B, Saxon 9.0.0.2 SA and Saxon.NET. Also the validation is done in function of the stylesheet version.

Transformation scenario

Before transforming the current edited XML document in <oXygen/> you must 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 XSL files	Such a scenario contains the location of an XML document that the edited XSL file is applied on and other transform parameters.

In order to apply a transformation scenario one has to press the Apply transformation scenario button from the *Transformation* toolbar. Alternatively, transform actions can be applied from the Project view's contextual menu without having to open the files:

- Configure transformation scenario - allows the configuration of file's associated transformation scenario. If no transformation scenario is associated with the file, then the menu action is disabled.
- Apply transformation scenario - applies the associated transformation scenario on the selected files. If the currently processed file does not have an associated transformation scenario then the Configure transformation scenario dialog is opened.
- Transform with... - allows the user to select a transformation scenario to be applied on the currently selected files.

Built-in transformation scenarios

If the Apply Transformation Scenario button from the *Transformation* toolbar is pressed, currently there is no scenario associated with the edited document and the edited document contains a "xml-stylesheet" processing instruction referring to a XSLT stylesheet (commonly used for display in Internet browsers), then <oXygen/> will prompt the user and offer the option to associate the document with a default scenario containing in the *XSL URL* field the URL from the *href* attribute of the processing instruction. This scenario will have the "Use xml-stylesheet declaration" checkbox set by default, will use Saxon as transformation engine, will perform no FO processing and will store the result in a file with the same URL as the edited document except the extension which will be changed to html. The name and path will be preserved because the output file name is specified with the help of two editor variables: `${cfd}` and `${cfn}`.

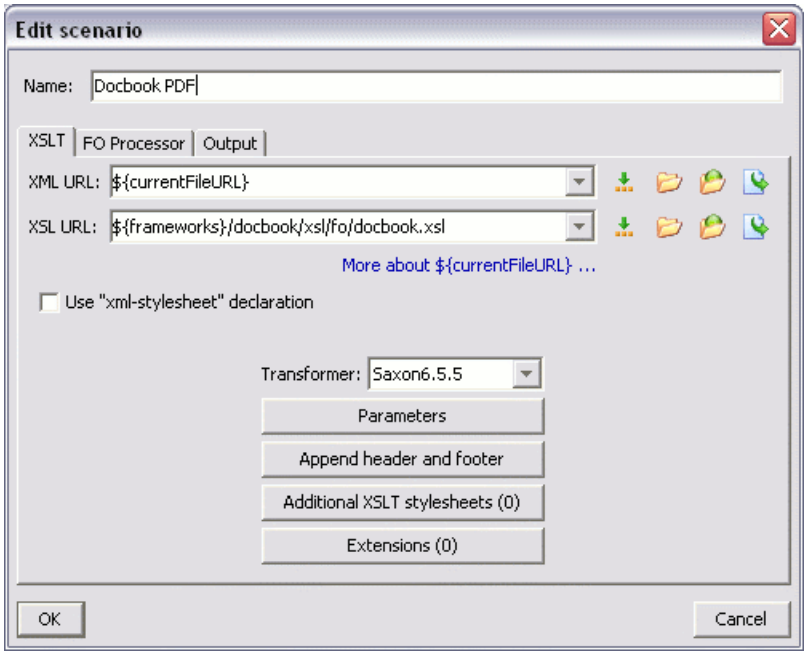
<oXygen/> comes with preconfigured built-in scenarios for usual transformations that enable the user to obtain quickly the desired output: associate one of the built-in scenarios with the current edited document and then apply the scenario with just one click.

Defining a new transformation scenario

The Configure Scenario dialog is used to associate a scenario from the list of all scenarios with the edited document by selecting an entry from the list. The dialog is opened by pressing the Configure Transformation Scenario button on the *Transformation* toolbar of the document view. Once selected the scenario will be applied with only one click on the Apply Transformation button on the same toolbar. Pressing the Apply Transformation button before associating a scenario with the edited document will invoke first the Configure Scenario dialog and then apply the selected scenario.

Open the Configure Transformation dialog by selecting Document+ XML Document → Configure transformation scenario. (**Ctrl+Shift+C**) Complete the dialog as follows:

Figure 8.1. The Configure Transformation Dialog - XSLT Tab



XML URL

Specifies an input XML file to be used for the transformation. Please note that this URL is resolved through the catalog resolver. If the catalog does not have a mapping for the URL, then the editor will try to use the file directly.

The following buttons are shown immediately after the input field:

Insert editor variables button	Opens a dialog allowing to introduce special <oXygen/> editor variables in the XML URL field.
Button *Browse for local input XSL file*	Opens a file browser dialog allowing to select a local file name for the XML URL field.
Button *Browse for remote input XML file*	Opens a file browser dialog allowing to select a remote file name for the XML URL field.
Button *Open XML file*	Opens the file with the path specified in the XML URL path in a the editor.

XSL URL

Specifies an input XSL file to be used for the transformation. Please note that this URL is resolved through the catalog resolver. If the catalog does not have a mapping for the URL, then the editor will try to use the file directly.

	The above set of browsing buttons are available also for this input.
Checkbox *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.
Combo box *Transformer*	This combo box contains all the transformer engines available for applying the stylesheet. These are the built-in engines and the external engines defined in the user preferences. If you want to change the default selected engine just select other engine from the drop down list of the combo box.
Button *Parameters*	Opens the dialog for configuring the XSLT parameters. In this dialog you set any global XSLT parameters of the main stylesheet set in the *XSL URL* field or of the additional stylesheets set with the button *Additional XSLT stylesheets*.
Button *Append header and footer*	Opens a dialog for specifying a 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.
Button *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.
Button *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 XSLT/XQuery transformation.

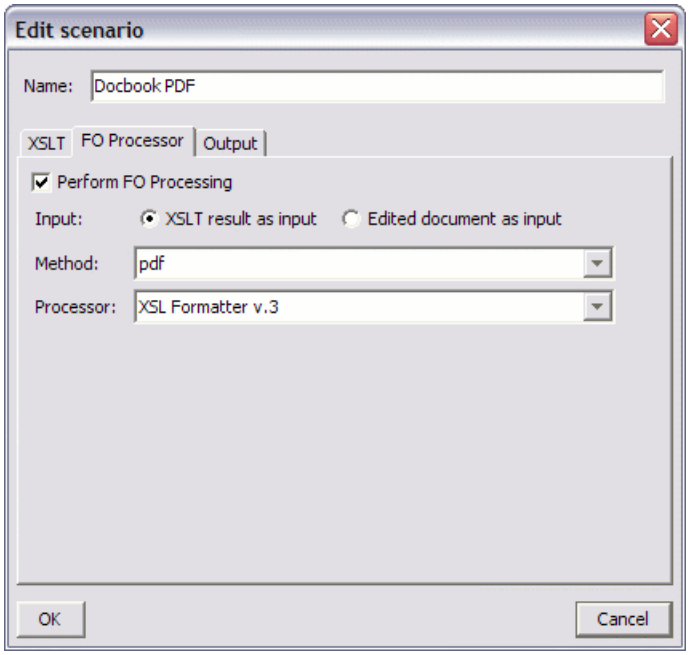
When creating a scenario that applies to an XML file, <oXygen/> fills the XML URL with the default variable "${currentFile}". This means the input for the transformation is taken from the currently edited file. You can modify this value to other file path. This is the case of currently editing a section from a large document, and you want the transformation to be performed on the main document, not the section. You can specify in this case either a full absolute path: file:/c:/project/docbook/test.xml or a path relative to one of the editor variables, like the current project file: ${pdu}/docbook/test.xml .

When the scenario applies to XSL files, the field XSL URL is containing ${currentFile}. Just like in the XML case, you can specify here the path to a master stylesheet. The path can be configured using the editor variables.

Note

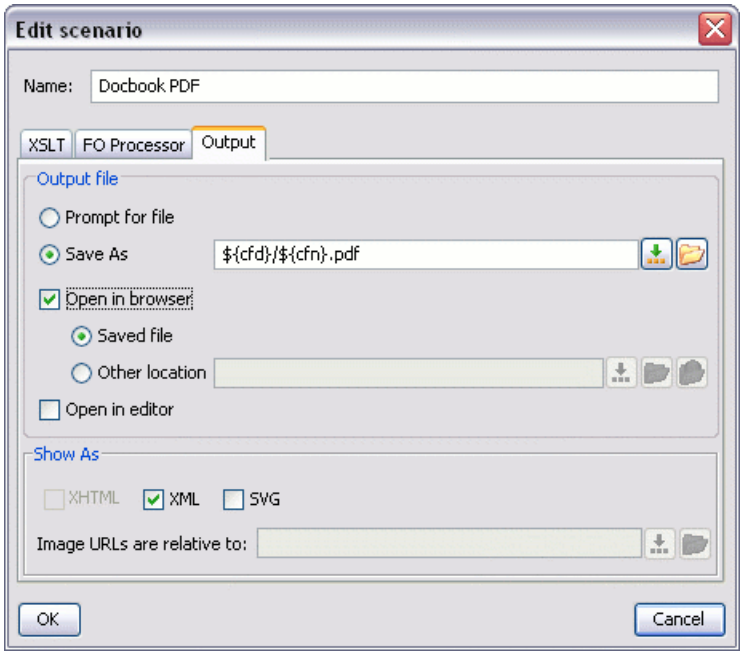
If you are sharing the scenarios by saving them into the project file (see Transformation Scenario Sharing) it is recommended that the URL fields to have path values relative to the project editor variable ${pdu}.

Figure 8.2. The Configure Transformation Dialog - FO Processor Tab



Checkbox *Perform FO Processing*	Enable or disable applying an FO processor (either the built-in Apache FOP engine or an external engine defined in Preferences) during the transformation.
Radio button *XSLT result as input*	The FO processor is applied to the result of the XSLT transformation defined on the XSLT tab of the dialog.
Radio button *Edited document as input*	The FO processor is applied directly to the current edited document.
Combo box *Method*	The output format of the FO processing: PDF, PostScript or plain text.
Combo box *Processor*	The FO processor, which can be the built-in Apache FOP processor or an external processor.

Figure 8.3. The Configure Transformation Dialog - Output Tab



Radio button *Prompt for file*

At the end of the transformation a file browser dialog will be displayed for specifying the path and name of the file which will store the transformation result.

Text field *Save As*

The path of the file where it will be stored the transformation result. The path can include special <oXygen/> editor variables.

Check box *Open in browser*

If this is checked <oXygen/> will open automatically the transformation result in a browser application specific for the type of that result (HTML/XHTML, PDF, text).

Radio button *Saved file*

When *Open in browser* is selected this button can be selected to specify that <oXygen/> should open automatically at the end of the transformation the file specified in the *Save As* text field.

Radio button *Other location*

When *Open in browser* is selected this button can be used to specify that <oXygen/> 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/> editor variables.

Check box *Open in editor*

When this is checked the transformation result set in the *Save As* field is opened in a new editor panel in <oXygen/> 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, etc.

Check box *Show As XHTML*

It is enabled only when *Open in browser* is disabled. If this is checked <oXygen/> will display the transformation result in a built-in XHTML browser panel at the bottom of the <oXygen/> window.

Important

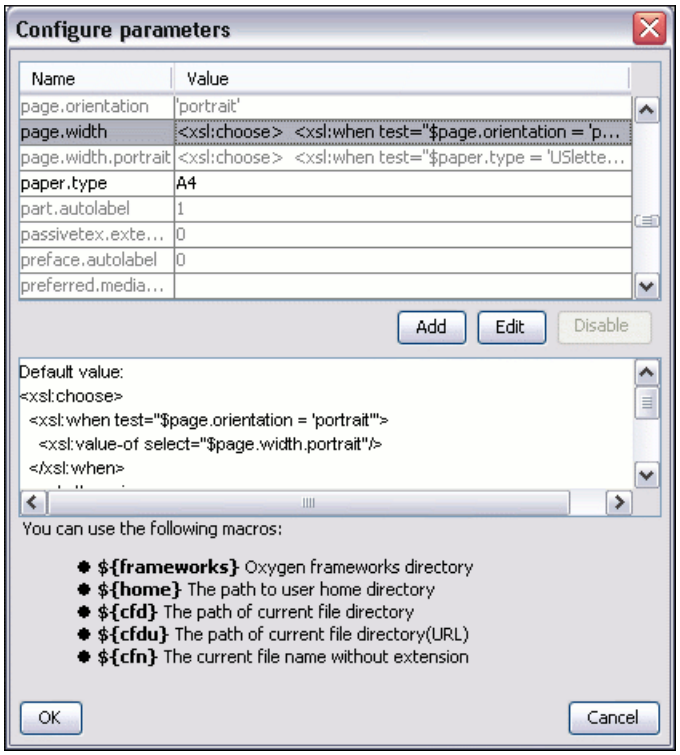
When transforming very large documents you should be aware that enabling this feature will result in a very long time necessary for rendering the transformation result in the XHTML result viewer panel. This drawback appears due to the built-in Java XHTML browser implementation. In this situations if you wish to see the XHTML result of the transformation you should use an external browser by checking the *Open in browser* checkbox.

Check box *Show As XML*	If this is checked <oXygen/> will display the transformation result in an XML viewer panel at the bottom of the <oXygen/> window with syntax highlight specific for XML documents.
Check box *Show As SVG*	If this is checked <oXygen/> will display the transformation result in a SVG viewer panel at the bottom of the <oXygen/> window by rendering the result as a SVG image.
Text field *Image URLs are relative to*	If *Show As XHTML* is checked this text field specifies the path for resolving image paths contained in the transformation result.

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:

Figure 8.4. Configure parameters dialog



The table presents all the parameters of the XSLT stylesheet and all imported and included stylesheets with their current values. 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 and the system ID of the stylesheet that declares it.

For setting the value of a parameter declared in the stylesheet in a namespace, for example:

```
<xsl:param name="p:param" xmlns:p="namespace">default</xsl:param>
```

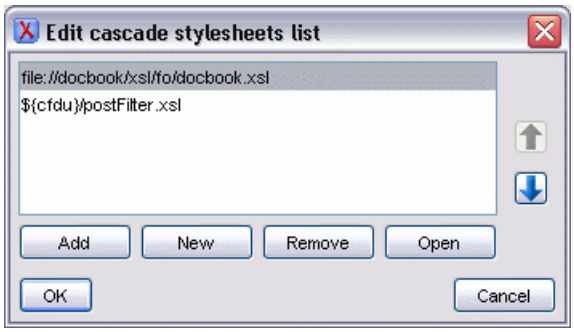
use the following expression in the *Name* column of the *Parameters* dialog:

```
{namespace}param
```

Additional XSLT Stylesheets

The list of additional XSLT stylesheets can be edited in the dialog opened by the button "Additional XSLT Stylesheets".

Figure 8.5. Edit additional XSL stylesheets list dialog



Add — Adds a stylesheet in the "Additional XSLT stylesheets" list using a file browser dialog , also 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.

New — Opens a dialog in which you can type the name of a stylesheet. The name is considered relative to the URL of the current edited XML document. You can use editor variables in the name of the stylesheet. 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.

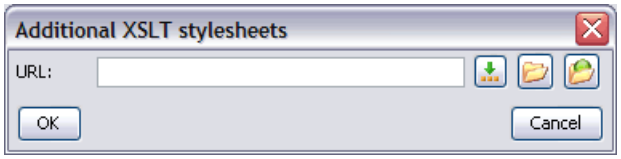
Open — Opens the selected stylesheet in a separate view .

Up — Move the selected stylesheet up in the list.

Down — Move the selected stylesheet down in the list.

This dialog allows the user to add additional XSLT stylesheets to the transformation.

Figure 8.6. Add a new stylesheet

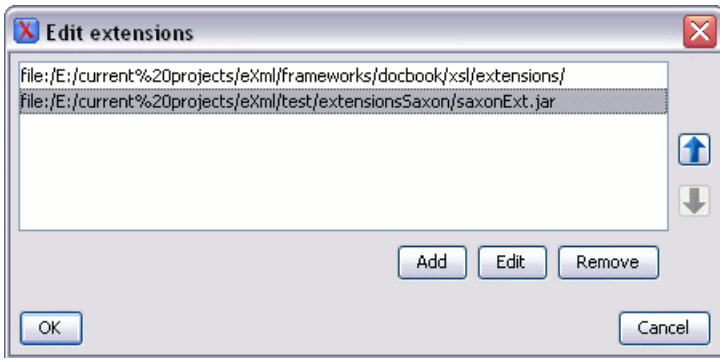


The path specified in the URL text field can include special <oXygen/> editor variables.

XSLT/XQuery Extensions

The edit extensions dialog is used to specify the jars and classes containing extension functions called from the XSLT/XQuery file of the current transformation scenario.

Figure 8.7. The XSLT/XQuery Extension Edit Dialog



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.

Creating a Transformation Scenario

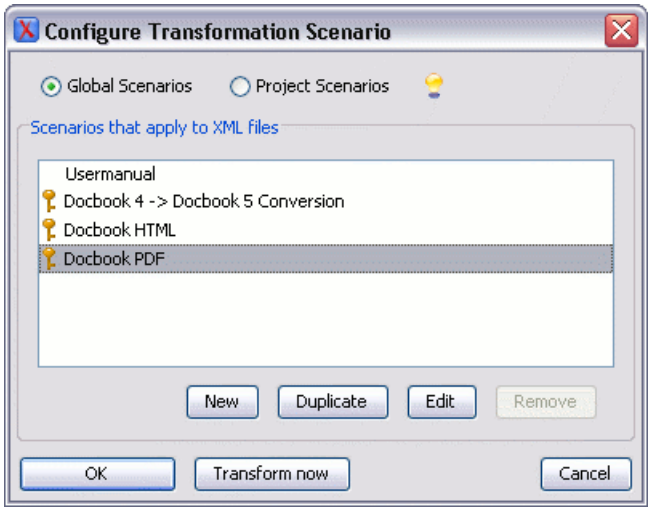
Use the following procedure to create a scenario.

1. Select Document+ XML Document → 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 in the Name field and type a new name.
4. Click OK or Transform Now to save the scenario.

Sharing the Transformation Scenarios. Project Level Scenarios.

In the upper part of the dialog showing the list of scenarios you will find two radio buttons controlling where the scenarios are stored.

Figure 8.8. Transformation Scenario List Dialog



Selecting "Global Scenarios" ensures that the scenarios are saved 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 DocBook 4 document and one custom transformation scenario. 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.

XSL-FO processors

The <oXygen/> installation package is distributed with the Apache [http://www.apache.org]FOP [http://xml.apache.org/fop/index.html] (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.

Tip

To include PNG images in the final PDF document you need the JIMI [http://java.sun.com/products/jimi/] or JAI [http://java.sun.com/products/java-media/jai/] libraries. For TIFF images you need the JAI [http://java.sun.com/products/java-media/jai/] library. The JIMI and JAI libraries are not bundled with <oXygen/> due to Sun's licensing. Using them is as easy as downloading them and copying the necessary jar files (required by the library documentation) in the lib subdirectory of the <oXygen/> installation directory. This means JimiProClasses.zip for JIMI and jai_core.jar, jai_codec.jar and mlibwrapper_jai.jar for JAI. For the JAI package you also need to include the directory containing the native libraries (mlib_jai.dll and mlib_jai_mmx.dll on Windows) in the PATH system variable.

The MacOS 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 -> FO Processors panel.

Common transformations

The following examples use the DocBook XSL Stylesheets to illustrate how to configure <oXygen/> for transformation to the various target formats.

Note

<oXygen/> comes with the latest versions of the DocBook and TEI frameworks including special XSLT stylesheets for DocBook and TEI documents. DocBook XSL extensions for the Saxon and Xalan processors are included in the `frameworks/docbook/xsl/extensions` directory.

The following steps are common to all the example procedures below.

1. Set the editor focus to the document to be transformed.
2. Select Document+ XML Document → Configure transformation scenario (**Ctrl+Shift+C**) to open the Configure Transformation dialog.
3. If you want to edit an existing scenario select that scenario in the list and press the *Edit* button. If you want to create a new scenario press the *New* button. If you want to create a new scenario based on an existing scenario select the scenario in the list and press the *Duplicate* button.
4. Select the XSLT tab.
5. Click the "Browse for an input XSL file button". The Open dialog is displayed.

Note

During transformations the Editor Status Bar will show "Transformation - in progress". The transformation is successfully complete when the message "XSL transformation successful" displays. If the transform fails the message "XSL transformation failed" is displayed as an error message in the Messages Panel. The user can stop the transformation process, if the transformer offers such support, by pressing the "Stop transformation" button. In this case the message displayed in the status bar will be "Transformation stopped by user". For the specific case of an XQuery transformation, if you chose an NXD transformer, pressing the "Stop transformation" button will have no effect, as NXD transformers offer no such support.

PDF Output

1. Change directory to **[oxygen]/frameworks/docbook/xsl/fo/**.
2. Select `docbook.xsl`, click Open. The dialog closes.
3. Select the FOP tab.
4. Check the Perform FOP option. The remaining options are enabled.
5. Select the following options:

a. XSLT result as input.

b. PDF as method.

c. Built-in(Apache FOP) as processor.

6. Select the Output tab.
7. In the Save As field enter the output file name relative to the current directory (`YourFileName.pdf`) or the path and output file name (`C:\FileDirectory\YourFileName.pdf`).
8. Optionally, uncheck the XHTML and XML check boxes in the Show As group.
9. Click Transform Now. The transformation is started.

PS Output

1. Change directory to **[oxygen]/frameworks/docbook/xsl/fo/**.
2. Select `docbook.xsl`, click Open. The dialog closes.
3. Select the FOP tab.
4. Check the Perform FOP option. The remaining options are enabled.
5. Select the following options:

a. XSLT result as input.

b. PS as method.

c. Built-in(Apache FOP) as processor.

6. Select the Output tab.
7. In the Save As field enter the output file name relative to the current directory (`YourFileName.ps`) or the path and output file name (`C:\FileDirectory\YourFileName.ps`).
8. Optionally, uncheck the XHTML and XML check boxes in the Show As group.
9. Click Transform Now. The transformation is started.

TXT Output

1. Change directory to **[oxygen]/frameworks/docbook/xsl/fo/**.
2. Select `docbook.xsl`, click Open. The dialog closes.
3. Select the FOP tab.
4. Check the Perform FOP option. The remaining options are enabled.
5. Select the following options:

a. XSLT result as input.

b. TXT as method.

c. Built-in(Apache FOP) as processor.

6. Select the Output tab.
7. In the Save As field enter the output file name relative to the current directory (`YourFileName.txt`) or the path and output file name (`C:\FileDirectory\YourFileName.txt`).
8. Optionally, uncheck the XHTML and XML check boxes in the Show As group.
9. Click Transform Now. The transformation is started.

HTML Output

1. Change directory to **[oxygen]/frameworks/docbook/xsl/html/**.
2. Select `docbook.xsl`, click Open. The dialog closes.
3. Select the FOP tab.
4. Uncheck the Perform FOP option. The FOP options are disabled.
5. Select the Output tab.
6. In the Save As field enter the output file name relative to the current directory (`YourFileName.html`) or the path and output file name (`C:\FileDirectory\YourFileName.html`).

   a. If your pictures are not located relative to the out location, check the XHTML check box in the Show As group.

   b. Specify the path to the folder or URL where the pictures are located

7. Click Transform Now. The transformation is started.

HTML Help Output

1. Change directory to **[oxygen]/frameworks/docbook/xsl/htmlhelp/**.
2. Select `htmlhelp.xsl`, click Open. The dialog closes.
3. Set the XSLT parameter base.dir, it identifies the output directory. (If not specified, the output directory is system dependent.) Also set the manifest.in.base.dir to 1 in order to have the project files copied in output as well.
4. Select the FOP tab.
5. Uncheck the Perform FOP option. The FOP options are disabled.
6. Click Transform Now. The transformation is started.
7. At the end of the transformation you should find the html, hhp and hhc files in the *base.dir* directory.
8. Download Microsoft's HTML Help Workshop and install it.

9. Integrate HTML Help Workshop as an external tool. Go to Options → Preferences+External Tools
10. Create a new external tool entry named HTMLHelp with Working directory being the same with the base.dir parameter defined above and Configure command set to [path to installed HTML Help Workshop]\hhc.exe <filename>, where <filename> is the name of the html help project file (for example htmlhelp.hhp).
11. Run the tool from Tools → External Tools → HTMLHelp.

JavaHelp Output

1. Change directory to **[oxygen]/frameworks/docbook/xsl/javahelp/**.
2. Select `javahelp.xsl`, click Open. The dialog closes.
3. Set the XSLT parameter base.dir, it identifies the output directory. (If not specified, the output directory is system dependent.)
4. Select the FOP tab.
5. Uncheck the Perform FOP option. The FOP options are disabled.
6. Click Transform Now. The transformation is started.

XHTML Output

1. Change directory to **[oxygen]/frameworks/docbook/xsl/xhtml/**.
2. Select `docbook.xsl`, click Open. The dialog closes.
3. Select the FOP tab.
4. Uncheck the Perform FOP option. The FOP options are disabled.
5. Select the Output tab.
6. In the Save As field enter the output file name relative to the current directory (`YourFileName.html`) or the path and output file name (`C:\FileDirectory\YourFileName.html`).
   a. If your pictures are not located relative to the out location, check the XHTML check box in the Show As group.
   b. Specify the path to the folder or URL where the pictures are located
7. Click Transform Now. The transformation is started.

Supported XSLT processors

The <oXygen/> distribution comes with the following XSLT processors:

Xalan 2.7.0	Xalan-Java http://xml.apache.org/xalan-j/ 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 [http://saxon.sourceforge.net/saxon6.5.5/] 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 9.0.0.2 B

Saxon-B http://saxon.sf.net/ implements the "basic" conformance level for XSLT 2.0 and XQuery. 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.

Besides the above list <oXygen/> supports the following processors:

Xsltproc (libxslt)

Libxslt http://xmlsoft.org/XSLT/ 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/> is 2.6.23 and the libxslt version is 1.1.15

<oXygen/> 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.

MSXML 3.0/4.0

MSXML 3.0/4.0 http://msdn.microsoft.com/xml/ is available only on Windows 2000, Windows NT and Windows XP platforms. It can be used for transformation and validation of XSLT stylesheets.

<oXygen/> use the Microsoft XML parser through its command line tool msxsl.exe [http://msdn.microsoft.com/library/default.asp?url=/library/en-us/dnxml/html/msxsl.asp]

Because msxsl.exe is only a wrapper, Microsoft Core XML Services (MSXML) must be installed on the computer otherwise you get an corresponding warning. You can get the latest Microsoft XML parser from Microsoft web-site http://www.microsoft.com/downloads/details.aspx?FamilyId=3144B72B-B4F2-46DA-B4B6-C5D7485F2B42&displaylang=en [http://www.microsoft.com/downloads/details.aspx?FamilyId=3144B72B-B4F2-46DA-B4B6-C5D7485F2B42&displaylang=en]

MSXML .NET

MSXML .NET http://msdn.microsoft.com/xml/ is available only on Windows NT4, Windows 2000 and Windows XP platforms. It can be used for transformation and validation of XSLT stylesheets.

<oXygen/> performs XSLT transformations and validations using .NET Framework's XSLT implementation (System.Xml.Xsl.XslTransform class) through the nxslt [http://www.tkachenko.com/dotnet/nxslt.html] command line utility. The nxslt version included in <oXygen/> is 1.6.

You should have the .NET Framework version 1.0 already installed on your system otherwise you get this 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 Microsoft web-site http://www.microsoft.com/downloads/details.aspx?FamilyID=d7158dee-a83f-4e21-b05a-009d06457787&displaylang=en [http://www.microsoft.com/downloads/details.aspx?FamilyID=d7158dee-a83f-4e21-b05a-009d06457787&displaylang=en]

.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 get this 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 Microsoft web-site http://www.microsoft.com/downloads/details.aspx?FamilyID=d7158dee-a83f-4e21-b05a-009d06457787&displaylang=en [http://www.microsoft.com/downloads/details.aspx?FamilyID=d7158dee-a83f-4e21-b05a-009d06457787&displaylang=en]

.NET 2.0

A transformer based on the System.Xml 2.0 library available in the .NET 2.0 framework from Microsoft (http://msdn.microsoft.com/xml/). It is available only on Windows.

You should have the .NET Framework version 2.0 already installed on your system otherwise you get this 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 Microsoft web-site http://www.microsoft.com/downloads/details.aspx?FamilyID=9655156b-356b-4a2c-857c-e62f50ae9a55&DisplayLang=en [http://www.microsoft.com/downloads/details.aspx?FamilyID=9655156b-356b-4a2c-857c-e62f50ae9a55&DisplayLang=en]

Saxon 9SA

Saxon-8SA http://www.saxonica.com/ is the schema-aware edition of Saxon-8B and it is available on a commercial license from the Saxonica [http://www.saxonica.com/] site. Saxon-SA includes an XML Schema processor, and schema-aware XSLT, XQuery, and XPath processors

In order to use it with <oXygen/> you have to place the saxon9sa.jar and the license key from Saxonica in the [oXygen-install-folder]/lib folder

Saxon.NET

Saxon.NET http://weblog.saxondotnet.org/ is the port of Saxon-8B XSLT processor to the .NET platform and it is available on a Mozilla Public License 1.0 (MPL) from the Mozilla [http://www.mozilla.org/MPL/MPL-1.0.html] site.

In order to use it with <oXygen/> you have to unzip the Saxon.NET distribution http://www.saxondotnet.org/saxon.net/downloads/Saxon.NET-1.0-RC1.zip [http://www.saxondotnet.org/saxon.net/downloads/Saxon.NET-1.0-RC1.zip] in the <oXygen/> install folder.

You should have the .NET Framework version 1.1 already installed on your system otherwise you get this warning: Saxon.NET requires .NET Framework 1.1 to be installed.

You can get the .NET Framework version 1.1 from Microsoft web-site http://www.microsoft.com/downloads/ThankYou.aspx?familyId=262d25e3-

f 5 8 9 - 4 8 4 2 - 8 1 5 7 - 0 3 4 d 1 e 7 c f 3 a 3 & d i s p l a y L a n g = e n
[http://www.microsoft.com/downloads/ThankYou.aspx?familyId=2d25e3f5-8942-8157-034d1e7cf3a3&displayLang=en]

Note

There is no integrated XML Catalog support for MSXML 3.0/4.0 and .NET processors.

The button Transformation options available on the *Transformation* toolbar allows quick access to the XSLT options in the <oXygen/> user preferences.

Configuring custom XSLT processors

One can configure other XSLT transformation engines than the ones which come with the <oXygen/> distribution. Such an external engine can be used for XSLT transformations within <oXygen/>, in the Editor perspective, and is available in the list of engines in the dialog for editing transformation scenarios. However it cannot be used in the XSLT Debugger perspective.

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.

Extensions for Xalan and Saxon are included in [<oXygen/> install directory] \frameworks\docbook\xsl\extensions. If you want to use the extensions group for Xalan, you have to rename the file "xalan25.jar.ext" to "xalan25.jar". Same specifications for Saxon: rename "saxon653.jar.ext" to "saxon653.jar". You can only use one group of extensions at a time.

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 9.0.0.2 - http://www.saxonica.com/documentation/extensions/intro.html

In order to ease the configuration of XSLT processor extension path, you can use the Extensions button of the scenario edit dialog.

As alternative the manual configuration must be performed with the following steps in order to find and use successfully the Java extension classes:

- Set the property "com.oxygenxml.additional.classpath" to contain the additional paths to the directories containing the used Java extension classes or jars.

Example of setting a directory called "test1" containing extension classes and a jar "test2/ext.jar" located in the directory C:\work\ext\ :

- For users who use a script (bat or sh) to start <oXygen/> add the following parameter "-Dcom.oxygenxml.additional.classpath=C:/work/ext/test1;C:/work/ext/test2/ext.jar" to the java command line in

your script file (`oxygen.bat` or `oxygen.sh`). Example: "java -Xmx256m -Dcom.oxygenxml.additional.classpath=C:/work/ext/test1;C:/work/ext/test2/ext.jar -cp %CP% ro.sync.exml.Oxygen %1 %2 %3 %4 %5" .

- For users who use an executable (exe) to start <oXygen/> add the following parameter **-Dcom.oxygenxml.additional.classpath=C:/work/ext/test1;C:/work/ext/test2/ext.jar** on a new line in the `oxygen.vmoptions` file situated in the install directory of the application.

After the parameter is set, Java classes and jars from the extension paths are dynamically loaded by <oXygen/>

Chapter 9. Querying documents

Running XPath expressions

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.

XPath models an XML document as a tree of nodes. 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.

Examples:

child: : * Select all children of the root node.

.//name Select 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/>'s XPath console

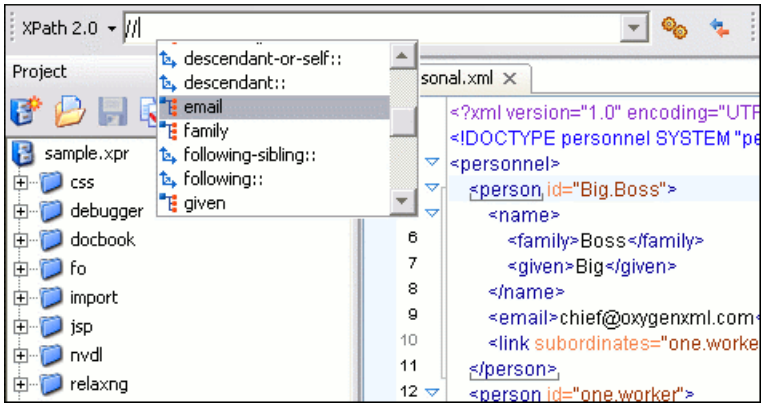
To use XPath effectively requires at least an understanding of the XPath Core Function Library [http://www.w3.org/TR/xpath#corelib]. If you have this knowledge the <oXygen/> XPath expression field part of the current editor toolbar can be used to aid you in XML document development.

In <oXygen/> a XPath 1.0 or XPath 2.0 expression is typed and executed on the current document from the XPath console available on the XPath toolbar for every open XML document.

The content completion assistant that helps in entering XPath expressions in attributes of XSLT stylesheets elements is also available in the XPath console and offers always proposals dependent of the current context of the cursor inside the edited document. The set of XPath functions proposed by the assistant depends on the XPath version selected from the drop-down menu of the XPath button (1.0 or 2.0).

In the following example the cursor is on a *person* element and the content completion assistant offers all the child elements of the *person* element and all XPath 2.0 functions:

Figure 9.1. Content Completion in the XPath console



The evaluation of the XPath expression tries to resolve the locations of documents referred in the expression through the XML catalogs which are configured in Preferences and the current XInclude preferences, for example when evaluating the *collection(URIofCollection)* function (XPath 2.0). If you need to resolve the references from the files returned by the *collection()* function with an XML catalog set up in the <oXygen/> preferences you have to specify in the query which is the parameter of the *collection()* function the name of the class of the XML catalog enabled parser for parsing these collection files. The class name is *ro.sync.xml.parser.CatalogEnabledXMLReader* and you specify it like this:

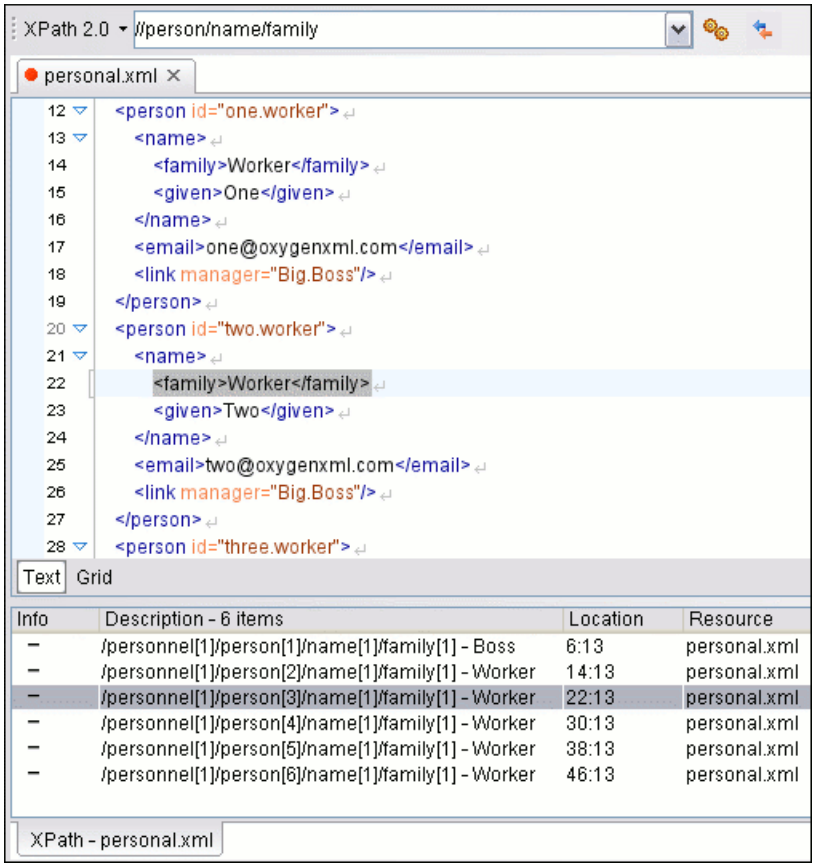
```
let $docs := collection(iri-to-uri(
    "file:///D:/temp/test/XQuery-catalog/mydocsdir?recurse=yes;select=*.xml;
    parser=ro.sync.xml.parser.CatalogEnabledXMLReader"))
```

If you want to see in the XPath console the XPath expression at the current cursor position when navigating in the document you can check the button XPath update on caret move.

The results of an XPath query are returned in the Message Panel. Clicking a record in the result list highlights the nodes within the text editor panel with a character level precision. Results are returned in a format that is a valid XPath expression:

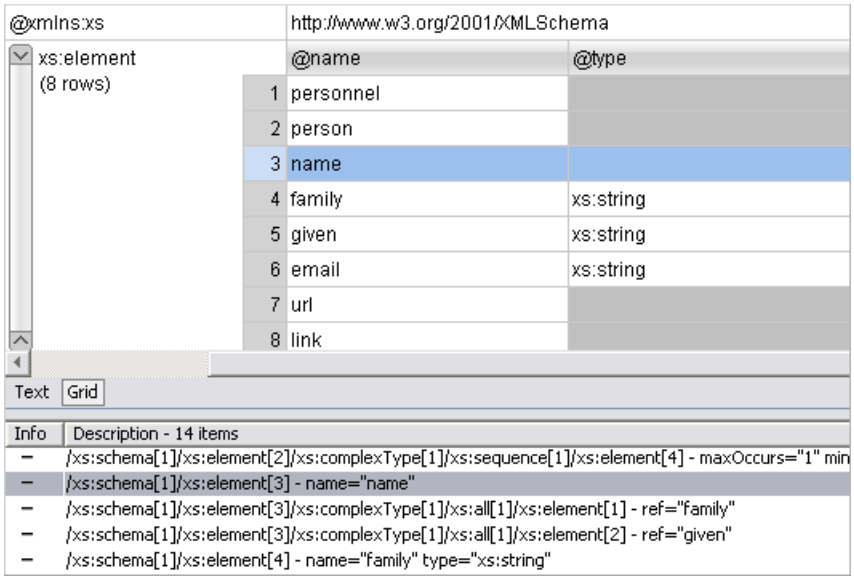
- [FileName.xml] /node[value]/node[value]/node[value] -

Figure 9.2. XPath results highlighted in editor panel with character precision



When using the Grid Editor, clicking a result record will highlight the entire node.

Figure 9.3. XPath results highlighted in the Grid Editor

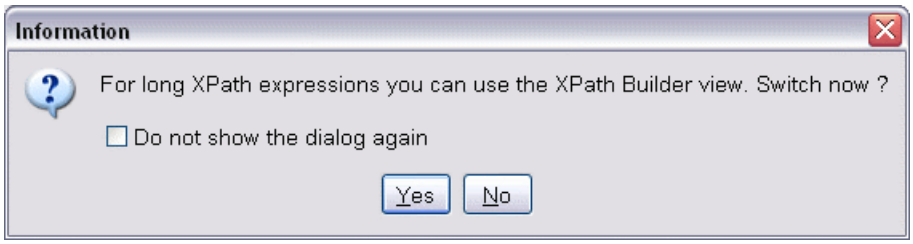


Note

XPath 2.0 queries are executed using Saxon 9 B transformation engine and they are not schema aware. If you try to impose type restrictions in a XPath 2.0 query they are ignored.

When the limit of long expressions is reached (60 characters) a dialog pops up and offers to switch the focus to the XPath builder view. This is a view specially designed to assist you with typing and testing complex XPath 1.0 / 2.0 expressions.

Figure 9.4. Popup dialog to switch to the XPath Builder view



Example 9.1. XPath Utilization with DocBook DTD

Our example is taken from a DocBook book based on the DocBook XML DTD. The book contains a number of chapters. DocBook defines that chapters as have a <chapter> start tag and matching </chapter> end tag to close the element. To return all the chapter nodes of the book enter **//chapter** into the XPath expression field, then **Enter**. This will return all the chapter nodes of the DocBook book, in the Message Panel. If your book has six chapters, their will be six records in the result list. Each record when clicked will locate and highlight the chapter and all sibling nodes contained between the start and end tags of the chapter.

If we used XPath to query for all example nodes contained in the section 2 node of a DocBook XML document we would use the following XPath expression **//chapter/sect1/sect2/example**. If an example node is found in any section 2 node, a result will be returned to the message panel. For each occurrence of the element node a record will be created in the result list.

In our example an XPath query on the file `oxygen.xml` determined that:

```
- [oxygen.xml] /chapter[1]/sect1[3]/sect2[7]/example[1]
```

Which means:

In the file `oxygen.xml`, first chapter, third section level 1, seventh section level 2, the example node found is the first in the section.

Note

If your project is comprised of a main file with ENTITY references to other files, you can use XPath to return all the name elements of a certain type by querying the main file. The result list will query all referenced files.

Note

When the edited document is of type XSL the XPath expression typed in the XPath console is applied over the XML document specified in the transformation scenario associated with the XSL document.

<oXygen/> provides a user preference to be set if you want to apply the XPath expression over the XSL document itself.

Important

If the document defines a default namespace then <oXygen/> will bind this namespace to the first free prefix from the list: default, default1, default2, etc. For example if the document defines the default namespace *xmlns="something"* and the prefix *default* is not associated with a namespace then you can match tags without prefix in a XPath expression typed in the XPath console by using the prefix *default*. For example to find all the *level* elements when the root element defines a default namespace you should execute in the XPath console the expression:

```
//default:level
```

To define default mappings between prefixes that can be used in the XPath console and namespace URIs go to the XPath Options user preferences panel and enter the mappings in the *Default prefix-namespace mappings* table. The same preferences panel allows also the configuration of the default namespace used in XPath 2.0 expressions entered into the XPath toolbar and the creation of different results panels for XPath queries executed on different XML documents.

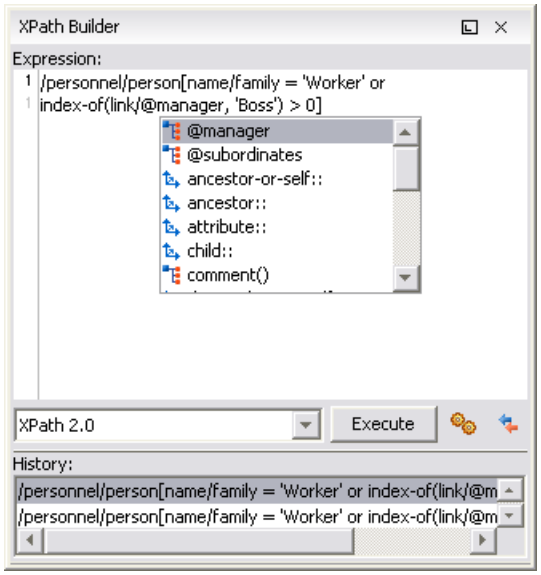
To apply a XPath expression relative to the element on which the caret is positioned use the action Document → XML Document → Copy XPath (**Ctrl+Alt+.**) (also available on the context menu of the main editor panel) to copy the XPath expression of the element to the clipboard and the Paste action of the contextual menu of the XPath console to paste this expression in the console. Then add your relative expression and execute the resulting complete expression.

On Windows the context menu can be displayed with the mouse on a right click or with the keyboard by pressing the special context menu key available on Windows keyboards.

The XPath Builder View

Complex XPath expressions can be composed with the help of the content completion assistant available for XPath expressions in a special view called *XPath Builder.* Also the expressions can be tested in the view by execution on the edited document. The view is opened from menu Perspective -> Show View.

Figure 9.5. The XPath Builder View



The *Execute* button runs the expression on the edited document and takes into account the value selected in the combo box with the XPath version number: 1.0 or 2.0. The XPath preferences panel is accessible from the XPath Options shortcut button near the *Execute* button. A history list with the XPath expressions evaluated in the past on all documents opened in the current <oXygen/> session is also available in the bottom area of the view so that new expressions can be composed based on old ones without re-entering the whole expression.

The XPath update on caret move button enables the XPath Builder view to display the XPath expression at the current cursor position when navigating in the document.

The evaluation of the XPath expression tries to resolve the locations of documents referred in the expression through the XML catalogs which are configured in Preferences and the current XInclude preferences, for example when evaluating the *collection(URIofCollection)* function (XPath 2.0).

The results of the XPath query are displayed in the same Message Panel as for the XPath console and are computed with the same character level precision.

The usual edit actions (Cut, Copy, Paste, Select All, Undo, Redo) are available in the popup menu of the top part of the view, where XPath expressions are entered. For the history list area of the view the popup menu contains two actions:

- Execute - to execute again the expression selected in the list.
- Remove - to remove the selected expression from the list.

Working with XQuery

What is XQuery

XQuery is the query language for XML and is currently under development at the W3C. The many benefits of XQuery include:

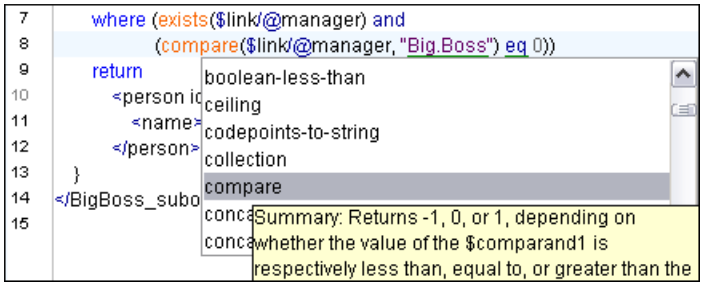
- XQuery allows you to work in one common model no matter what type of data you're working with: relational, XML, or object data.
- XQuery is ideal for queries that must represent results as XML, to query XML stored inside or outside the database, and to span relational and XML sources.
- XQuery allows 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 Document dialog appears select XQuery entry.

Once you created the new document <oXygen/> provides syntax highlight for keywords and all known XQuery functions and operators. Also for these there is available a content completion component that can be activated by pressing Ctrl+Space keys. The functions and operators are presented together with a comment about parameters and functionality.

Figure 9.6. XQuery Content Completion

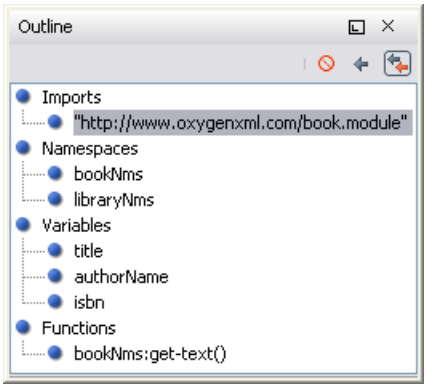


XQuery Outline View

The XQuery document structure is presented in the *XQuery Outline* view. The information is organized in categories like:

- *Imports* - contains the imported modules.
- *Namespaces* - contains the declared namespaces.
- *Variables* - contains the declared variables.
- *Functions* - contains the declared functions.

Figure 9.7. XQuery Outline View

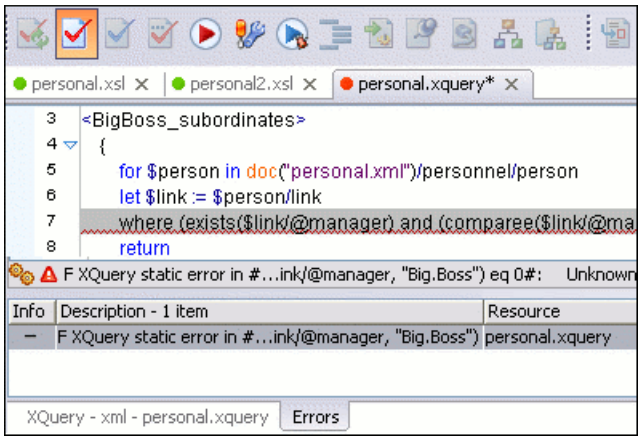


The selection in the outline view can be synchronized with the caret's moves or the changes in the XQuery editor. Selecting one of the leaf nodes from the outline view also selects the corresponding item in the source document.

XQuery Validation

With <oXygen/> you can validate your documents before using them in your transformation scenarios. The validation uses the Saxon 9.0.0.2 B processor or the 9.0.0.2 SA, IBM DB2, eXist, Software AG Tamino, Berkeley DB XML or X-Hive/DB if you installed them. This is in conformance with the XQuery Working Draft http://www.w3.org/TR/xquery/. The processor is used in two cases: validation of the expression and execution. Although the execution implies a validation, it is faster to syntactically check the expression 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 on one entry, the line where the error appeared is highlighted.

Figure 9.8. XQuery Validation



Please note that if you choose a processor that doesn't support XQuery validation you will receive a warning when trying to validate.

The *Validate* toolbar provides a button Validation options for quick access to the XQuery options in the <oXygen/> user preferences.

Note

If there is no transformation scenario associated with the current document, the validation will be performed using the processor or connection specified in the *XML / XSLT - FO / XQuery* Preferences page. Otherwise, the XQuery document will be validated using the Transformer from the associated scenario.

Other XQuery editing actions

The XQuery editor type offers a reduced version of the popup menu available in the XML editor type, that means only the split actions,the folding actions,the edit actions a part of the source actions (only the actions *To lower case*, *To upper case*, *Capitalize lines*) and *Open file at cursor*, *Open in system application*.

Transforming XML Documents Using XQuery

XQueries are very similar to the XSL stylesheets in the sense they both are capable of transforming an XML input into another format. You can define transformation scenarios that specify the input URL, the preview mode, XML or XHTML. 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, and are exported at the same time with the XSLT scenarios. The transformation performed can be based on the XML document specified in the Input field, or, if this field is empty, the documents referred from the query expression are used instead. 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 the processor Saxon 9.0.0.2 B, Saxon 9.0.0.2 SA or a database connection (details can be found in the Working with Databases chapter - in the XQuery transformation section).

Chapter 10. Debugging XSLT stylesheets and XQuery documents

Overview

The Debugger perspectives enables you to test and debug XSLT 1.0 /2.0 stylesheets and XQuery 1.0 documents. 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 for each step. At the same time, special views in the interface provide various types of debugging information and events useful for understanding the transformation process.

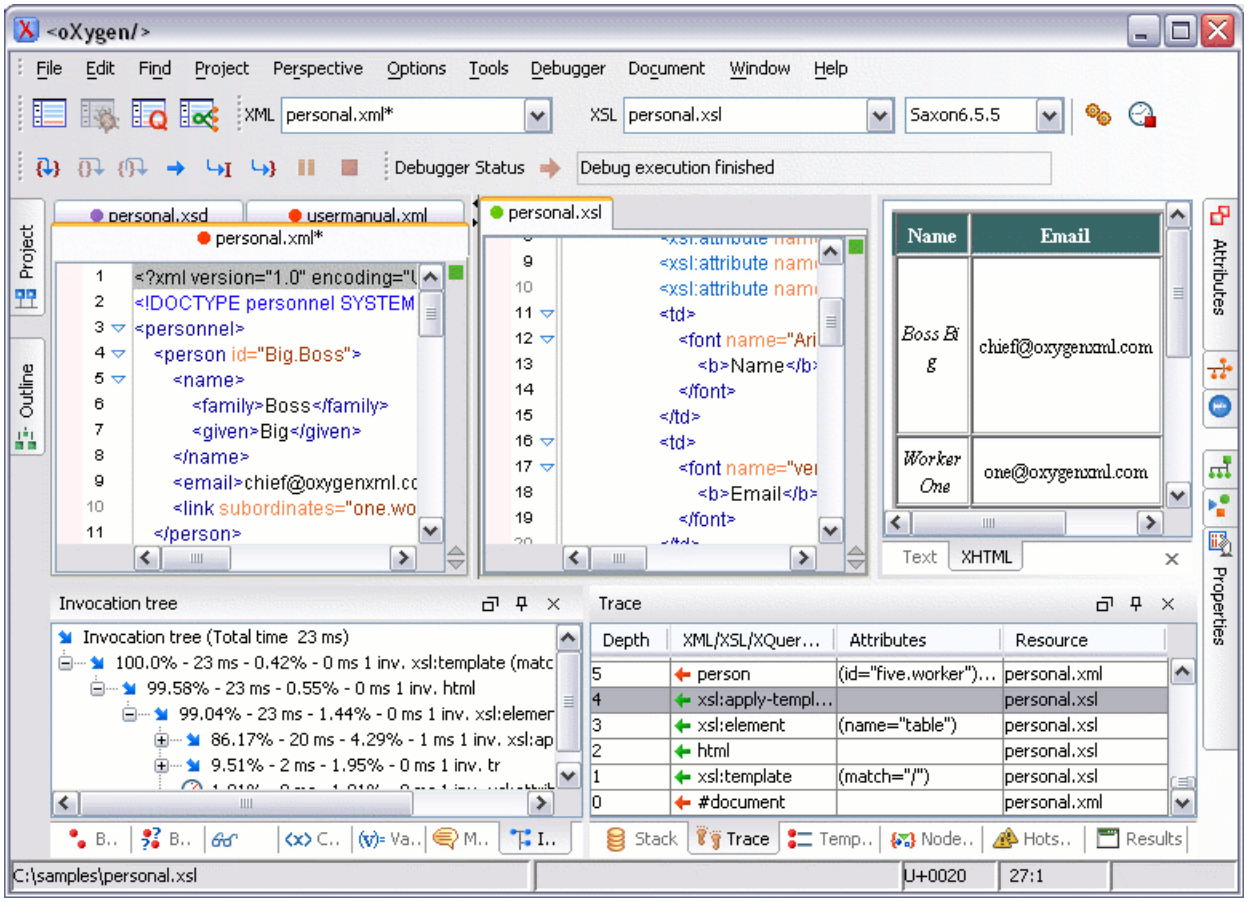
The user benefits of a rich set of features for testing and solving XSLT/XQuery problems:

- Support for XSLT 1.0 stylesheets (through the Saxon 6.5.5 and Xalan XSLT engines) , XSLT 2.0 stylesheets (through the Saxon 9B XSLT engine) and XQuery 1.0 (through the Saxon 9B XQuery engine).
- Stepping capabilities: step in, step over, step out, run, run to cursor, run to end, pause, stop.
- Back mapping between every piece of output and instruction element /source context who generate it .
- Breakpoints on both source and XSLT/XQuery documents.
- Call stack view 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 Debugger perspective interface looks like below. This interface is comprised of 4 panes as follows:

Figure 10.1. Debugger Mode Interface



Source document view (XML)	Displays and allows editing of data or document oriented XML files (documents).
XSL/XQuery document view (XSL/XQuery)	Displays and allows editing of XSL files(stylesheets) or XQuery documents.
Output document view	Displays the transformed output that results from the input of a selected document (XML) and selected stylesheet (XSL) or XQuery document to the transformer. The result of transformation is dynamically written as the transformation is processed. There are two views for the output: a text view (with XML syntax highlight) and an XHTML view. For large output the XHTML view can be can disabled (see Debugger Settings).
Control view	The control view provides functionality for configuration and control of debugging operations. It also provides a series of Information views types. This pane is comprised of two parts: • Control Toolbar • Information views

XML documents and XSL stylesheets or XQuery documents that were opened in 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 toggling 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 same as the context menus that are activated by a right click of the mouse. On Windows the context menu can be displayed with the mouse on a right click or with the keyboard by pressing the special context menu key available on Windows keyboards. Bookmarks are replaced by breakpoints in Debugger perspective.

During debugging the current execution node is highlighted on both document (XML) and XSL/XQuery views.

Control Toolbar

The toolbar contains all actions needed in order to configure and control the debug process. Items are described below from left to right as they appear in the toolbar.

Figure 10.2. Control Toolbar

XML source selector	The selection represents the source document to be used as input by the transformation engine. The selection list is filled-in with all opened files (the XML ones being emphasized). This gives you the possibility to use other file types as source. In case of XQuery debugging session this selection field can be set to default value NONE, as usually XQuery documents do not require an input source.
XSL/XQuery selector	The selection represents the stylesheet or XQuery document to be used by the transformation engine. The selection list is filled-in with all opened files (the XSL/XQuery ones being emphasized).
XSLT/XQuery engine selector	Lists the available XSLT/XQuery processors
XSLT/XQuery parameters	XSLT/XQuery parameters to be used by the transformation.
Edit extensions	Add and remove the Java classes and jars used as XSLT extensions.
Enable profiling	Enable/Disable current transformation profiling.
Enable XHTML output	Enable or disable rendering of output to the XHTML Output document View during the transformation process. For performance issues, it is advisable to disable XHTML output for large jobs. Also, the XHTML area is only able to render XHTML documents. In order to view the output result of other formats, such as HTML, save the Text output area to a file and use the required external browser for viewing.

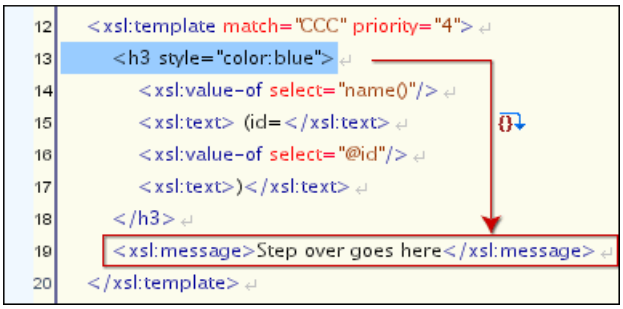
When starting a debug session from the editor perspective using the Debug Scenario action, the state of this toolbar button reflects the state of the "Show as XHTML" output option from the scenario.

Step into

Starts the debugging process and runs until the next stylesheet node (next step in transformation).

Step over

Executes the current stylesheet node (including its sub-elements) and goes to next node in document order (usually the next sibling of the current node).



Step out

Steps out to the parent node (equivalent to the Step over on the parent).

Run

Starts the debugging process and runs until the first breakpoint is encountered or until the end of transformation occurs, if no breakpoints are encountered (see the section called “Breakpoints View”).

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 end of execution.

Run to end

Runs the transformation until the end, without taking into account any enabled breakpoints that might be set.

Pause

Interrupts the current transformation. This 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.

Note

Accelerator key combinations can be associated with debugger actions in the <oXygen/> preference dialog called Menu Shortcut Keys .

Information views

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 (for a more detailed discussion on each information type see Viewing processing information):

Left side information views

- Context Node View
- XWatch View
- Breakpoints View
- Break Conditions View
- Messages View (XSLT only)
- Variables View

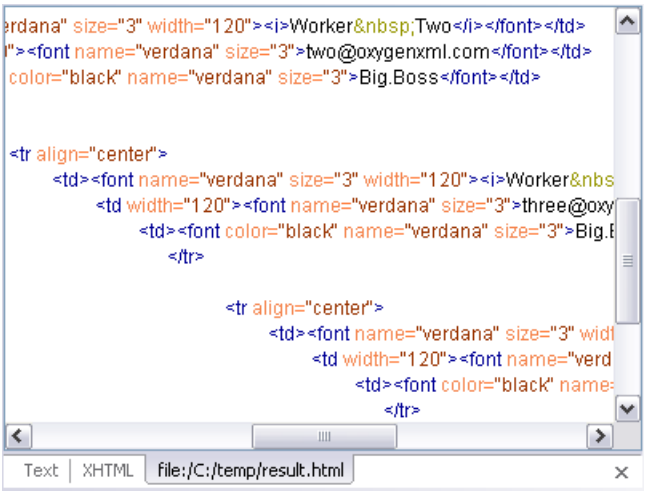
Right side information views

- Stack View
- Trace View
- Templates View (XSLT only)
- Nodeset View

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.

Figure 10.3. Multiple output documents in XSLT 2.0



Working with the XSLT/XQuery Debugger

The following topics are present about how to follow XSLT/XQuery processing and detect errors in your stylesheets or XQuery documents:

- Steps in a typical debug process
- Using breakpoints
- Viewing processing information
- Determining what XSL/XQuery expression generated particular output

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 desired Debugger perspective (XSLT or XQuery) with one of the actions (here explained for XSLT):
   - Menu Perspective → Debugger or the toolbar button Debugger
   - Menu Document → XML Document → Debug scenario or the toolbar button Debug scenario
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 XSL/XQuery document in the XSL/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.

Using breakpoints

The <oXygen/> XSLT/XQuery Debugger allows you to interrupt XSLT/XQuery processing to gather information about variables and processor execution at particular points.

Inserting breakpoints

To insert a breakpoint:

1. In the XML source document or the XSLT/XQuery document that you want to set a breakpoint, place your cursor on the line where you want the breakpoint to be. You can set breakpoints on XML source only for XSLT debugging sessions.

2. Select Edit → Breakpoints → Create or directly click with the mouse the left side stripe of the editor window on the line where you want the breakpoint to be.

Note

If the start tag of the element you want to set a breakpoint is spanning on multiple rows, then you have to place the breakpoint on the line containing the end of the start tag. In the following example if you try to place a breakpoint on the call-template line, the editor will show an error dialog, explaining that you must place the breakpoint at the end of the start tag. This means you have to place the breakpoint on the line containing the text: ">" , just after the "name" attribute.

```
<xsl:template match="chapter">
    <xsl:call-template
            name="title"
     >
     </xsl:call-template>
</xsl:template>
```

Removing breakpoints

To remove a breakpoint:

- Click with the mouse the left side stripe of the editor window on the line with the breakpoint or select Edit → Breakpoints → Remove all

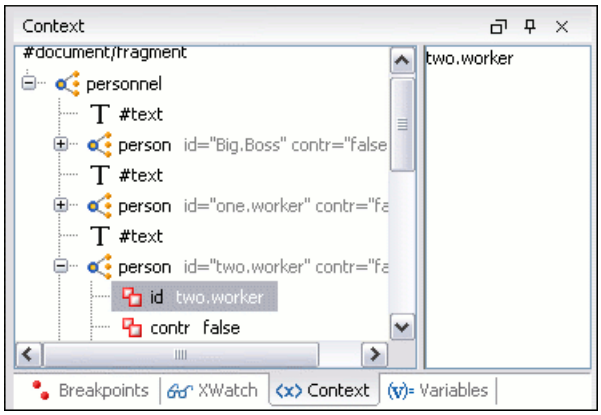
Viewing processing information

Detailed information about the debugger status are provided using the information views.

Context node view

The context node is valid only for XSLT debugging session and is a source node corresponding to the XSL expression being 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 on XWatch View. The value of the context node is presented as a tree in the view.

Figure 10.4. 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 will be presented before the node name. The value of the selected attribute or node is shown in the right side panel.

XPath watch view

Shows XPath expressions to be evaluated during debugging. Expressions are evaluated dynamically as the processor changes its source context.

Figure 10.5. The XPath watch view

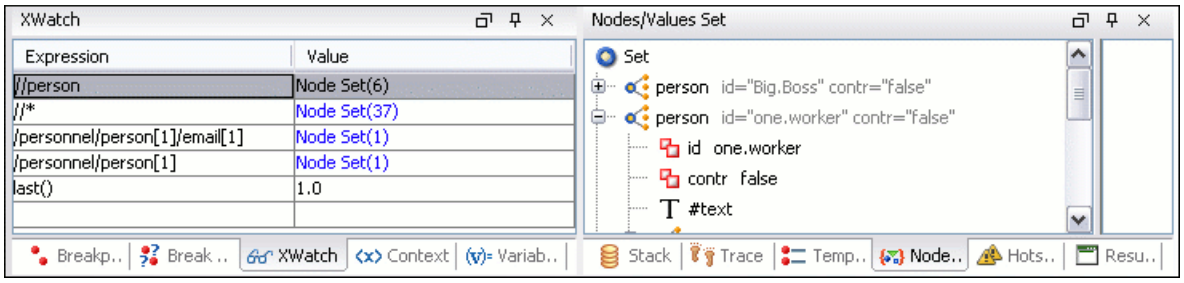


Table 10.1. XWatch details

Column	Description
Expression	XPath expression to be evaluated (should be XPath 1.0 or 2.0 compliant).
Value	Result of XPath expression evaluation. Value has a type (see Possible Values in the section the section called “Variables View”). For *Node Set* results the number of nodes in the set is shown in parenthesis.

Remarks

- Expressions referring to variables names are not evaluated. In case of an XPath error, you get an Error line.
- The expression list is not deleted at the end of transformation (it is preserved during sessions).
- To insert a new expression click the last line on the expression column and enter it or right click and select the *Add* action. Press enter on cell to add and evaluate.
- To delete an expression click on its Expression column and delete its content or right click and select the *Remove* action. Press enter on cell to commit changes.
- If the expression result type is a Node Set you can click on it (Value column) and you will see on the right side its value. (see Nodeset View).
- Copy, Add, Remove and Remove All actions are offered in every row's contextual menu.

Breakpoints View

Lists all breakpoints set on opened documents. Once you set a breakpoint it is automatically added in this list. Breakpoints can be set on XSL/XQuery documents and in XML documents for XSLT debugging sessions.

Figure 10.6. The Breakpoints View

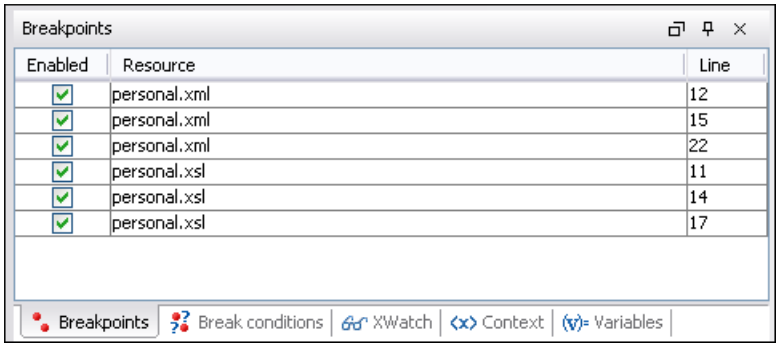


Table 10.2. Breakpoints details

Column	Description
Enabled	If checked, the current condition is evaluated and taken into account.
Resource	Resource file where the breakpoint is set. Entire path of resource file is available as tooltip.
Line	Line number inside resource where the breakpoint is set.

Valid Breakpoint

- Not all set breakpoints are valid. For example if the breakpoint is set on one empty 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.
- The contextual menu on table has the Go to, Remove, Remove All, Enable All, Disable All options.

- Clicking a record highlights the breakpoint line into the document.

Break conditions view

Lists all defined break conditions. Unlike breakpoints, break conditions are not associated with a document, but they represent XPath expressions evaluated in the current debugger context. In order to be processed their evaluation result should be a boolean value.

Figure 10.7. The Break conditions view

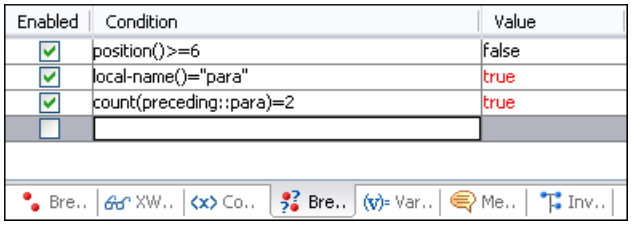


Table 10.3. Break conditions details

Column	Description
Enabled	If checked, the current condition is evaluated and taken into account.
Condition	XSLT/XQuery expression to be evaluated during debugging. The expression will be evaluated at every debug step.
Value	Boolean result of the evaluated condition or error message if the condition expression cannot be evaluated.

When the Debugger hits an active break condition it pauses the execution of the transformation and places a small marker on the left side of the line where the break condition occurred. The tooltip of the marker explains the cause of the pause. To disable further pauses when the same condition occurs you have to uncheck the *Enabled* column of the corresponding line in the *Break conditions* view.

Important

- The contextual menu on table has the Add, Remove, Remove All, Enable All, Disable All options.

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.

Figure 10.8. The Messages View

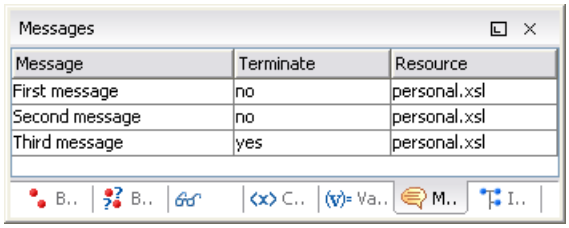


Table 10.4. Messages details

Column	Description
Message	Message content.
Terminate	Signals if processor will terminate the transformation or not once it encounters the message (true/false respectively)
Resource	Resource file where `<xsl:message>` instruction is defined. The complete path of the resource is available as tooltip.

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 (ascending, descending, no sort)

Stack View

Shows the current execution stack of both source and XSL/XQuery nodes. During transformation two stacks are managed: one of source nodes being processed and the other for XSL/XQuery nodes being processed. <oXygen/> shows both node types into one common stack. The source (XML) nodes are preceded by a red color icon while XSL/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 XSL/XQuery instruction is executed (the last red color node on the stack). The stack is oriented upside down.

Figure 10.9. The Stack View

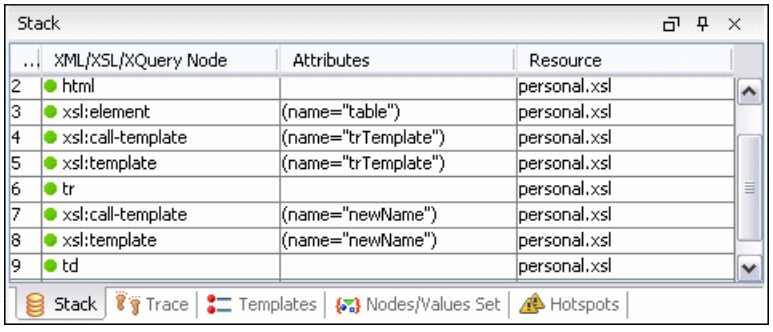


Table 10.5. Stack details

Column	Description
#	Order number, represents the depth of the node (0 is the stack base).
XML/XSL/XQuery Node	Node from source or stylesheet document currently being processed. One particular stack node is the document root, noted as #document.
Attributes	Attributes of the node (list of `id="value "` pairs).
Resource	Resource file where the node is located. Entire path is available as tooltip.

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 on Xalan you only see their names. (example `<xsl:template>` on Saxon and template on Xalan).
- Only Saxon processor shows element attributes.
- Xalan processor shows the "built-in" 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 XSL/XQuery node.
- leaving a XSL/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 XSL/XQuery nodes.

It is possible to save the element trace in a structured XML document. It 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.

Figure 10.10. The Trace History View

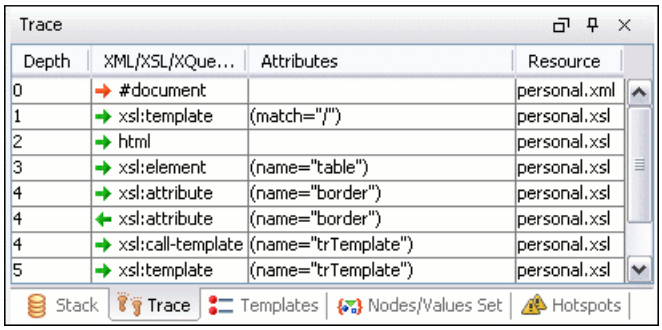


Table 10.6. Trace History details

Column	Description
Depth	Starts from 0 and represents the level of overlapping for that node. This is similar with the # order number from stack at the moment the node was processed.
XML/XSL/XQuery Node	Represents the node from the processed source or stylesheet document. One particular node is the document root, noted as #document. Every node has an arrow in front of it representing what action was performed on it (entering or leaving).
Attributes	Attributes of the node (list of `id="value "` pairs).
Resource	Resource file where the node is located. Complete path to resource file is provided as tooltip.

Remarks

- Clicking a record highlights that node's location inside the resource.
- Only Saxon processor shows element attributes.
- Xalan processor shows 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.

Figure 10.11. The Templates view

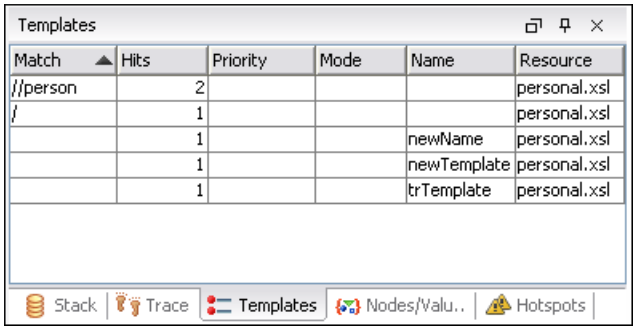


Table 10.7. Templates details

Column	Description
Match	Match attribute of the `<xsl:template>`.
Hits	Number of hits for the `<xsl:template>`. Shows how many times the XSLT processor used this particular template.
Priority	Template priority as established by XSLT processor.
Mode	Mode attribute of the `<xsl:template>`.
Name	Name attribute of the `<xsl:template>`.
Resource	Resource file where template is located. Complete path of resource file is available as tooltip.

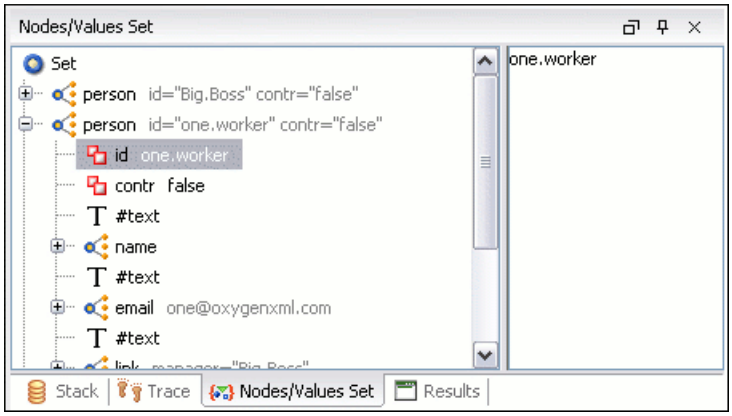
Remarks

- Clicking a record highlights that template definition inside 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 (ascending, descending, no sort)
- Xalan shows the "built-in" rules.

Node set view

This view is always used in relation with Variables View and XWatch View and shows a nodeset value in a tree form. Once you click a variable having as value a nodeset or tree fragment or an XPath expression evaluated to a nodeset in the above views the node set view gets updated with the respective value.

Figure 10.12. The Node Set view



The nodes/values set 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 will be presented before the node name. The value of the selected attribute or node are shown in the right side panel.

Remarks

- In case of longer values for Value/Attributes column content, 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

During transformation variables and parameters play an important role.

<oXygen/> uses the following icons to differentiate variables/parameters:

- V{} Global variable.
- {V} Local variable.
- P{} Global parameter.
- {P} Local parameter.

The values types of a variable are marked by icons explained below:

Possible Values

- 1/0 Boolean.
- ABC String.
- 123 Numeric.
- {N} Node set.
- {...} Tree fragment.
- Date. (XSLT 2.0 only)
- Object.
- ? Any.

Figure 10.13. The Variables View

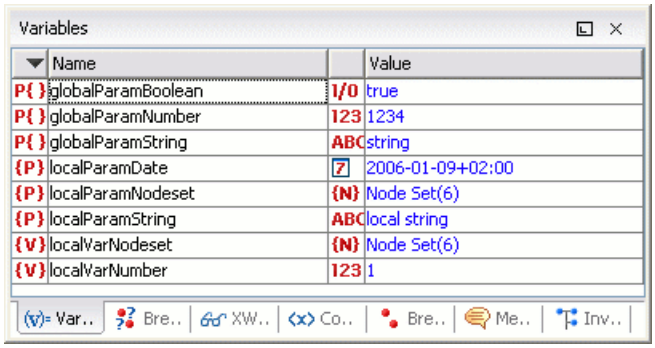


Table 10.8. Variables details

Column	Description
Name	Name of the variable/parameter.
Value	Current value for the variable/parameter.

Remarks

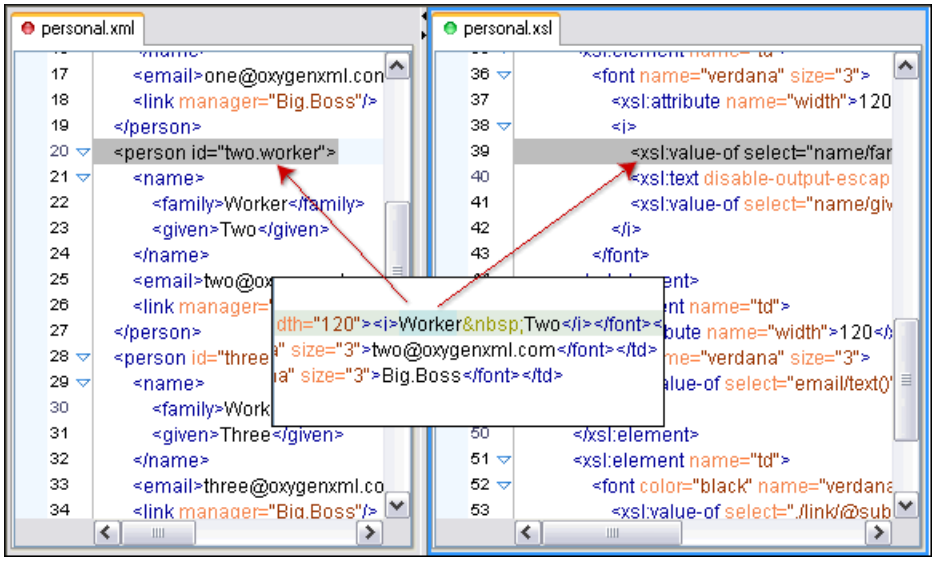
- Clicking a record highlights the variable definition line.
- Variable values could differ depending on the transformation engine used or stylesheet version set.
- If the value of the variable is a node-set or a tree-fragment, clicking on it causes the Node set view to be shown with corresponding set of values.
- Variable table values can be sorted by clicking the corresponding column header (ascending, descending, no sort)

Determining what XSL/XQuery expression generated particular output

In order to quickly spot the XSL templates or XQuery expressions with problems it is important to know what XSL template in the XSL 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 XSL/XQuery element being executed in the current source context. However, this can become difficult on complex stylesheets or XQuery documents that generates a large output.

Output to source mapping is a powerful feature that makes this output to source mapping persistent that is you can click on the text from the Output document view and the editor will select the XML source context and the XSL/XQuery element that generated the text.

Figure 10.14. Output to Source Mapping



1. If you are in the Editor perspective switch to the XSLT or XQuery Debugger perspective with one of the actions (here explained for XSLT):

   - Perspective → Debugger or the toolbar button Debugger
   - Document → XML Document → Debug scenario or the toolbar button Debug scenario

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 XSL/XQuery document in the XSL/XQuery selector of the Control toolbar

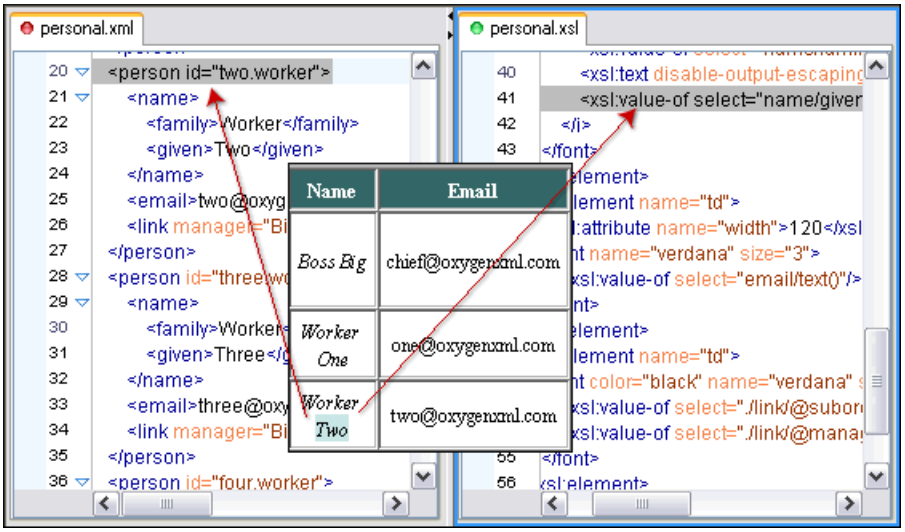
4. Select the XSLT/XQuery engine in the XSLT/XQuery engine selector of the Control toolbar

5. Set XSLT/XQuery parameters from the button available on the Control toolbar

6. Apply the 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 to have the XSL/XQuery element and the source context highlighted.

Figure 10.15. XHTML Output Mapping



Chapter 11. Profiling XSLT stylesheets and XQuery documents

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 editor debugging perspective.

Enabling/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.

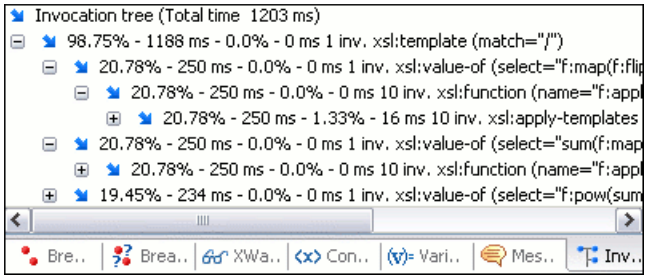
Viewing profiling information

Detailed profiling information for the current transformation is provided using the information views:

Invocation tree view

The invocation tree view shows a top-down call tree representing how XSLT instructions or XQuery expressions are processed.

Figure 11.1. Invocation tree view



The entries in the invocation tree have different meanings which are indicated by the displayed icons:

- This points to a call whose inherent time is insignificant compared to its call tree time.
- This 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 ms or µs. 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 ms or µs. 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.

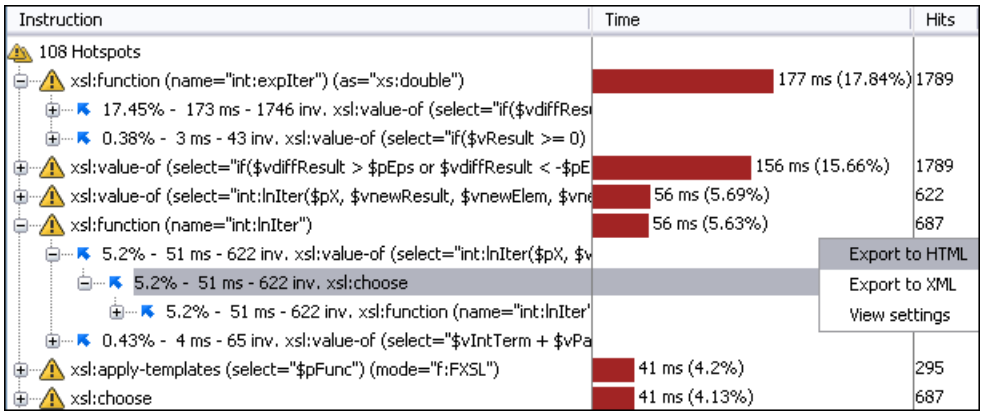
Note

All nodes having their call tree time less than the one specified in the XSLT/XQuery profiler settings are cumulated and shown as *Others* node.

Hotspots View

The hotspots view shows a list of all instruction calls which lie above the threshold defined in the XSLT/XQuery profiler settings .

Figure 11.2. 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 in several columns:

- the instruction name;
- the inherent time in ms or µs 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 ms or µs 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 (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 when the transformation ends successfully.

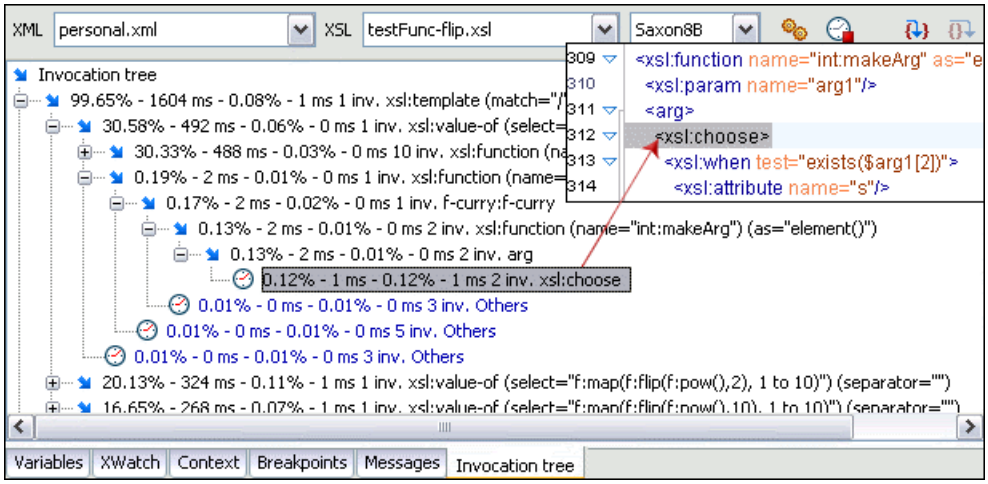
Note

Breakpoints/step capabilities may influence the result of profiling so their usage should be restricted to minimum.

Looking to right side (Hotspots view), you can immediately spot the time the processor spent in each instruction. As 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 at 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 11.3. 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 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 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 also available on distribution (see the subdirectory `frameworks/profiler/` of the <oXygen/> installation directory) 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.

Note

Precision: For Java virtual machine versions less than 1.4 we provide a time measurement in milli-seconds while for greater versions (1.5) the time resolution is provided in microseconds.

Caution

Profiling exhaustive transformation may run into an OutOfMemoryException 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.

Chapter 12. Comparing and merging documents

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/>'s new features: Compare files and Compare 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/> provides a simple means of performing file and folder comparisons. You can see the differences in your files and folders and also you can 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.

Also the comparison tool can be started using command line arguments. In the Oxygen installation folder there are 2 executable shells (diffFiles.bat and diffDirs.bat if running on Windows). You can give one or two command line arguments to each of these shells.

For example, to start the comparison between 2 directories on Windows use:

```
diffDirs.bat "c:\Program Files" "c:\ant"
```

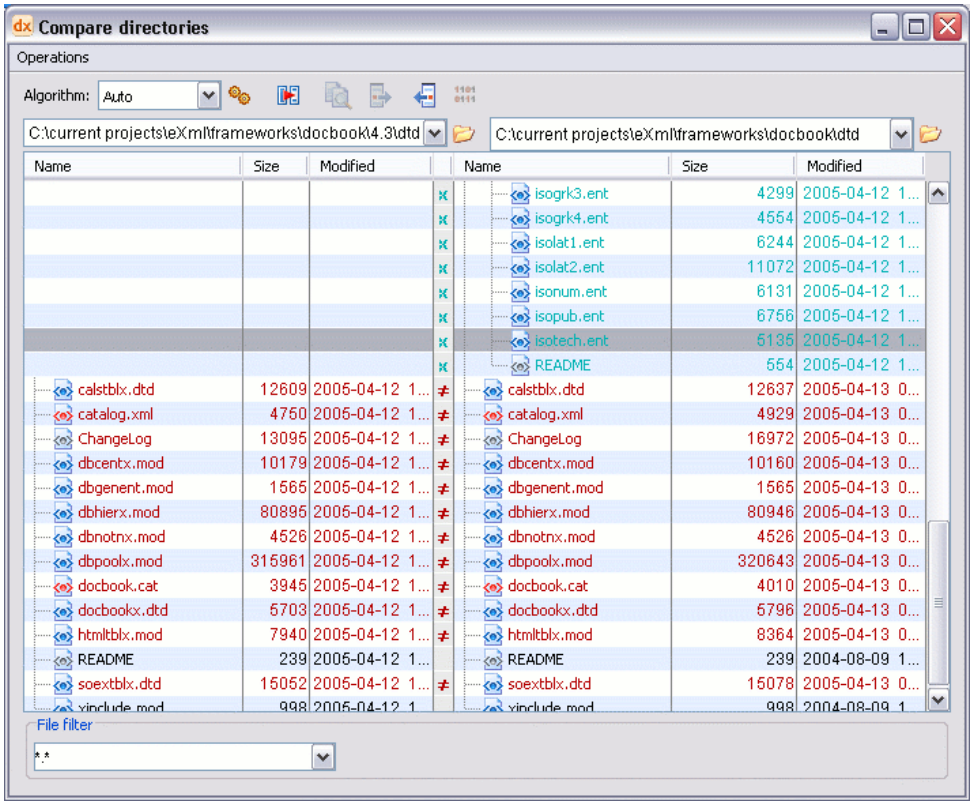
Note that if there are spaces in the path names, the paths need to be surrounded by quotes. Also one argument can be missing in which case the second directory will be chosen manually by the user.

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 or you can compare and merge the different files by double-clicking on them.

Figure 12.1. The Compare directories window



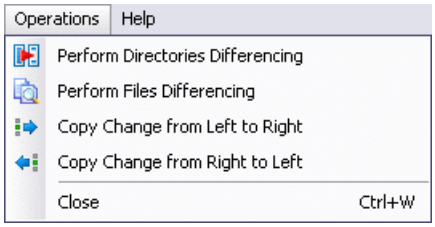
The directories comparison user interface

The directory comparison user interface is comprised of the following components:

The Operations Menu

This menu contains the functions available for directories comparison:

Figure 12.2. The Operations Menu



Operations → Perform directories differencing : Performs the comparison of the directories.

Operations → Perform files differencing : Performs the comparison of the files.

Operations → Copy change from left to right : Copies the selected file or folder to the corresponding directory from the right (only available if the file or folder to be copied exists in the left directory)

Operations → Copy change from right to left : Copies the selected file or folder to the corresponding directory from the left (only available if the file or folder to be copied exists in the right directory)

Operations → Close (**Ctrl+W**) : Closes the Compare directories window.

Compare Toolbar

Figure 12.3. The Compare toolbar

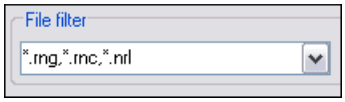
The available functions are presented in the Operations menu.

For the Algorithm and Diff Options buttons look below at File Comparison / Compare Toolbar

File Filter options

File filters are available; you can choose to see the differences only for XML files, or XSL files for instance.

Figure 12.4. File filter



Directories Selector

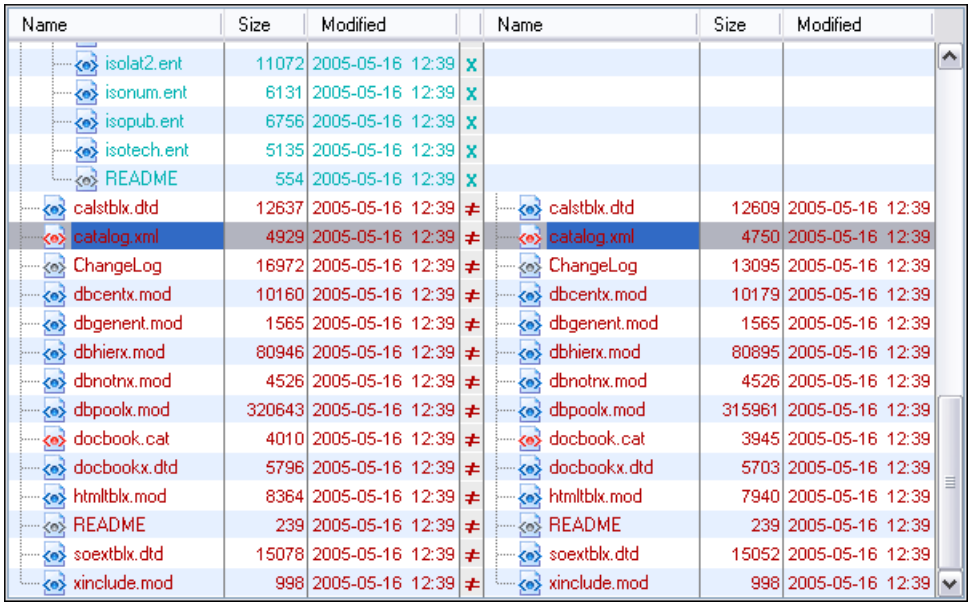
Figure 12.5. The Directories Selector

To open the directories you want to compare, select a folder from each "Browse for local file" button. <oXygen/> 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.

The comparison result

The directory comparison result is presented using a tree of files and directories.

Figure 12.6. Comparison result



For the files and folders from the compared directories you can see their name, size and their modification date.

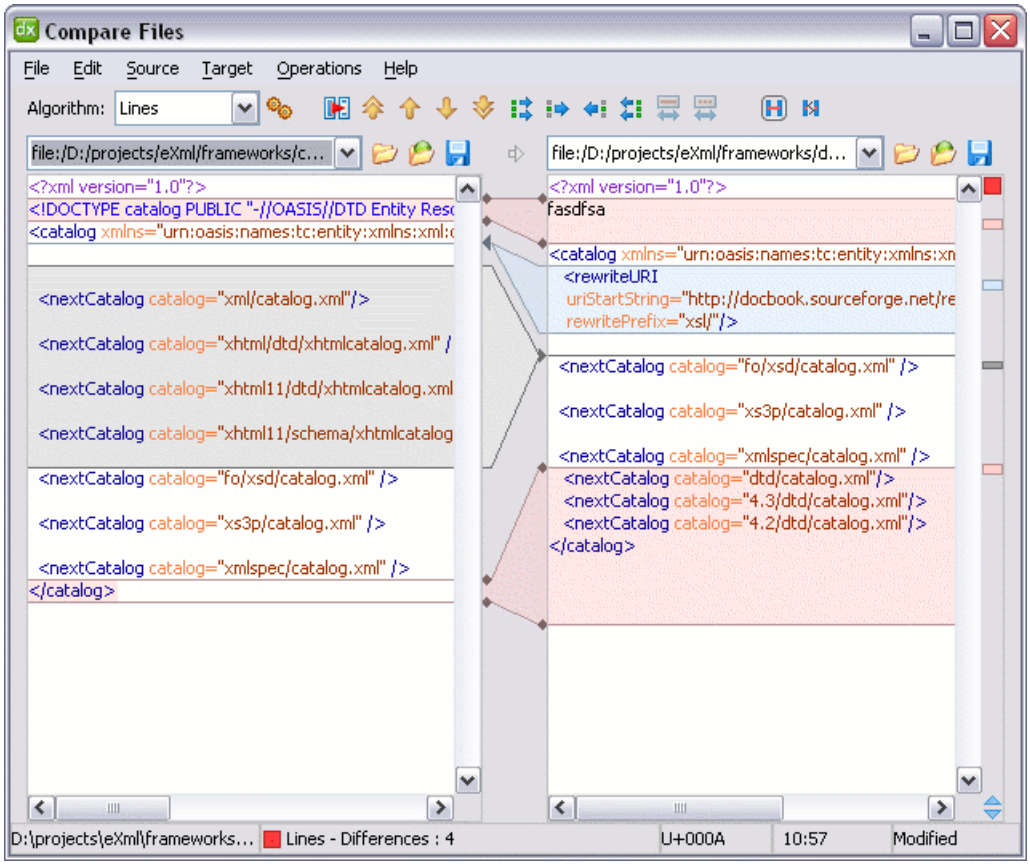
If a file or a folder exists only in one of the compared directories, the name of the file or folder will be blue and marked with an "X".

If a file exists in both directories but the content is different, the name of the file will be red and marked with a "not-equal" sign. <oXygen/> offers an useful option here: you can double-click the line marked with the "not-equal" sign and a new "File Content Comparison" Window will be opened, showing the differences between the two files.

File Comparison

The comparison of a pair of files MODIF is done by opening them in two editors arranged in a side-by-side layout. You can edit either the source or the target file. The differences are refreshed when you save the modified document.

Figure 12.7. The Compare Files Window



The window is comprised of the following components:

The Main Menu

The Main Menu provides access to all the functions and features available in this window:

The Source Menu

Here you can select the source file to be compared.

Source → Open : Browses for a file (the source file).

Source → Open URL : Opens URL to be used as a source file. See Open URL for details.

Source → Save : Saves the changes made in the source file.

The Target Menu

Here you can select the target file to be compared.

Target → Open : Browses for a file (the target file).

Target → Open URL : Opens URL to be used as a target file. See Open URL for details.

Target → Save : Saves the changes made in the target file.

Operations Menu

Operations → Perform files differencing : Performs the comparison of the source and the target files.

Operations → Go to first modification : Selects the first difference in the files. (The button becomes available if the selection is not on the first modification)

Operations → Go to previous modification : Selects the previous difference in the files. (The button becomes available if the selection is not on the first modification)

Operations → Go to next modification : Selects the next difference in the files. (The button becomes available if the selection is not on the last modification)

Operations → Go to last modification : Selects the last difference in the files. (The button becomes available if the selection is not on the last modification)

Operations → Copy all non-conflicting changes from left to right : Copies the non-conflicting changes from the source to the target.

Operations → Copy all non-conflicting changes from right to left : Copies the non-conflicting changes from the target to the source.

Operations → Copy change from left to right : Copies the selected difference from the source to the target.

Operations → Copy changes from right to left : Copies the selected difference from the target to the source.

Operations → Show modification details at word level : Provides Word Level Comparison

Operations → Show modification details at char level : Provides Character Level Comparison

Compare Toolbar

This is where you'll find the operations that can be performed on the source and target files.

Figure 12.8. The Compare Toolbar

The available functions are presented at the Operations menu.

Perform files differencing	Run the diff algorithm selected in the Algorithm combo box on the two selected files.
Diff Options	Opens the Diff Options page [preferences-diff].
Go to first modification	Scroll the two-way comparison panel to the first difference marked in the two-way comparison panel.
Go to previous modification	Scroll the two-way comparison panel to the previous difference marked in the two-way comparison panel.
Go to next modification	Scroll the two-way comparison panel and select the next difference marked in the two-way comparison panel.

Go to last modification	Scroll the two-way comparison panel and select the last difference marked in the two-way comparison panel.
Copy all non-conflicting changes from left to right	All the nodes present in the left side file and not present in the right side file are copied to the right side file.
Copy change from left to right	Copy the current difference marked in the two-way comparison panel from the left side file to the right side file.
Copy change from right to left	Copy the current difference marked in the two-way comparison panel from the right side file to the left side file.
Copy all non-conflicting changes from right to left	All the nodes present in the right side file and not present in the left side file are copied to the left side file.
Show modification details at word level	The Word algorithm is applied to the current difference marked in the two-way comparison panel and the result is displayed in a separate dialog.
Show modification details at char level	The Characters algorithm is applied to the current difference marked in the two-way comparison panel and the result is displayed in a separate dialog.
Enable scrolling synchronization	When one of the two panels is scrolled up or down the other panel is scrolled in the same direction so that corresponding match of the current difference from the other panel is displayed at the same time as in the scrolled panel.
Disable scrolling synchronization	When one of the two panels is scrolled up or down the other panel is not scrolled. The effect is that the corresponding match of the current difference from the other panel is not displayed at the same time as in the scrolled panel.

Also, <oXygen/> offers you the complete diff solution:

- two XML diff algorithms
  - *XML Accurate* works on small files and it is very precise.
  - *XML Fast* works on larger files but it is less precise than XML Accurate.
- *Syntax Aware* for the file types known by <oXygen/>, it computes the differences taking into consideration the syntax of the documents.
- three all-purpose algorithms:
  - *Lines* algorithm computes the differences at line level
  - *Words* algorithm computes the differences at word level
  - *Characters* algorithm computes the differences at character level
- an automatic selection of the algorithm:
  - *Auto* selects the most appropriate algorithm, based on the files' content and size.

Diff Options button	It provides quick access to the Diff preferences pane where you set Diff parameters that will be saved for the next time when you open the Compare Files dialog.

Files Selector

To open the source and target files where you want to see the differences, select a file from the "Open" or "Open URL" button. <oXygen/> 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 changes.

The two editors are kept in sync, if you scroll the text in one of them, the other will also scroll to show the difference. The differences are indicated using highlights connected through colored areas. You can use the "Go to modification" buttons to navigate between differences or simply select a change by clicking on it in the overview ruler located in the right-most part of the window. Also the overview ruler contains a success indicator in its upper part that will turn green in case the are no differences and red if differences are found. You can also do this by clicking on 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.

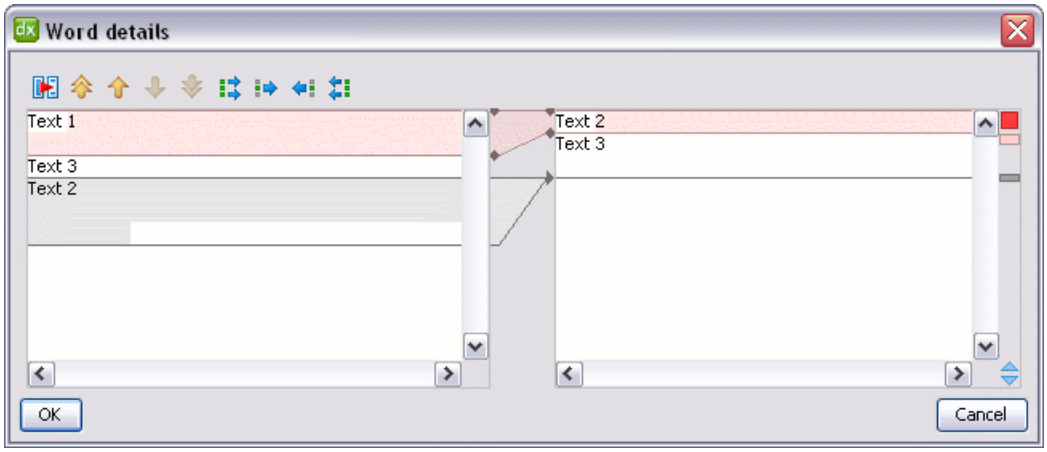
You can right-click the text editors for the "Cut", "Copy", "Paste" and "Select all" actions. The Find/Replace dialog is displayed by pressing Ctrl+F (Cmd+F on Mac). Also there are available the Find/Replace options: F3 used to perform another search using the last search configuration, and Shift+F3 to perform 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 modification details at word level" button from the Compare Panel or from the Operations menu.

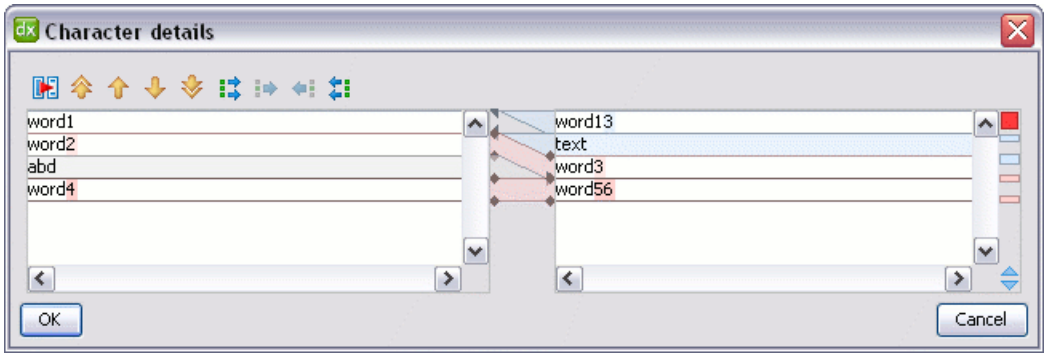
Figure 12.9. Word Level Comparison



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 modification details at char level" button from the Compare Panel or from the Operations menu.

Figure 12.10. Character Level Comparison



Chapter 13. Working with Databases

XML is a storage and interchange format for structured data and it is supported by all major database systems. <oXygen/> 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/> offers support for the following relational databases: IBM DB2, JDBC-ODBC Bridge, MySQL, Microsoft SQL Server, Oracle 10.2 like browsing the tables of these types of database in the *Database Explorer* view, executing SQL queries against them, calling stored procedures with input and output parameters.

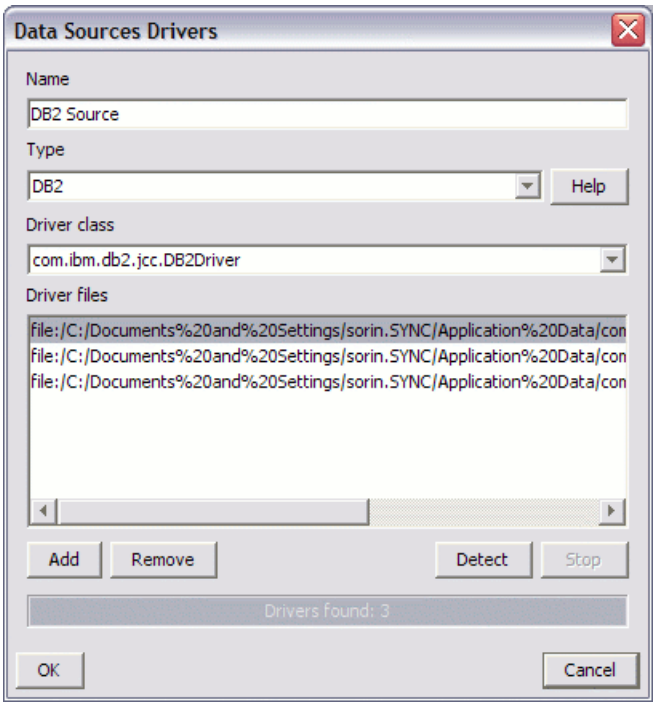
In the following sections one can find the tools that <oXygen/> offers for working with relational databases and a description on how to configure a relational data source, a connection to a data source and also the views where connections can be browsed and results are displayed.

Configuring Database Data Sources

How to configure an IBM DB2 Data Source

1. Go to *Preferences -> Data Sources*. In the Data Sources panel click the *New* button.
2. Enter a unique name for this data source and select *DB2* from the driver type combo box.

Figure 13.1. Data Source Drivers Configuration Dialog



Press the Add button to add the following IBM DB2 specific files:

- 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/>.

You can manually manage the Driver Files using *Add*, *Remove*, *Detect* and *Stop*(detection) buttons.

3. Select the most suited *Driver class*.
4. Click *OK* to finish the data source configuration.

How to configure a Generic JDBC Data Source

<oXygen/>'s default configuration already contains a generic JDBC data source called *JDBC-ODBC Bridge*.

1. Go to *Preferences -> Data Sources*. In the Data Sources panel click the *New* button.
2. Enter a unique name for this data source and select *Generic JDBC* from the driver type combo box.

   Click the *Add* button and find the driver file on your file system.

   You can manage the Driver Files using *Add*, *Remove*, *Detect* and *Stop*(detection) buttons.
3. Select the most suited *Driver class*.
4. Click *OK* to finish the data source configuration.

How to configure a Microsoft SQL Server Data Source

1. Go to *Preferences -> Data Sources*. In the Data Sources panel click the *New* button.
2. Enter a unique name for this data source and select *SQLServer* from the driver type combo box.
3. Press the Add button to add the following Microsoft SQL Server specific files:

   - 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/>.

   You can manage the Driver Files using *Add*, *Remove*, *Detect* and *Stop*(detection) buttons.
4. Select the most suited *Driver class*.
5. Click *OK* to finish the data source configuration.

How to configure a MySQL Data Source

<oXygen/>'s default configuration already contains a generic JDBC data source called *MySQL*.

1. Go to *Preferences -> Data Sources*. In the Data Sources panel click the *New* button.
2. Enter a unique name for this data source and select *Generic JDBC* from the driver type combo box.

   Press the Add button to add the following MySQL specific files:

   - mysql-com.jar

   You can manage the Driver Files using *Add*, *Remove*, *Detect* and *Stop*(detection) buttons.
3. Select the most suited *Driver class*.
4. Click *OK* to finish the data source configuration.

How to configure an Oracle 10.2 Data Source

1. Go to *Preferences -> Data Sources*. In the Data Sources panel click the *New* button.
2. Enter a unique name for this data source and select *Oracle* from the driver type combo box.

   Press the Add button to add the following Oracle 10.2 specific files:

   - ojdbc14.jar

   In the Download links for database drivers section there are listed the URLs from where to download the drivers necessary for accessing Oracle 10.2 databases in <oXygen/>.

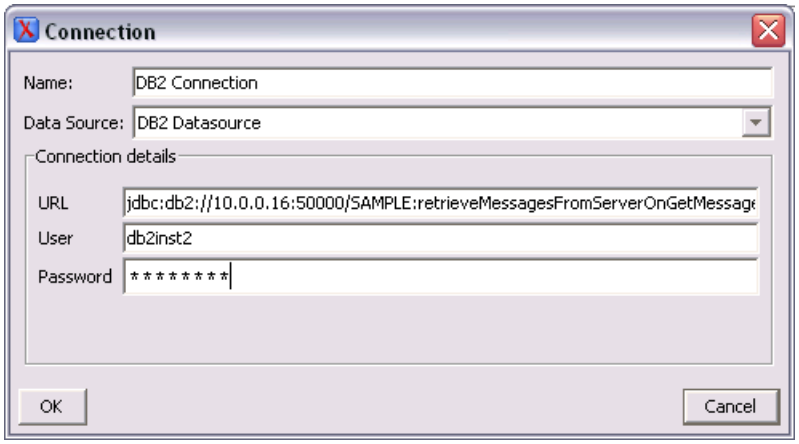
   You can manage the Driver Files using *Add*, *Remove*, *Detect* and *Stop*(detection) buttons.
3. Select the most suited *Driver class*.
4. Click *OK* to finish the data source configuration.

Configuring Database Connections

This section presents a set of procedures describing how to configure connections that use relational data sources.

How to Configure an IBM DB2 Connection

Figure 13.2. The Connection Configuration Dialog



1. Go to *Preferences -> Data Sources*. In the Connections panel click the *New* button.
2. Enter a unique name for this connection and select one of the previously configured DB2 data sources from the Data Source combo box.
3. Fill-in the Connection Details:

   URL — URL to the installed IBM DB2 engine.

   User — User name to access the IBM DB2 database engine.

   Password — Password to access the IBM DB2 engine.

4. Click *OK*.

How to Configure a JDBC-ODBC Connection

1. Go to *Preferences -> Data Sources*. In the Connections panel click the *New* button.
2. Enter a unique name for this connection and select one of the previously configured Generic JDBC data sources from the Data Source combo box.
3. Fill-in the Connection Details:

   URL — URL to the configured ODBC source.

   User — User name to access the configured ODBC source.

   Password — Password to access the configured ODBC source.

4. Click *OK*.

How to Configure a Microsoft SQLServer Connection

1. Go to *Preferences -> Data Sources*. In the Connections panel click the *New* button.

2. Enter a unique name for this connection and select one of the previously configured SQLServer data sources from the Data Source combo box.
3. Fill-in the Connection Details:

   URL — URL to the installed SQLServer engine.

   User — User name to access the SQLServer database engine.

   Password — Password to access the SQLServer engine.

4. Click *OK*.

How to Configure a MySQL Connection

1. Go to *Preferences -> Data Sources*. In the Connections panel click the *New* button.
2. Enter a unique name for this connection and select one of the previously configured MySQL data sources from the Data Source combo box.
3. Fill-in the Connection Details:

   URL — URL to the installed MySQL engine.

   User — User name to access the MySQL database engine.

   Password — Password to access the MySQL engine.

4. Click *OK*.

How to Configure an Oracle 10.2 Connection

1. Go to *Preferences -> Data Sources*. In the Connections panel click the *New* button.
2. Enter a unique name for this connection and select one of the previously configured Oracle data sources from the Data Source combo box.
3. Fill-in the Connection Details:

   URL — URL to the installed Oracle engine.

   User — User name to access the Oracle database engine.

   Password — Password to access the Oracle engine.

4. Click *OK*.

Note

Registering,unregistering or updating a schema might involve dropping/creating types. For schema-based XMLType tables or columns in schemas, you need privileges like

- 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

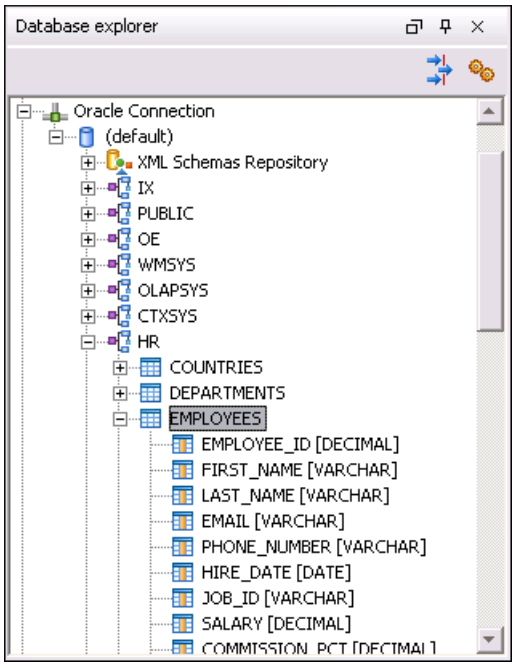
To avoid granting these privileges to the schema owner, Oracle recommends that the operations requiring these privileges be performed by a DBA if there are XML schema-based XMLType table or columns in other users' database schemas.

Resource Management

Database Explorer View

This view presents in a tree-like fashion the database connections configured in *Preferences -> Data Sources*. You can connect to a database simply by expanding the connection node. The database structure can be expanded up to column level. <oXygen/> supports multiple simultaneous database connections and the connections tree provides an easy way to browse them.

Figure 13.3. Database Explorer View



The following objects are displayed by the Database Explorer view:

- Connection
- Catalog
- XML Schema Repository
- XML Schema Component
- Schema
- Table
- System Table
- Table Column

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 *Database Explorer* view.
- The Configure Database Sources button opens the *Data Sources* preferences page where you can configure both data sources and connections.

Below you can find a description of the contextual menu actions available on the Database Explorer levels. Please note that you can also open an XML schema component in the editor by double-clicking it. To view the content of a table in the Table Explorer view double-click one of its fields.

Actions available at connection level

- Refresh - performs a refresh of the selected node's subtree.
- Configure Database Sources - opens the *Data Sources*preferences page where you can configure both data sources and connections.

Actions available at catalog level

- Refresh - performs a refresh of the selected node's subtree.

Actions available at schema level

- Refresh - performs a refresh of the selected node's subtree.

Actions available at table level

- 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). View.

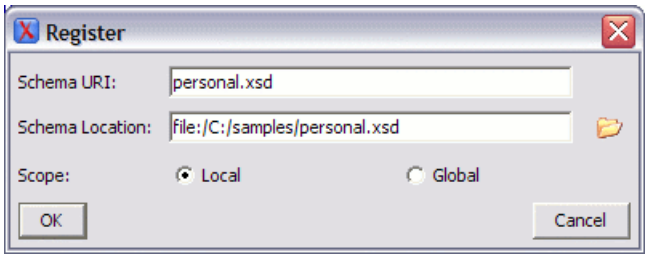
XML Schema Repository level

For relational databases that support XML schema repository (XSR) in their database catalogs, the actions available at this level are presented in the following sections.

Oracle's XML Schema Repository Level

- 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.

Figure 13.4. Register Dialog

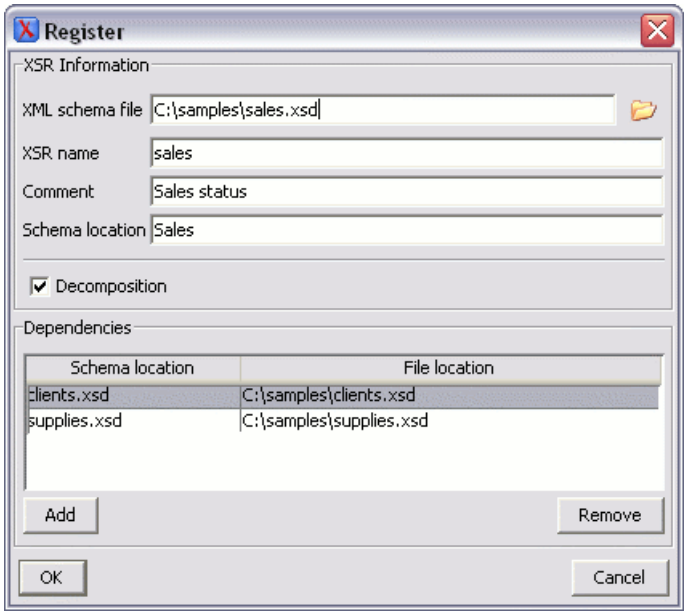


To add an XML Schema, enter the schema URI and location on your file system. Local scope means that the schema will be visible only to the user who registers it. Global scope means that the schema is public.

IBM DB2's XML Schema Repository Level

- 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.

Figure 13.5. Register Dialog



The XSR Information section of the above figure contains the following fields:

- *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.

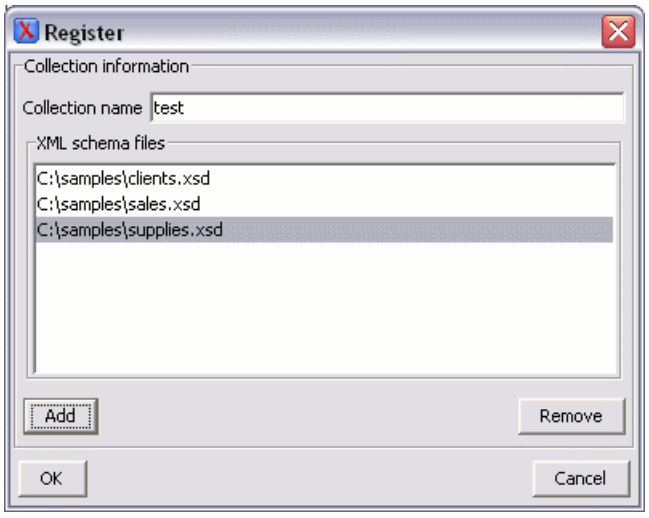
Actions available at schema level:

- 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/>.

Microsoft SQL Server's XML Schema Repository Level

- 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.

Figure 13.6. Register Dialog



To register a new schema, enter a collection name and the necessary schema files in the above dialog. XML Schema files management is done by using the *Add* and *Remove* buttons.

Actions available at schema level:

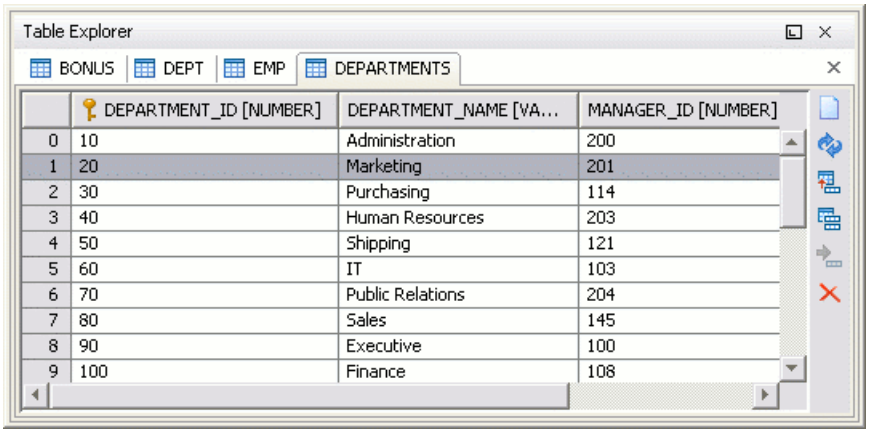
- Refresh - performs a refresh of the selected node (and it's subtree).

- 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/>.

Table Explorer View

Every table from the Database Explorer can be displayed and edited 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/> will try to update the database with the new cell content.

Figure 13.7. 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/>'s options is displayed in the Table Explorer view, a warning dialog will inform you that the table is only partially shown.

Note

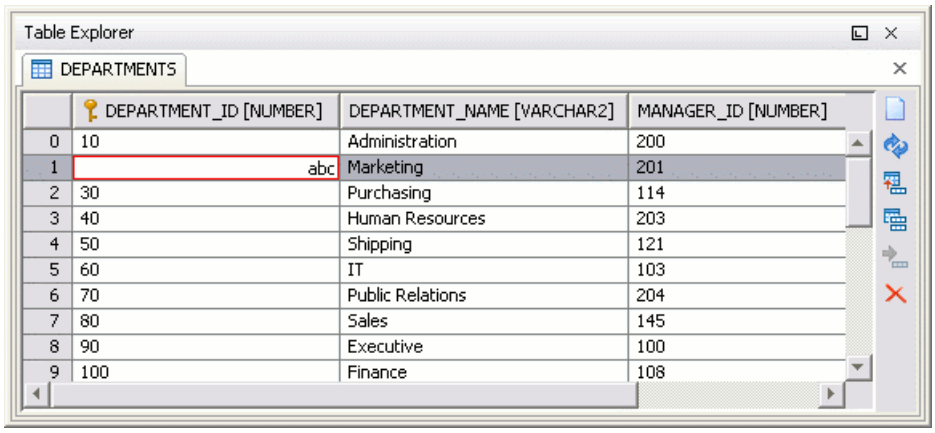
A custom validator cannot be applied on files loaded through an <oXygen/> custom protocol plugin developed independently and added to <oXygen/> after installation. This applies also on columns of type XML.

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 above figure *DEPARTMENT_ID* contains *NUMBER* values. If a character or string was inserted, the cell will look like this:

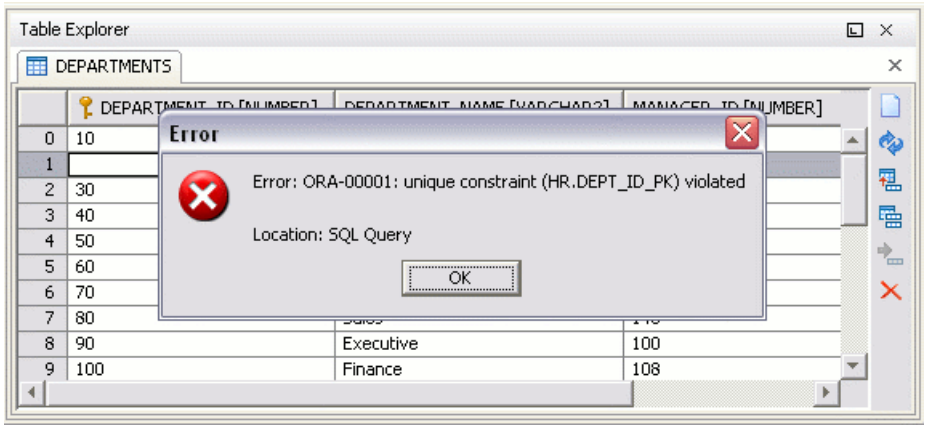
Figure 13.8. Cell containing an invalid value.



- If the constraints of the database aren't met (like primary key constraints for example), an Information dialog will appear, notifying you of the reason the database hasn't been updated.

  For example, if you'd try to set the primary key *DEPARTMENT_ID* for the second record in the table to 10 also, you would get the following message:

Figure 13.9. 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). View.
- 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.

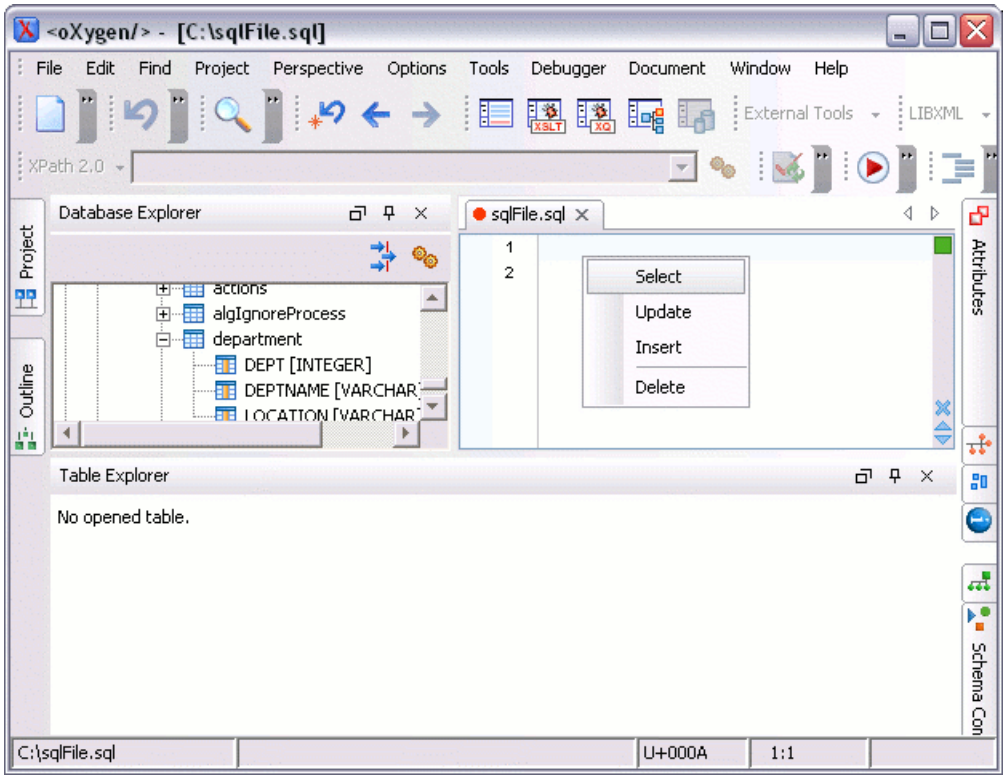
SQL Execution Support

<oXygen/>'s support for writing SQL statements includes syntax highlight, folding and drag&drop(DND) from the Database 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 Database Explorer

Configure a database connection as it was shown previously in this chapter and browse to the table you will use in your statement and drag it into the editor (where a sql file is open).

Figure 13.10. SQL statement editing with DND



Next, select the type of statement from the popup menu that appears in the sql editor. Depending on your choice, one of the following statements will be 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`)

DND is available both on the table and on its fields. Click on the column and drag it into the editor. The same popup menu as above will appear. Depending on your choice, one of the following statements will be 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`=)

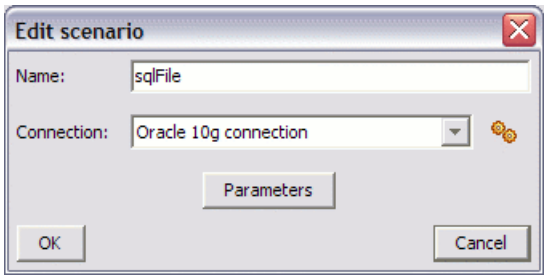
SQL Validation

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

First configure a transformation scenario. Click on the Configure Transformation Scenario button from the *Transformation* toolbar. The dialog that appears contains the list of existing scenarios that apply to SQL documents. To configure a new scenario, click the *New* button.

Figure 13.11. New SQL scenario dialog



Enter a name for the scenario and choose one of the available database connections. To configure a new connection click on Configure Database Sources .

Placeholders(?) for parameters are supported by <oXygen/>. For the following example *SELECT * FROM `test`.`department` where DEPT = ? or DEPTNAME = ?* two parameters can be configured for the transformation scenario. To do this, in the previous dialog click the Parameters button and add a new parameter for each placeholder. 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.

The result of a SQL transformation will be displayed in the *Table Explorer* view.

Importing from Databases

This feature is explained in detail in the Import from database section of Importing Data chapter.

Creating XML Schema from Databases

This feature is explained in detail in the Convert table structure to XML section of Importing Data chapter.

Native XML Database (NXD) Support

Native XML databases have an XML-based internal model and their fundamental unit of storage is XML. <oXygen/> offers support for: Berkeley DB XML, eXist, MarkLogic, Software AG Tamino, Raining Data TigerLogic, X-Hive/DB and Oracle XML DB.

Configuring Database Data Sources

This section presents a set of procedures describing how to configure NXD data sources.

How to configure a Berkeley DB XML datasource

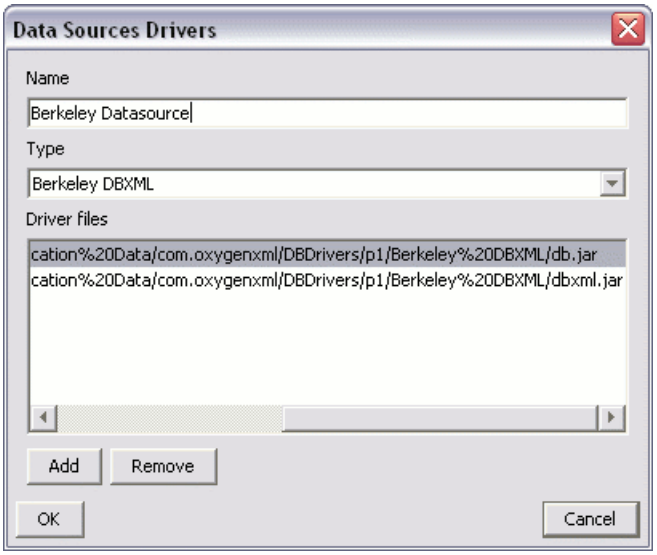
The latest instructions on how to configure Berkeley DB XML support in <oXygen/> can be found on our website [http://www.oxygenxml.com/doc/ug-standalone/native-xml-database-support.html#configure-berkeley-datasource].

<oXygen/> supports Berkeley DB XML version 2.3.10. The following directory definitions shall apply:

- OXY_DIR - oXygen installation root directory. (for example on Windows C:\Program Files\Oxygen 9.1)
- DBXML_DIR - Berkeley DB XML database root directory. (for example on Windows C:\Program Files\Sleepycat Software\Berkeley DB XML 2.3.10)
- DBXML_LIBRARY_DIR (usually on Mac and Unix is DBXML_DIR/lib and on Windows is DBXML_DIR/bin)

1. Go to *Preferences -> Data Sources*. In the Data Sources panel click the *New* button.
2. Enter a unique name for this data source and select *Berkeley DBXML* from the driver type combo box.

Figure 13.12. Data Source Drivers Configuration Dialog



3. Press the Add button to add the following Berkeley DB specific files:
   - 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)
4. Click *OK* to finish the data source configuration.

How to configure an eXist datasource

The latest instructions on how to configure eXist support in <oXygen/> can be found on our website [http://www.oxygenxml.com/doc/ug-standalone/native-xml-database-support.html#configure-exist-datasource].

The eXist database server versions supported by <oXygen/> are 1.0 and 1.1.

1. Go to *Preferences -> Data Sources*. In the Data Sources panel click the *New* button.
2. Enter a unique name for this data source and select *eXist* from the driver type combo box.
3. Press the Add button to add the following eXist specific files:
   - exist.jar (check for it into your eXist installation root directory)
   - xmldb.jar (check for it into /lib/core subdirectory of your eXist installation root directory)
   - xmlrpc-1.2-patched.jar (check for it into /lib/core subdirectory of your eXist installation root directory)
4. Click *OK* to finish the data source configuration.

How to configure a MarkLogic datasource

The latest instructions on how to configure MarkLogic support in <oXygen/> can be found on our website [http://www.oxygenxml.com/doc/ug-standalone/native-xml-database-support.html#configure-marklogic-datasource].

1. Go to *Preferences -> Data Sources*. In the Data Sources panel click the *New* button.
2. Enter a unique name for this data source and select *MarkLogic* from the driver type combo box.
3. Add the following MarkLogic specific file:
   - xcc.jar

   In the Download links for database drivers section there are listed the URLs from where to download the drivers necessary for accessing MarkLogic databases in <oXygen/>.
4. Click *OK* to finish the data source configuration.

How to configure a Software AG Tamino datasource

The latest instructions on how to configure Software AG Tamino support in <oXygen/> can be found on our website [http://www.oxygenxml.com/doc/ug-standalone/native-xml-database-support.html#configure-tamino-datasource].

1. Go to *Preferences -> Data Sources*. In the Data Sources panel click the *New* button.
2. Enter a unique name for this data source and select *Tamino* from the driver type combo box.
3. Using the *Add* button add the following jar files available in the `SDK\TaminoAPI4J\lib` subdirectory of the Tamino 4.4.1 database install directory:
   - TaminoAPI4J.jar

- TaminoAPI4J-l10n.jar
- TaminoJCA.jar

Note

You must use the jar files from the version 4.4.1 of the Tamino database.

4. Click *OK* to finish the data source configuration.

How to configure a Raining Data TigerLogic datasource

The latest instructions on how to configure TigerLogic support in <oXygen/> can be found on our website [http://www.oxygenxml.com/doc/ug-standalone/native-xml-database-support.html#configure-tigerlogic-datasource].

1. Go to *Preferences -> Data Sources*. In the Data Sources panel click the *New* button.
2. Enter a unique name for this data source and select *TigerLogic* from the driver type combo box.
3. Add the following TigerLogic specific files (found in the TigerLogic JDK lib directory from the server side):
   - connector.jar
   - jca-connector.jar
   - tlapi.jar
   - tlerror.jar
   - utility.jar
   - xmlparser.jar
   - xmltypes.jar
4. Click *OK* to finish the data source configuration.

How to configure an X-Hive/DB datasource

The latest instructions on how to configure X-Hive/DB support in <oXygen/> can be found on our website [http://www.oxygenxml.com/doc/ug-standalone/native-xml-database-support.html#configure-xhive-datasource].

1. Go to *Preferences -> Data Sources*. In the Data Sources panel click the *New* button.
2. Enter a unique name for this data source and select *X-Hive* from the driver type combo box.
3. Add the following X-Hive/DB specific files (found in the X-Hive/DB lib directory from the server side):
   - antlr.jar
   - icu4j.jar
   - retroweaver-rt.jar

- xhive.jar

If you like to use a bootstrap file when connecting to the database you need to additionally add the following JAR files found in the same place:

- fop.jar
- jsr173_api.jar
- lucene.jar
- mx4j.jar
- serializer.jar
- w3c.jar
- xalan.jar
- xbean.jar
- xercesImpl.jar
- xml-apis.jar

4. Click *OK* to finish the data source configuration.

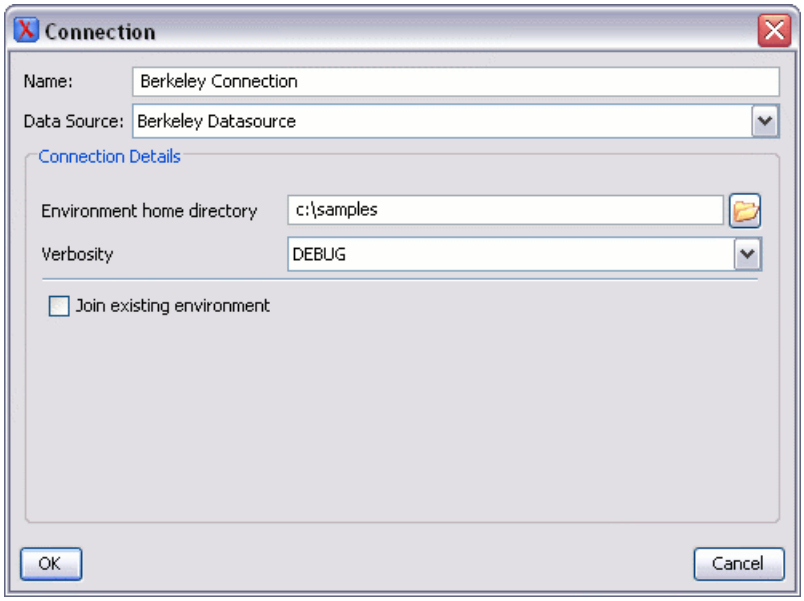
Configuring Database Connections

This section presents a set of procedures describing how to configure connections that use Native XML Database data sources.

How to configure a Berkeley DB XML Connection

<oXygen/> supports Berkeley DB XML version 2.3.10.

Figure 13.13. The Connection Configuration Dialog



1. Go to *Preferences -> Data Sources*. In the Connections panel click the *New* button.

2. Enter a unique name for this connection and select one of the previously configured Berkeley data sources from the Data Source combo box.

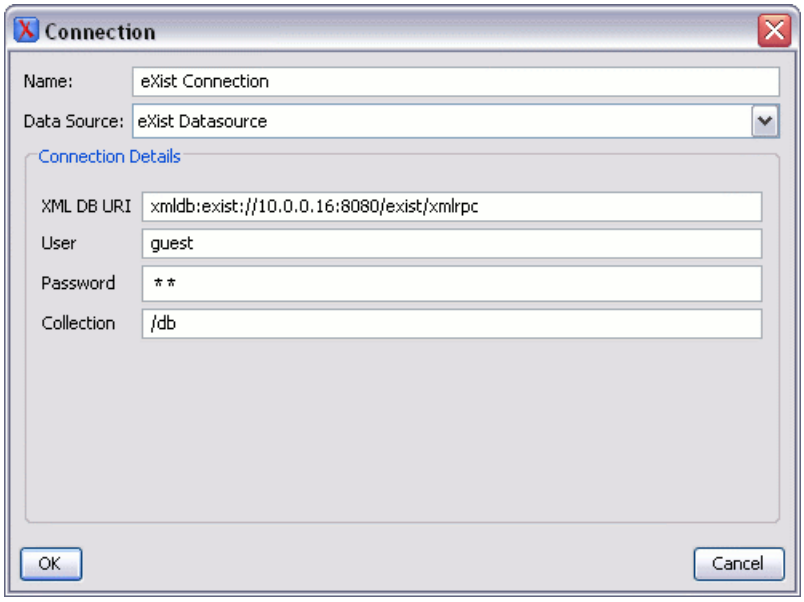
3. Fill-in the Connection Details:

Environment home directory	Path to the Berkeley DB XML's home directory.
Verbosity	The user can choose between four levels of verbosity: DEBUG, INFO, WARNING, ERROR.
Join existing environment	If checked, an attempt will be made to join an existing environment in the specified home directory and all the original environment settings will be preserved. If that fails, you should consider reconfiguring the connection with this option unchecked.

4. Click *OK*.

How to configure an eXist Connection

Figure 13.14. The Connection Configuration Dialog



1. Go to *Preferences -> Data Sources*. In the Connections panel click the *New* button.

2. Enter a unique name for this connection and select one of the previously configured eXist data sources from the Data Source combo box.

3. Fill-in the Connection Details

   XML DB URI — URI to the installed eXist engine.

   User — User name to access the eXist database engine.

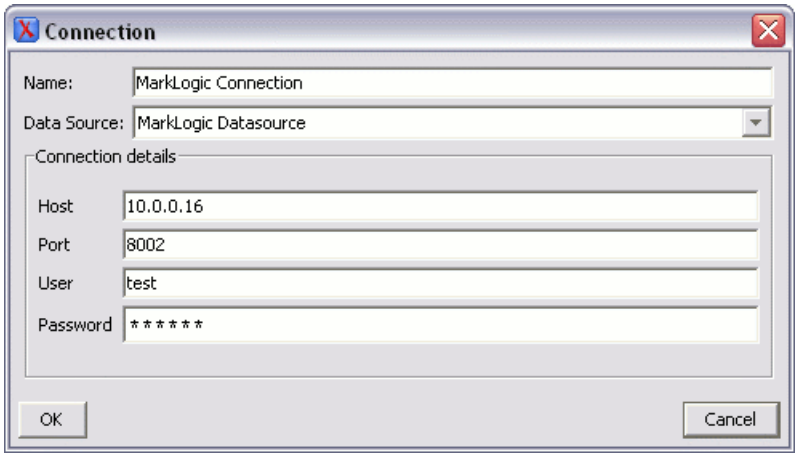
   Password — Password to access the eXist database engine.

   Collection — 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.

4. Click *OK*.

How to configure a MarkLogic Connection

Figure 13.15. The Connection Configuration Dialog



1. Go to *Preferences -> Data Sources*. In the Connections panel click the *New* button.
2. Enter a unique name for this connection and select one of the previously configured MarkLogic data sources from the Data Source combo box.
3. Fill-in the Connection Details:

   Host — The hostname or ip address of the installed MarkLogic engine.

   Port — The port number of the MarkLogic engine.

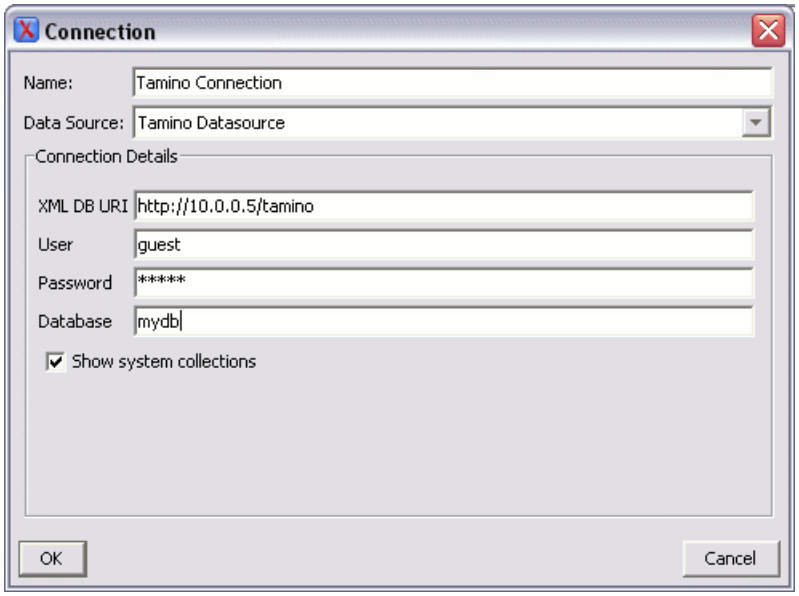
   User — User name to access the MarkLogic engine.

   Password — Password to access the MarkLogic engine.

4. Click *OK*.

How to configure a Software AG Tamino Connection

Figure 13.16. The Connection Configuration Dialog



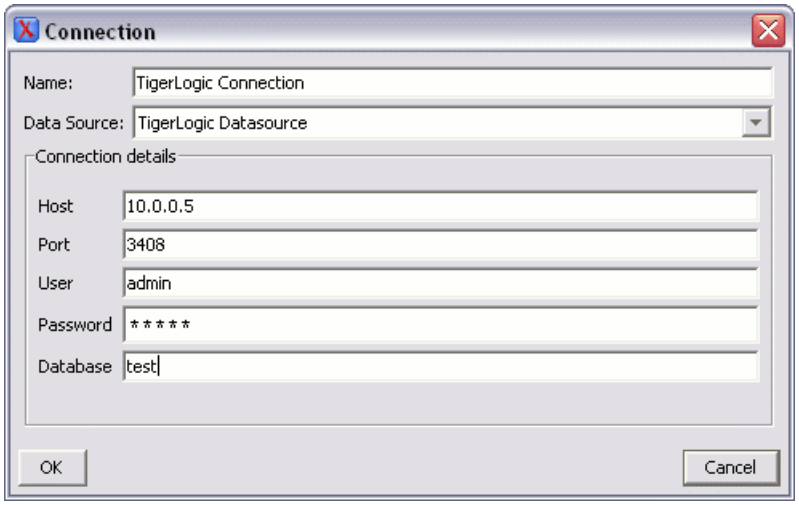
1. Go to *Preferences -> Data Sources*. In the Connections panel click the *New* button.
2. Enter a unique name for this connection and select one of the previously configured Tamino data sources from the Data Source combo box.
3. Fill-in the Connection Details:

XML DB URI	URI to the installed Tamino engine
User	User name to access the Tamino database engine
Password	Password to access the Tamino database engine
Database	The name of the database to access from the Tamino database engine.
Show system collections	Check this if you want to see the Tamino system collections in the Database Explorer.

4. Click *OK*.

How to configure a Raining Data TigerLogic Connection

Figure 13.17. The Connection Configuration Dialog



1. Go to *Preferences -> Data Sources*. In the Connections panel click the *New* button.

2. Enter a unique name for this connection and select one of the previously configured TigerLogic data sources from the Data Source combo box.

3. Fill-in the Connection Details:

   Host — The hostname or ip address of the installed TigerLogic engine.

   Port — The port number of the TigerLogic engine.

   User — User name to access the TigerLogic engine.

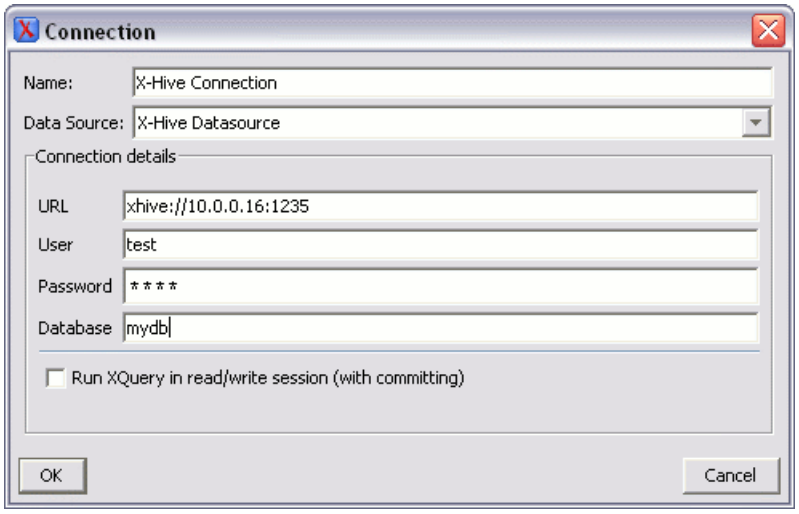
   Password — Password to access the TigerLogic engine.

   Database — The name of the database to access from the TigerLogic engine.

4. Click *OK*.

How to configure an X-Hive/DB Connection

Figure 13.18. The Configure Connection Dialog



1. Go to *Preferences -> Data Sources*. In the Connections panel click the *New* button.

2. Enter a unique name for this connection and select one of the previously configured X-Hive DB data sources from the Data Source combo box.

3. Fill-in the Connection Details:

   URL — The URL property for X-Hive connection. It is also called xhive.bootstrap and specifies the location of the X-Hive/DB federation.

   This property can be used in two different ways:

   If the property is a URL of the form xhive://host:port, the X-Hive/DB connection will attempt to connect to an X-Hive/DB server running behind the specified TCP/IP port.

   If the property is the complete (or relative) path to an XhiveDatabase.bootstrap file, an X-Hive/DB server will be started in the current JVM. Depending on the application, this can be much faster than using a remote server because the communication overhead is avoided. However, only one JVM can run an X-Hive/DB server for a specific federation at the same time.

   For the second case (using a bootstrap file to connect) you need to add additional JAR files when you configure the data source.

   User — User name to access the X-Hive/DB database engine.

   Password — Password to access the X-Hive/DB database engine.

Database	The name of the database to access from the X-Hive/DB database engine.
Run XQuery in read/write session (with committing)	If checked the X-Hive session ends with a commit, otherwise it ends with a rollback.

4. Click *OK*.

Resource Management

Database Explorer View

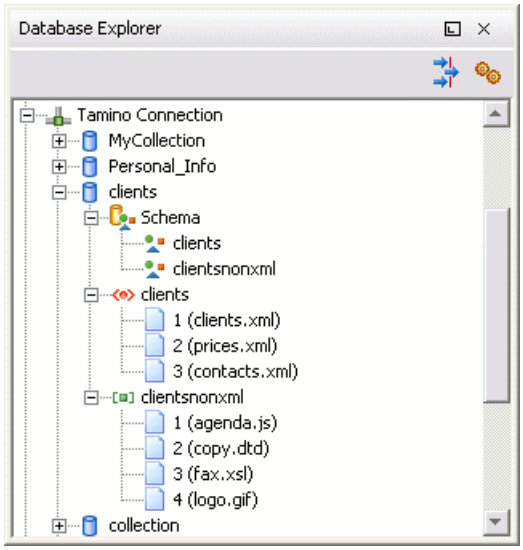
This view presents in a tree-like fashion the database connections configured in *Preferences -> Data Sources*. You can connect to a database simply by expanding the connection node. The database structure can be expanded up to column level. <oXygen/> supports multiple simultaneous database connections and the connections tree provides an easy way to browse them.

Some of the basic components employed by the XML:DB API are collections and resources, and they appear in the tree sorted in alphabetical order.

A collection is a hierarchical container for resources and further sub-collections.

There are two types of resources: XML resource and non XML resource . An *XML resource* represents an xml document or a document fragment, selected by a previously executed XPath query.

Figure 13.19. The Database Explorer View



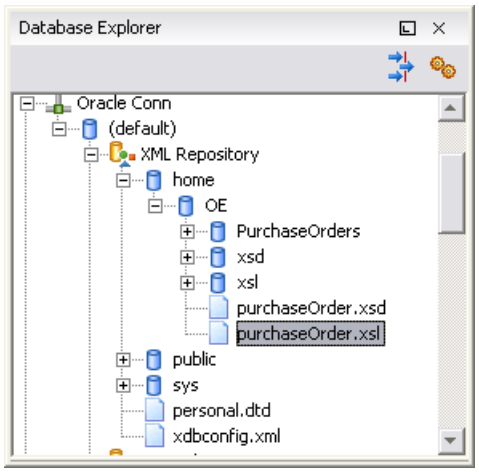
Below you can find a description of the contextual menu actions available on the Database Explorer levels (explained for each connection). Please note that you can open in the editor a resource or a schema component by double-clicking it.

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/> allows the user to browse the native Oracle XML Repository and perform various operations on the resources in the repository.

Figure 13.20. Browsing the Oracle XML DB Repository



Actions available at XML Repository level

- Refresh - performs a refresh of the XML Repository.
- Add container - add a new child container to the XML Repository
- Add resource - adds a new resource to the XML Repository.

Actions available at container level

- Refresh - performs a refresh of the selected container.
- Add container - add a new child container to the current one
- Add resource - adds a new resource to the folder.
- Delete - delete the current container.
- Properties - shows various properties of the current container.

Actions available at resource level

- Refresh - performs a refresh of the selected resource.
- Open - opens the selected resource in the editor.
- Rename - rename the current resource.
- Move - move the current resource to a new container.
- Delete - delete 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.

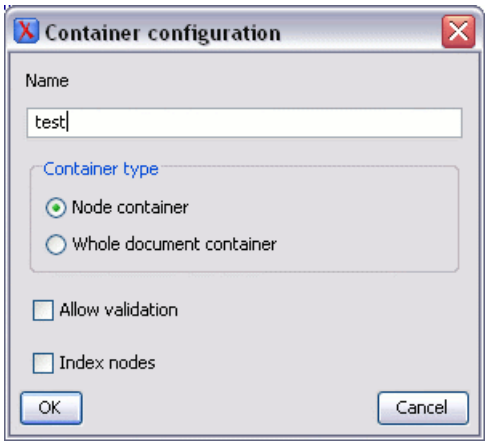
- Properties - shows various properties of the current resource.

Berkeley DB XML Connection

Actions available at connection level

- Refresh - performs a refresh of the selected node's subtree.
- Configure Database Sources - opens the *Data Sources* preferences page where you can configure both data sources and connections.
- Add container - allows adding a new container.

Figure 13.21. Add Container Dialog



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. BDB 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

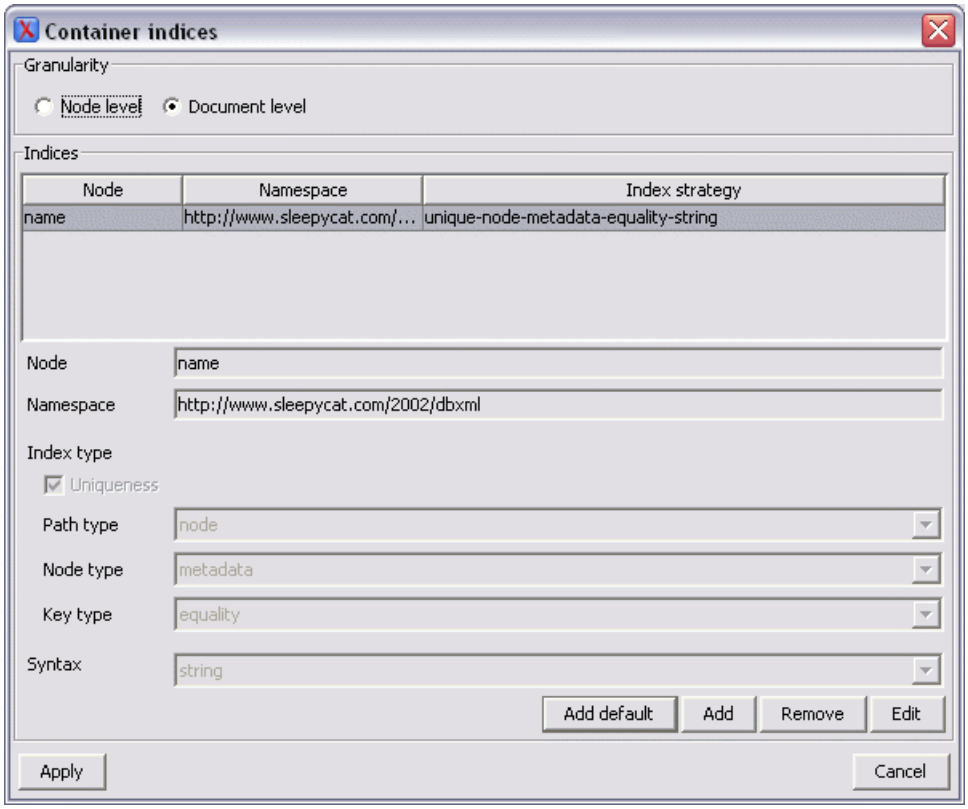
without any manipulation of line breaks or whitespace.

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.

Actions available at container level

- Refresh - performs a refresh of the selected node's subtree.
- 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 13.22. Container indices

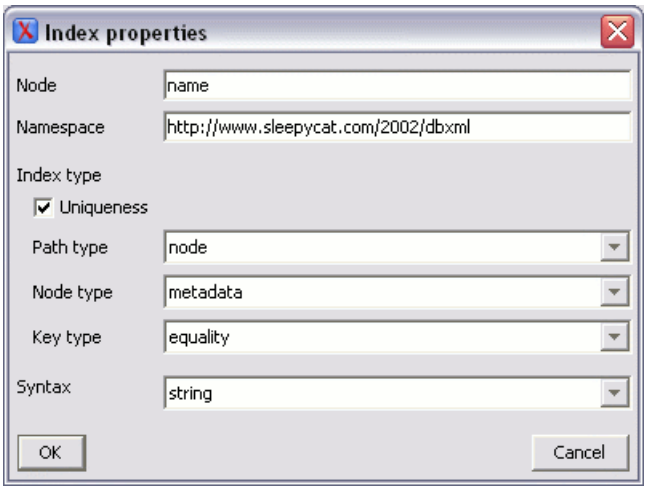


- Specifying the granularity:
  - Document granularity is good for retrieving large documents

- Node granularity is good for retrieving nodes from within documents

- Adding/editing indices:

Figure 13.23. Adding/editing 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

Actions available at resource level

- 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.
- 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.

eXist Connection

Actions available at connection level

- Refresh - performs a refresh of the selected node's subtree.
- Configure Database Sources - opens the *Data Sources* preferences page where you can configure both data sources and connections.

Actions available at container level

- Refresh - performs a refresh of the selected node's subtree.
- Add Resource - adds a new XML resource to the selected container.
- Add Container - creates a new collection in the selected one.
- Delete - removes the selected collection.
- Rename - allows you to change the name of the selected collection.
- Move - allows you to move the selected collection in a different location in the database tree.

Actions available at resource level

- 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 collection in the database tree.
- 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.

MarkLogic Connection

Note

Resource management is unavailable (no browsing support is offered). The interaction with the database is made using XQuery (more on this topic can be found in the XQuery section).

Software AG Tamino Connection

Actions available at connection level

- Refresh - performs a refresh of the selected node's subtree.
- Configure Database Sources - opens the *Data Sources* preferences page where you can configure both data sources and connections.
- Add container - allows you to create a new collection in the database.

Actions available at collection level

For every new Tamino collection, you can specify if a schema is *required*, *optional* or *prohibited*. The following actions are available:

- Refresh - performs a refresh of the selected node's subtree.
- Filter ... - An XQuery expression can be specified for filtering the nodes displayed in the selected Tamino container. It is only possible to specify one predicate. In the XQuery syntax a predicate is enclosed in square brackets. The square brackets, however, must not be specified in the dialog box displayed by this action. Only the predicate must be specified and it will be applied on the selected doctype. For example:

  ```
  name/surname between 'B', 'C'
  ```

- Insert XML instance - allows you to load a new XML document.
- Insert non XML instance - allows you to load a non XML document.
- Modify Collection Properties - allows you to change the schema usage for the selected collection to optional. This action is available on collections with required and prohibited schema usage.
- Define schema - allows you to add a new schema in the Schema Repository. This action is available on collections with optional and required schema usage.
- Delete - removes the selected collection. If it is a Tamino doctype then the action removes all the XML instances contained in the doctype.
- Set default - Sets this collection as the default collection for running queries with the input() function.

Actions available at schema level

- Refresh - performs a refresh of the selected schema.

- Open - opens the selected schema in the editor. There are supported schema changes that preserve the validity relative to the existent instances.
- Delete - removes the selected schema from the Schema Repository.

Actions available at resource level

- 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.
- Delete - removes the selected 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 - 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.

Validation of an XML resource stored in a Tamino database is done against the schema associated with the resource in the database.

Raining Data TigerLogic Connection

> **Note**
>
> Resource management is unavailable (no browsing support is offered). The interaction with the database is made using XQuery (more on this topic can be found in the XQuery section).

X-Hive/DB Connection

Actions available at connection level

- Refresh - performs a refresh of the selected node's subtree.
- 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 X-Hive 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

- 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

- 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

- 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 X-Hive 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.
- Delete - removes the selected library.
- Properties - displays the library properties.

Actions available at resource level

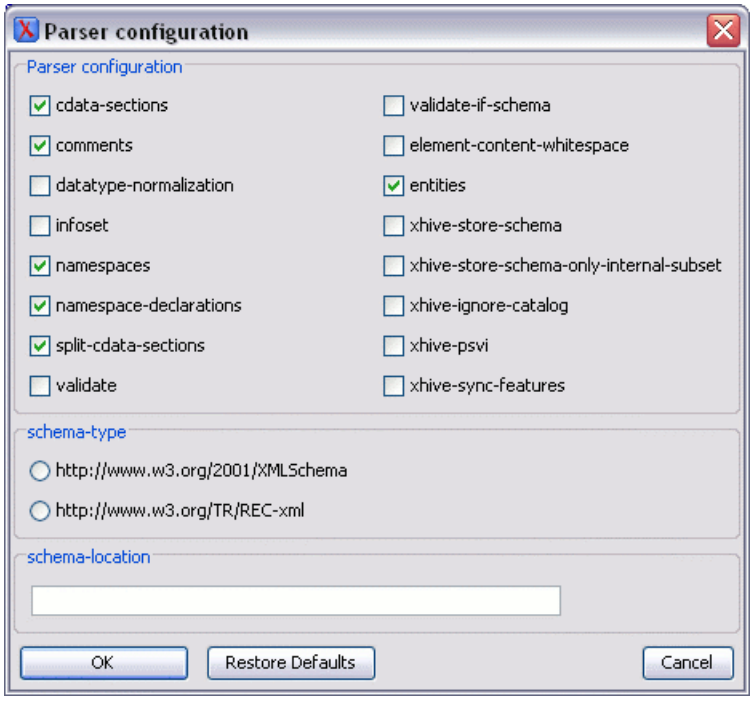
- Refresh - performs a refresh of the selected resource.

- 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.
- 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.

Validation of an XML resource stored in an X-Hive database is done against the schema associated with the resource in the database.

X-Hive parser configuration for adding XML instances

Figure 13.24. Parser configuration



- DOM Level 3 parser configuration parameters. More about each parameter can be found here: DOM Level 3 Configuration [http://www.w3.org/TR/2004/REC-DOM-Level-3-Core-20040407/core.html#DOMConfiguration]
- X-Hive specific parser parameters (for more information please consult the X-Hive manual):

- xhive-store-schema - During validated parsing, the corresponding DTD's or XML schemas are or are not stored in the catalog.
- xhive-store-schema-only-internal-subset - Store only the internal subset of the document (not any external subset). Modifier for xhive-store-schema (only has a function when that parameter is set to true, and when DTDs are involved). Use this option if you only want to store the internal subset of the document (not the external subset).
- xhive-ignore-catalog - During validated parsing, the corresponding DTD's and XML schemas in the catalog are ignored.
- xhive-psvi - Store 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 Xhive-DocumentIf are synchronized with the parameter settings of LSParser. Note that parameter settings "xhive-psvi" and "schema-location" are always synchronized.

XQuery and Databases

XQuery is a native XML query language and it can be used to query 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 offer XQuery support:

- *Native XML Databases:*
  - Berkeley DB XML
  - eXist
  - MarkLogic (validation support not available)
  - Software AG Tamino
  - Raining Data TigerLogic (validation support not available)
  - X-Hive/DB
- *Relational Databases:*
  - IBM DB2
  - Microsoft SQL Server (validation support not available)
  - Oracle (validation support not available)

Drag and Drop from Database Explorer

You can use <oXygen/>'s DND support when you are querying relational databases. Configure the relational data source and the database connection (as it was previously shown in this chapter), browse the connection up to table or column level and drag it in the editor (where an xquery file is open). An XPath expression of the selection will be inserted in the xquery document (at caret position).

XQuery validation

Please note that if you choose a processor that doesn't support XQuery validation you will receive a warning when trying to validate.

Note

If there is no transformation scenario associated with the current document, the validation will be performed using the processor or connection specified in the *XML / XSLT - FO / XQuery* Preferences page. Otherwise, the xquery document will be validated using the Transformer from the associated scenario.

XQuery transformation

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. XQuery is designed to retrieve and interpret XML data from any source, whether it is a database or a document.

To perform a query database you will first need to configure a data source and a connection (details can be found in the Relational Database Support and Native XML Database Support sections).

Next, configure a transformation scenario and associate it with your XQuery document:

1. Open the Configure Transformation Scenario dialog.
2. Click the *New* button.
3. In the *Edit Scenario* dialog insert the scenario's name. Then, from the list of available *Transformer*s choose the database connection you need. Configure any other parameters if necessary.
4. Click *OK* to finish editing the scenario.

To query the database, apply the transformation scenario associated with your XQuery document.

XQuery database debugging

XQuery debugging is currently supported only for the MarkLogic database engine.

To start a debug session against the MarkLogic engine you will first need to configure a MarkLogic data-source and a MarkLogic connection. Also you have to make sure that the debugging support is enabled in the MarkLogic server that will be accessed from <oXygen/>.

The MarkLogic XQuery debugger integrates seamlessly into the XQuery Debugger perspective. If you already have a MarkLogic scenario configured for the XQuery file you can choose directly to debug the scenario. If not, you just have to 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.

When debugging queries which import modules the recommended steps are as follows:

- After starting the debugging session 'Step in' repeatedly until reaching the desired modules

- Add each of the modules to the project for easy access
- Set breakpoints in the modules as needed
- Debug the query as you see fit
- 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

Peculiarities and limitations of the MarkLogic debugger integration:

- Debugging support is available only for MarkLogic server versions 3.2 or newer.
- All the debugging steps are executed by the MarkLogic server and the results or possible errors of each step are presented by the local debugger user interface.
- All declared variables are presented as strings.
- No support for Output to Source Mapping.
- No support for evaluating break conditions.
- No support for showing the trace.
- Breakpoints can be set in the imported modules but they are only active if the modules are opened in the editor at the time of debugging.
- Break conditions are not supported hence the Break Conditions view is disabled in the XQuery Debugger perspective.
- The modules can only be opened in the editor during the debugging session by stepping in repeatedly until reaching the module.
- There shouldn't be any breakpoints set in modules from the same server which are not involved in the current debugging session.

Chapter 14. Importing data

Introduction

XML was designed to describe data. 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 many different types of applications.

This is why <oXygen/> now offers you support for importing text files, MS Excel files, Database Data and HTML files into XML documents, that can be further converted into other formats using the Transform features.

Import from database

Import table content as XML document

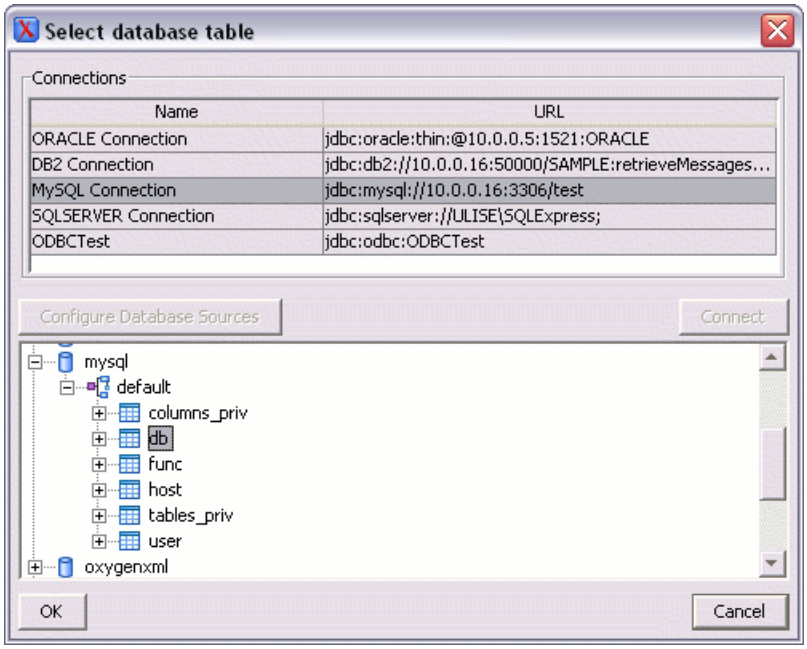
To import the content of a database table, select File → Import → Database Data... Next, in the "Select database table" choose the connection you want to use.

Note

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

You can edit, delete or add a new data source and connection: click on the "Configure Database Sources" button and the "Preferences" dialog will open at Data Sources section. Click Connect.

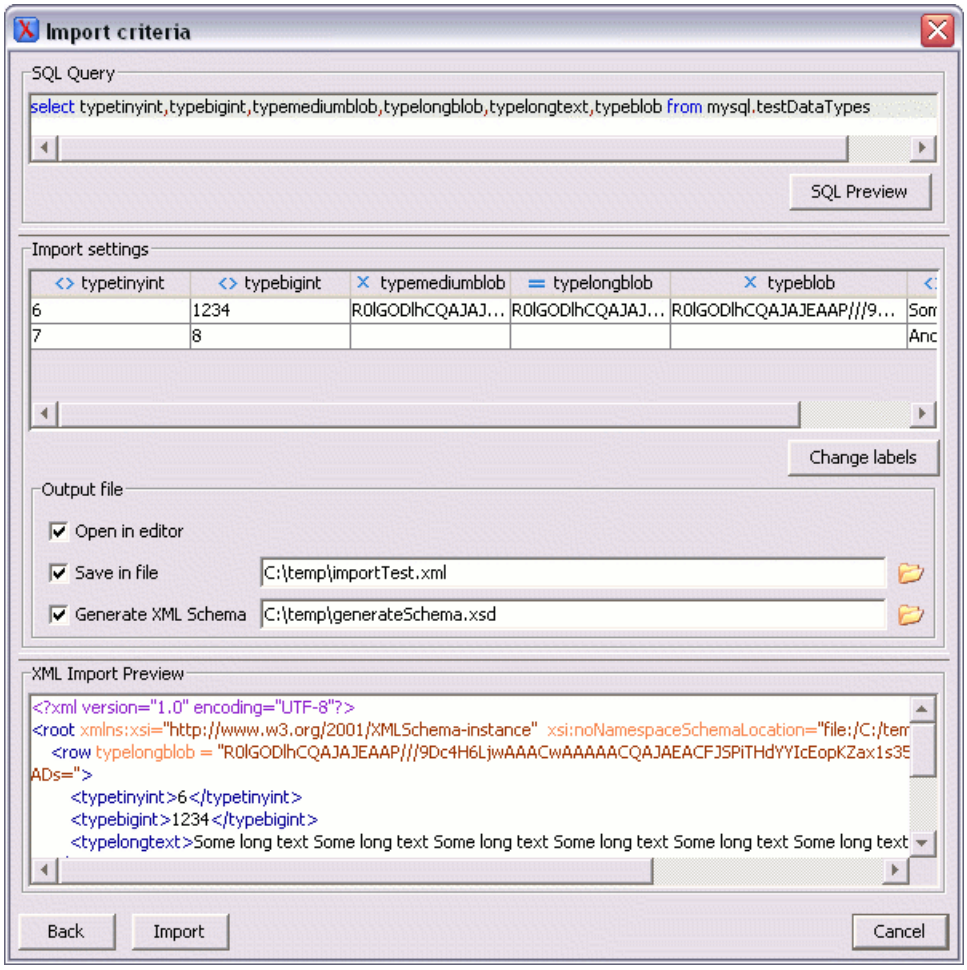
Figure 14.1. Select database table Dialog



From the catalogs list click on a schema and choose the required table. Click Ok.

The "Import criteria" Dialog will open next, showing a default Query string like "select * from table" in SQL Query. You can click the "SQL Preview" button to see the input data displayed in a tabular form and the XML Import Preview containing an example of what the generated XML will look like. The SQL Query message is editable. You can specify which fields should be taken into consideration.

Figure 14.2. Import from Database Criteria Dialog



If you edit the query string so that the query does a join of two or more tables and selects columns with the same name from different tables you should use an alias for the columns like in the following example. That will avoid a confusion of two columns 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  ...
```

SQL Preview

Displays the labels that will be used in the XML document and its preview. Import setting: If the "SQL Preview" button is pressed, it shows the labels that will be used in the XML document and the first 5 lines from the database. All data items in the input will be converted by default to element content, but this can be over-ridden by clicking on the individual column headers. Clicking once on a column header (ex Heading0) will cause the data from this column to be used as attribute values on the row elements. Clicking a second time - the column's data will be ignored when generating the XML file. You can cycle through these three options by continuing to click on the column header. If the data column will be converted to element content, the header will contain the "<>" symbol. If the data column will be converted to attribute content, the header will contain the "=" symbol, and if it will be skipped, the header will contain "x".

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 on 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 will be opened in the editor.

Save in file

If checked, the new XML document will be saved at the specified path.

Note

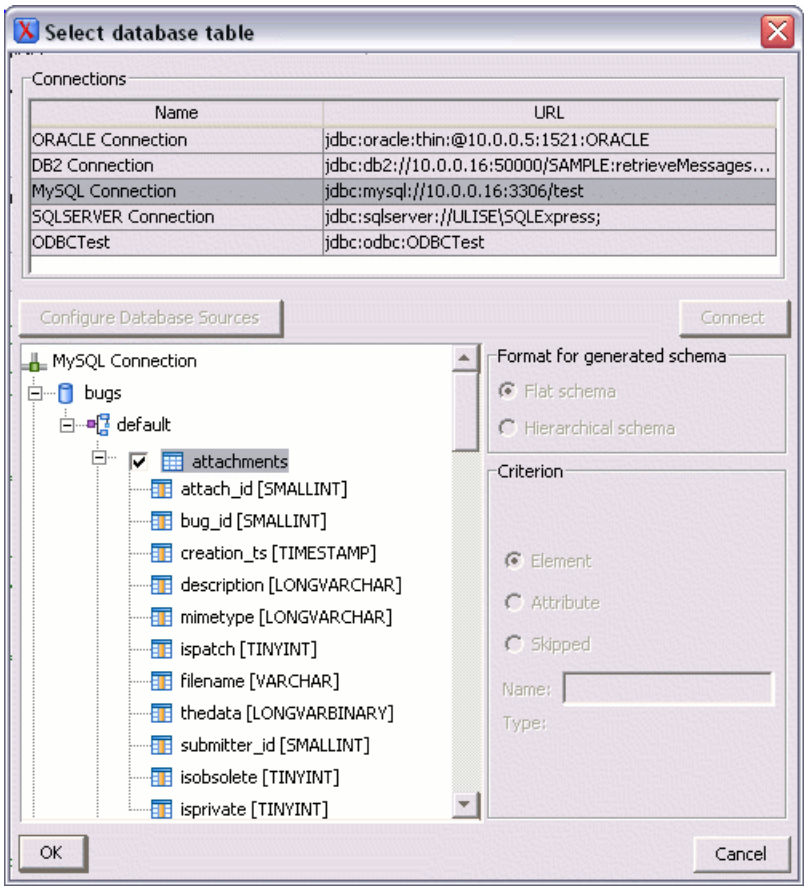
If only Open in editor is checked, the newly created document will be opened in the editor, but as an unsaved file.

Generate XML Schema

Allows you to specify the path of the generated XML Schema file.

Convert table structure to XML Schema

Figure 14.3. Select database table Dialog



Next, in the "Select database table" choose the connection you want to use.

Note

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

You can edit, delete or add a new data source and connection: click on the "Configure Database Sources" button and the "Preferences" dialog will open at the Data Sources section. Click Connect.

Format — Enables you to choose a format for the structure.

- Flat - Generates an XML Schema according to the ISO-ANSI Working draft (Part 14: XML Related Specifications SQL/XML).
- Hierarchical - Represents the database structure as a tree hierarchy taking into account the relationship between tables.

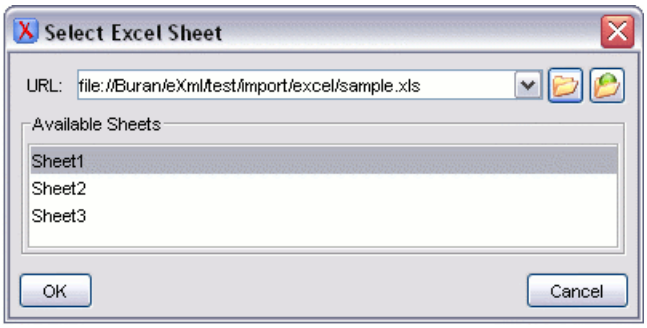
Criterion — The Criterion options allow the user to specify the name of the selected database column and also how it should be converted into XML. The following options are available:

- Element: When checked the selected column will be converted into an XML element.
- Attribute: If checked the selected column will be converted into an XML attribute.
- Skipped: Is to be selected if the intention is to skip that column from being imported.
- Name: Allows you to specify the name of the column to be imported. Implicitly <oXygen/> suggests an import name that is according to SQL/XML Specification.
- Type: Displays the data type of the imported column.

Import from MS Excel files

<oXygen/> can also import MS (Microsoft) Excel files into XML format documents. To do this, select File → Import → MS Excel File... In the "Select Excel Sheet" dialog provide the URL of the Excel document, choose one of the available sheets and click Ok.

Figure 14.4. Select Excel Sheet



The input data is displayed next in the "Import Criteria" Dialog in a tabular form and the XML Import Preview contains an example of what the generated XML will look like.

The Import Criteria Dialog has a similar behaviour with the one shown in case of "Import from text files".

Note

Please note that Excel sheets saved with versions later that Excel 2002 may not be handled correctly by the Import operation.

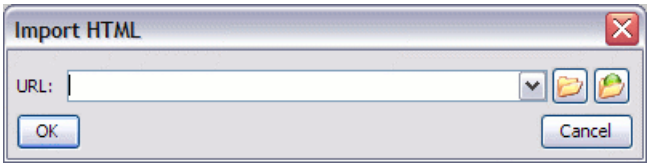
Import from HTML files

Another format that can be imported in an XML document is HTML.

Procedure 14.1. Import from HTML

1. Select File → Import → Import HTML ... The Import HTML dialog is displayed.

Figure 14.5. The Import HTML dialog



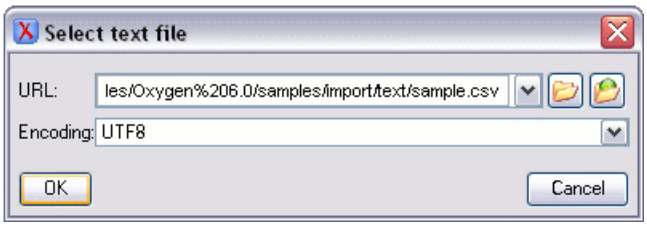
2. Complete the HTML document name and click the OK button.

The resulted document will be an XHTML file containing a DOCTYPE declaration referring to the XHTML DTD definition on the Web and the parsed content of the imported file as XHTML Transitional or Strict depending on what radio button the user chose when performing the import operation.

Import from text files

To import from a text file you'll have to select File → Import → Text File... In the "Select text file" dialog choose the URL and the encoding to be used and click OK.

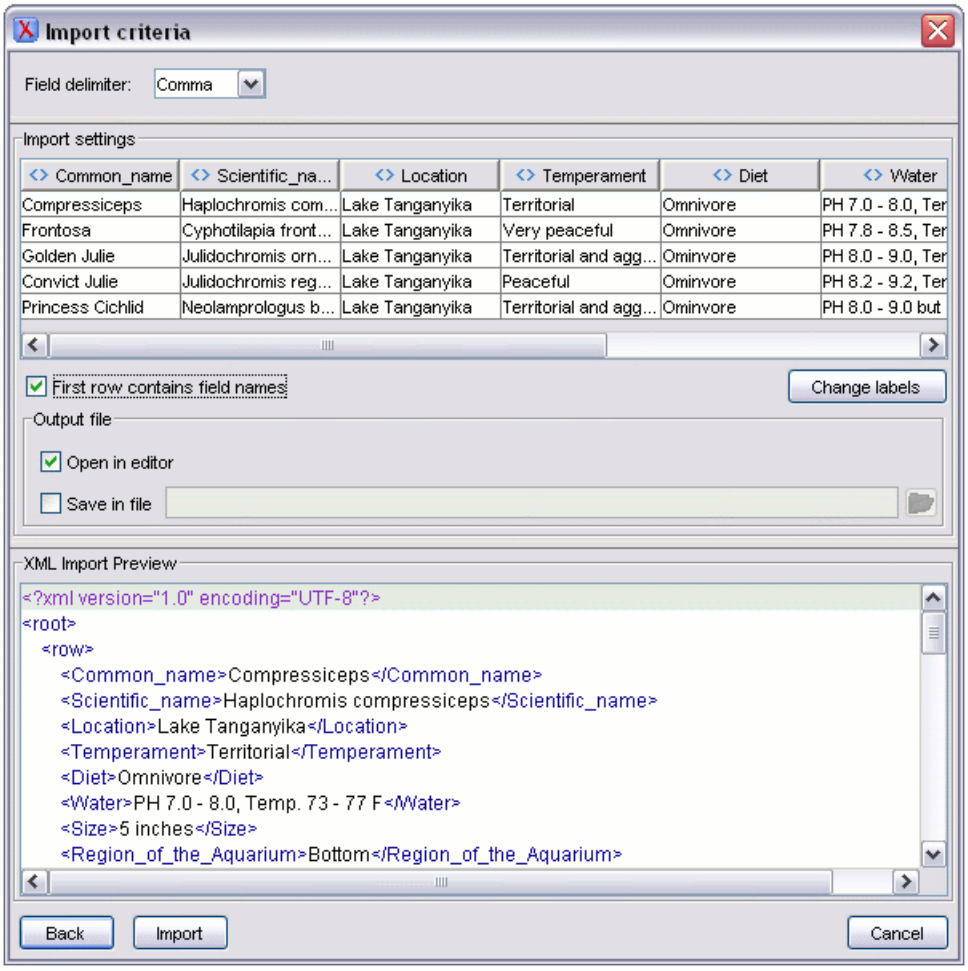
Figure 14.6. Select text file Dialog



- *URL*: Specifies the location of the text file to be imported.
- *Encoding*: Specifies the encoding (Unicode character encoding)

Next, in the "Import Criteria" Dialog select the field delimiter for the import settings. The input data is displayed here in a tabular form and the XML Import Preview contains an example of what the generated XML will look like.

Figure 14.7. Import Text Criteria Dialog



The above table shows the labels that will be used in the XML document and the first 5 lines from the text file in a tabular form. All data items in the input will be converted by default to element content, but this can be over-ridden by clicking on the individual column headers. Clicking once on a column header will cause the data from this column to be used as attribute values on the row elements. Clicking a second time - the column's data will be ignored when generating the XML file. You can cycle through these three options by continuing to click on the column header. If the data column will be converted to element content, the header will contain the "<>" symbol. If the data column will be converted to attribute content, the header will contain the "=" symbol, and if it will be skipped, the header will contain "x".

First row contains field names

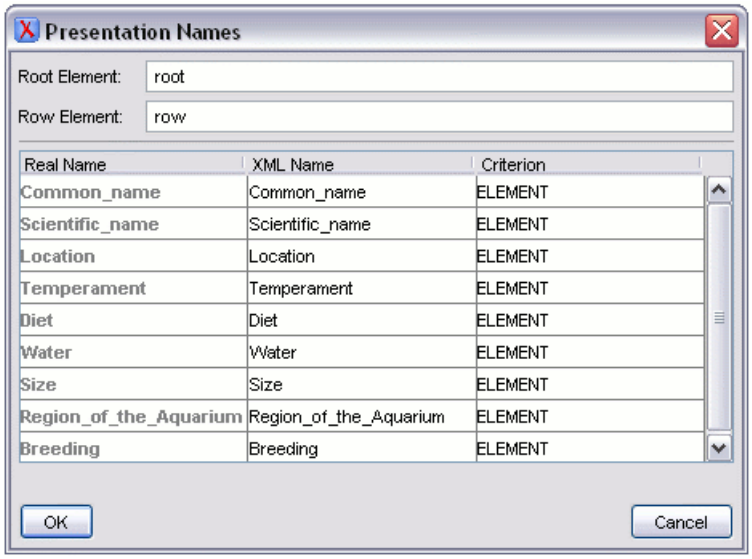
If the option is checked, you'll notice that the table has moved up; the default column headers are replaced (where there is information) by the content of the first row. In other words, the first row is interpreted as containing the field names. The changes are also visible in the preview of the XML document. To return to default (where the first row is interpreted as not containing field names), simply uncheck the option.

Change labels

If the above option is set, the first row of the input file contains presentation names and these will be used as tokens in the created XML files, otherwise some generic heading names will be used. 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.

Figure 14.8. Presentation Names



The XML names can be edited by double-clicking on 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 will be opened in the editor.

Save in file

If checked, the new XML document will be saved at the specified path.

Note

If only Open in editor is checked, the newly created document will be opened in the editor, but as an unsaved file.

Note

Click Back to return to Select text file Dialog.

Chapter 15. Composing Web Service calls

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. The editor is offering a way to edit the WSDL files that is similar to editing XML, the content completion and validation being driven by a mix of the WSDL and SOAP schemas. <oXygen/> supports WSDL version 1.1 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 after that against a SOAP 1.2 schema.

After you edit and validate your Web service descriptor against a mix of the XML Schemas for WSDL and SOAP it is very easy to check if the defined SOAP messages are accepted by the remote Web Services server using <oXygen/>'s WSDL SOAP Analyser integrated tool.

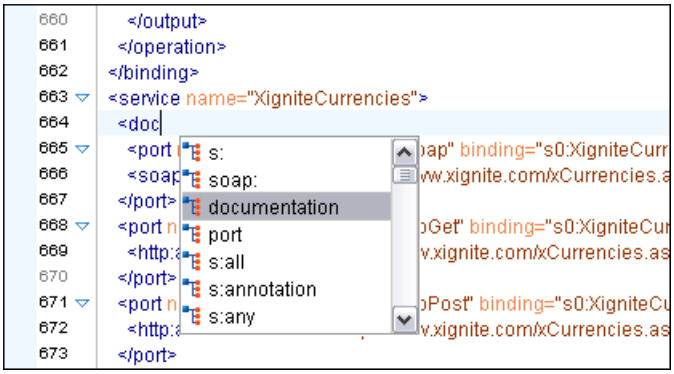
Composing a SOAP request

To design, compose, and test Web service calls in <oXygen/> follow the procedure:

1. Create a new document or open an existing document of type WSDL.

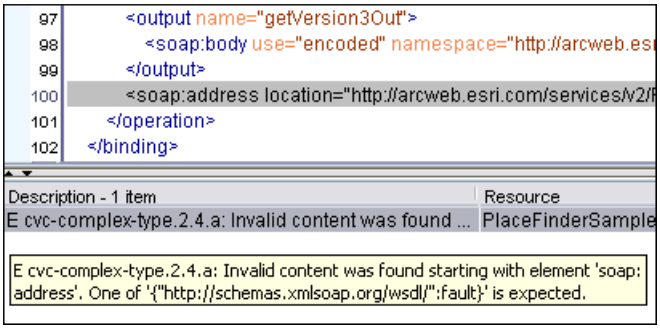
2. Design the Web Service descriptor in the WSDL editor pane where the content completion is driven by a mix of the WSDL and SOAP schemas. You do not need to specify the schema location for the WSDL standard namespaces because <oXygen/> comes with these schemas and uses them by default to assist the user in editing Web Service descriptors.

   Figure 15.1. Content completion for WSDL documents



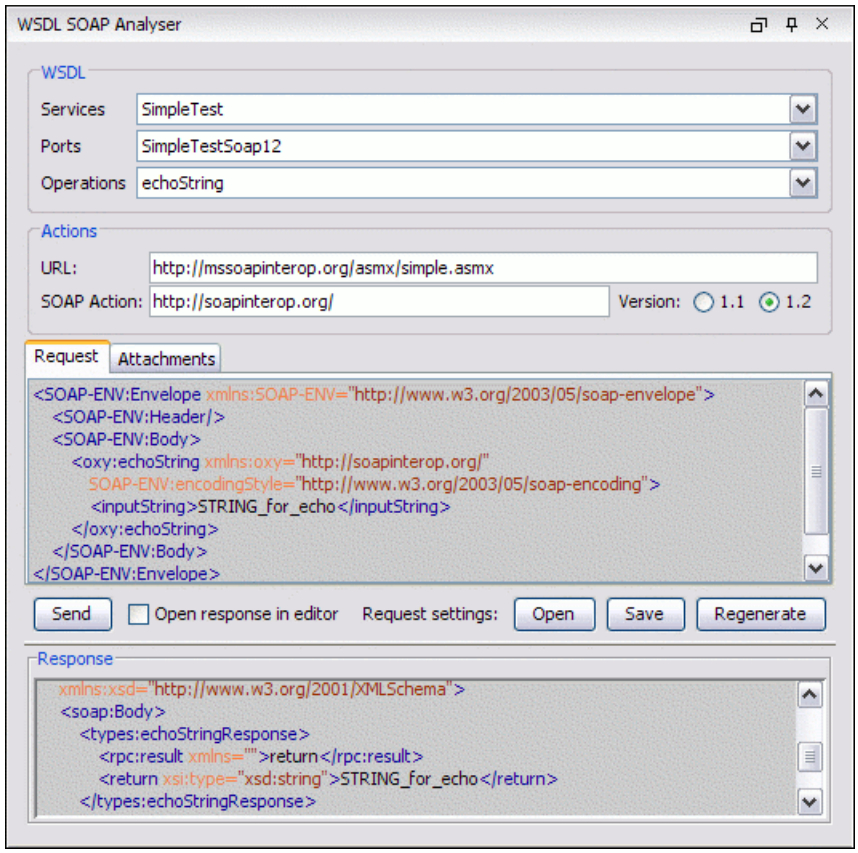
3. While editing the Web-Services descriptors check their conformance to the WSDL and SOAP schemas. In the following example you can see how the errors are reported.

Figure 15.2. Validating a WSDL file



4. Check if the defined messages are accepted by the Web Services server. <oXygen/> 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 open the WSDL SOAP Analyser tool by pressing the toolbar button WSDL SOAP Analyser or use the menu item Document → Tools → WSDL SOAP Analyser or from the Project view contextual menu select Open with → WSDL SOAP Analyser

Figure 15.3. WSDL SOAP Analyser



It 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: 1.1 or 1.2. The SOAP version is selected autmatically depending on the selected port.
- Request Editor. It allows you to compose the web service request. When an action is selected, <oXygen/> 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 is available for this editor and is driven by the schema that defines the type of the current message. While selecting different operations <oXygen/> will remember 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. The editor has visual line wrap so that all content is visible without scrolling.
- Attachments List. You can define a list of file's 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 will look like. After pressing the *Send* button it will present 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/> will prompt you to save them, then will try to open them with the associated system application. The response area has visual line wrap so that all content is visible without scrolling.
- 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 will be listed here. This list is presented only when there are errors.
- Send Button. Executes the request. A status dialog is shown when <oXygen/> is connecting to the server.

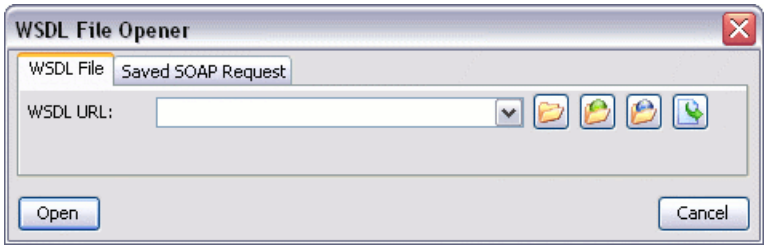
The testing of a WSDL file is straight-forward, you just have to click on the WSDL analysis button, then select the service, the port and the operation. The editor will generate the skeleton for the SOAP request. You can edit the request, eventually attach files to it and send it to the server. Watch the server response in the response area. For testing remote WSDL files see the next section.

5. 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 will save time in configuring the URLs and parameters.
6. You can open the result of a Web Service call in an editing view. In this way you can save it or process it further.

Testing remote WSDL files

To open and test a remote WSDL file use the menu item Tools → WSDL SOAP Analyser ...

Figure 15.4. WSDL File Opener



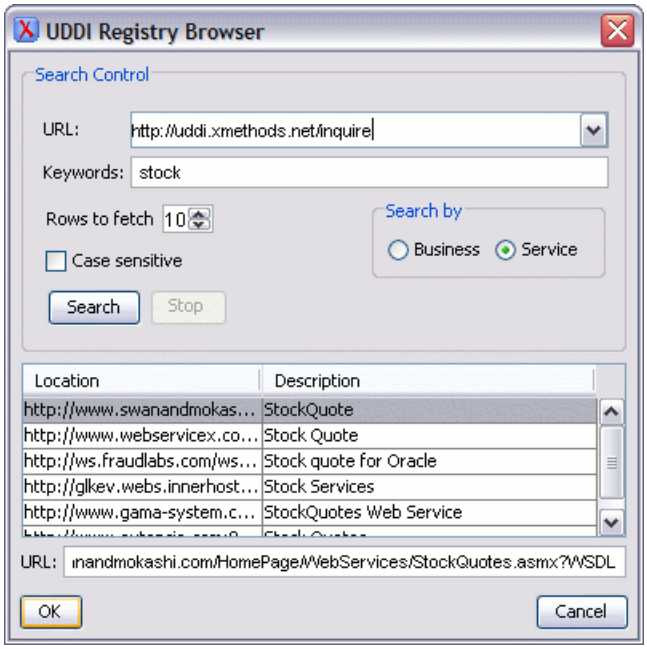
and in the WSDL File tab enter the URL of the remote WSDL file by typing or by browsing the local filesystem, a remote filesystem or even a UDDI Registry. Pressing OK will open the WSDL SOAP Analyser tool.

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

Pressing the button opens the UDDI Registry Browser dialog.

Figure 15.5. UDDI Registry Browser dialog



- In the URL combo box type the URL of an UDDI registry or choose one list.
- In the Keywords field enter the string you want to be used when searching the selected UDDI registry for available Web services.
- Optionally, you may change:
  - Rows to fetch - The maximum number of rows to be displayed in the result list.

- Search by - you can choose to search whether by company or by provided service.
- Case sensitive - When checked, the search will take into account the Keywords' case.

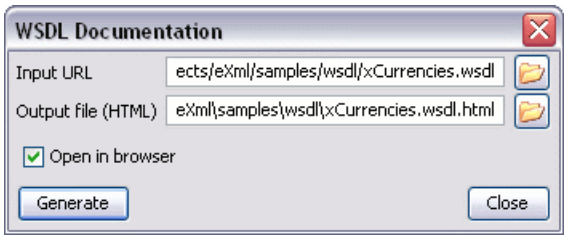
- Click the Search button. WSDLs that matched the search criteria are added in the result list.
- Select a WSDL from the list and click OK. The UDDI Registry Browser dialog is closed and you are returned to the WSDL File Opener dialog.

Generate WSDL documentation

To generate documentation for a WSDL document use the action Tools → Generate Documentation → WSDL Documentation.

The WSDL documentation dialog can be also opened from the Project Tree contextual menu: Generate Documentation → WSDL Documentation...

Figure 15.6. WSDL Documentation dialog



- In the Input URL field type the URL of the file or click on the browse button and select it from the file system.
- In the Output file(HTML) field you will have to enter the path and the filename where the documentation will be generated.
- If you want the result to be opened in a browser, select the corresponding checkbox.
- Click the Generate button and the documentation for the WSDL file will be generated.

Chapter 16. Digital signature

Overview

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 nonrepudiation 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 nonrepudiation.

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 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 [http://www.w3.org/TR/xmldsig-core/]). An XML Signature may be applied to the content of one or more resources.

- Enveloped or enveloping signatures are over data within the same XML document as the signature.
- Detached signatures are 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 allows 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/>: Canonical XML (or Inclusive XML Canonicalization)(XMLC14N [http://www.w3.org/TR/2001/REC-xml-c14n-20010315]) and Exclusive XML Canonicalization(EXCC14N [http://www.w3.org/TR/2002/REC-xml-exc-c14n-20020718/]). 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 then 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.

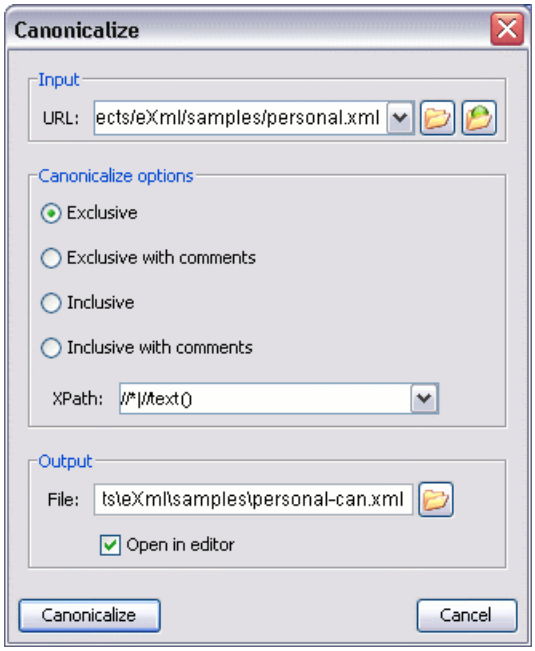
The canonicalization method can specify whether or not comments should be included in the canonical form output by the XML canonicalization method. If a canonical form contains comments corresponding to the comment nodes in the input node-set, the result is called canonical XML with comments. In an uncommented 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 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 editor panel context menu+Sourceand also from menuToolsand from menuDocument+Tools

Figure 16.1. Canonicalization settings dialog



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

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 it's "alias" already exists in that Keystore and no KeyStore can store trusted certificates generated with keys in it's KeyStore.

In <oXygen/> 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 Options → Preferences → Certificates .

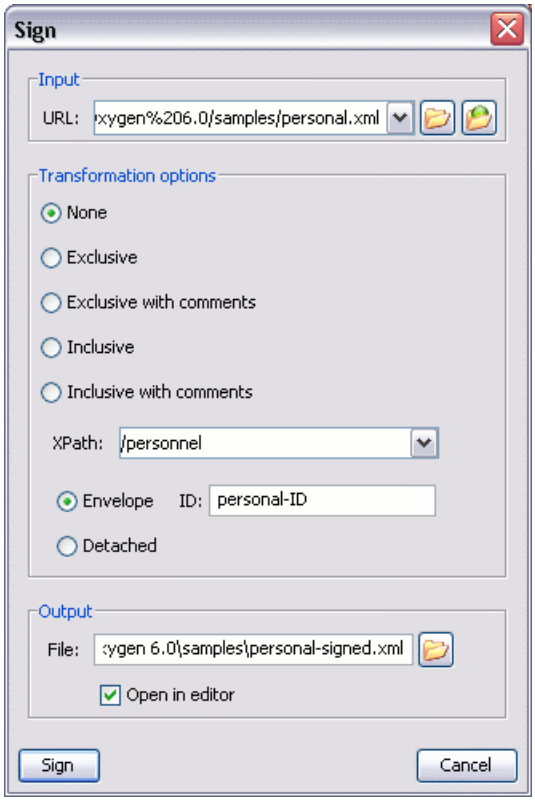
Note

A certificate without alias stored in a PKCS 12 keystore together with other certificates, with or without alias, cannot be always extracted correctly from the keystore due to the missing alias. Such a certificate should be the only certificate of a PKCS 12 keystore.

Signing files

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 editor panel context menu+Sourceand also from menuToolsand from menuDocument+Tools

Figure 16.2. Signature settings dialog

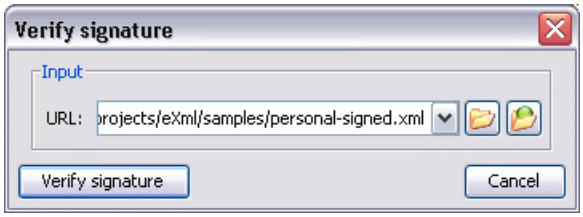


URL	Specifies the location of the input URL
None	If selected, no canonicalization algorithm is used.
Exclusive	If selected, the exclusive (uncommented) canonicalization method is used.
Exclusive with comments	If selected, the exclusive with comments canonicalization method is used.
Inclusive	If selected, 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. The canonicalization methods, XPath and ID are not available.
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 following dialog displayed by the action *Verify Signature* available from editor panel context menu+Sourceand also from menuToolsand from menuDocument+Tools

Figure 16.3. Verifying signature dialog



URL 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.

Chapter 17. The Syncro SVN Client

Introduction

What is Syncro SVN Client

Syncro SVN is a client for the Subversion version control system. 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.

Quick start guide and reference

The *Main window* section will provide a short description of the application main window layout, general functions, views and menus.

A *Getting started* chapter will take you through the basic operations, such as:

- Define a repository location
- Define a working copy
- Manage working copy resources
- Synchronize with a repository
- Obtain information for a resource
- Using the log history of a resource
- Adding and changing the properties of a resource
- Creating and maintaining branches and tags
- Some more advanced repository operations

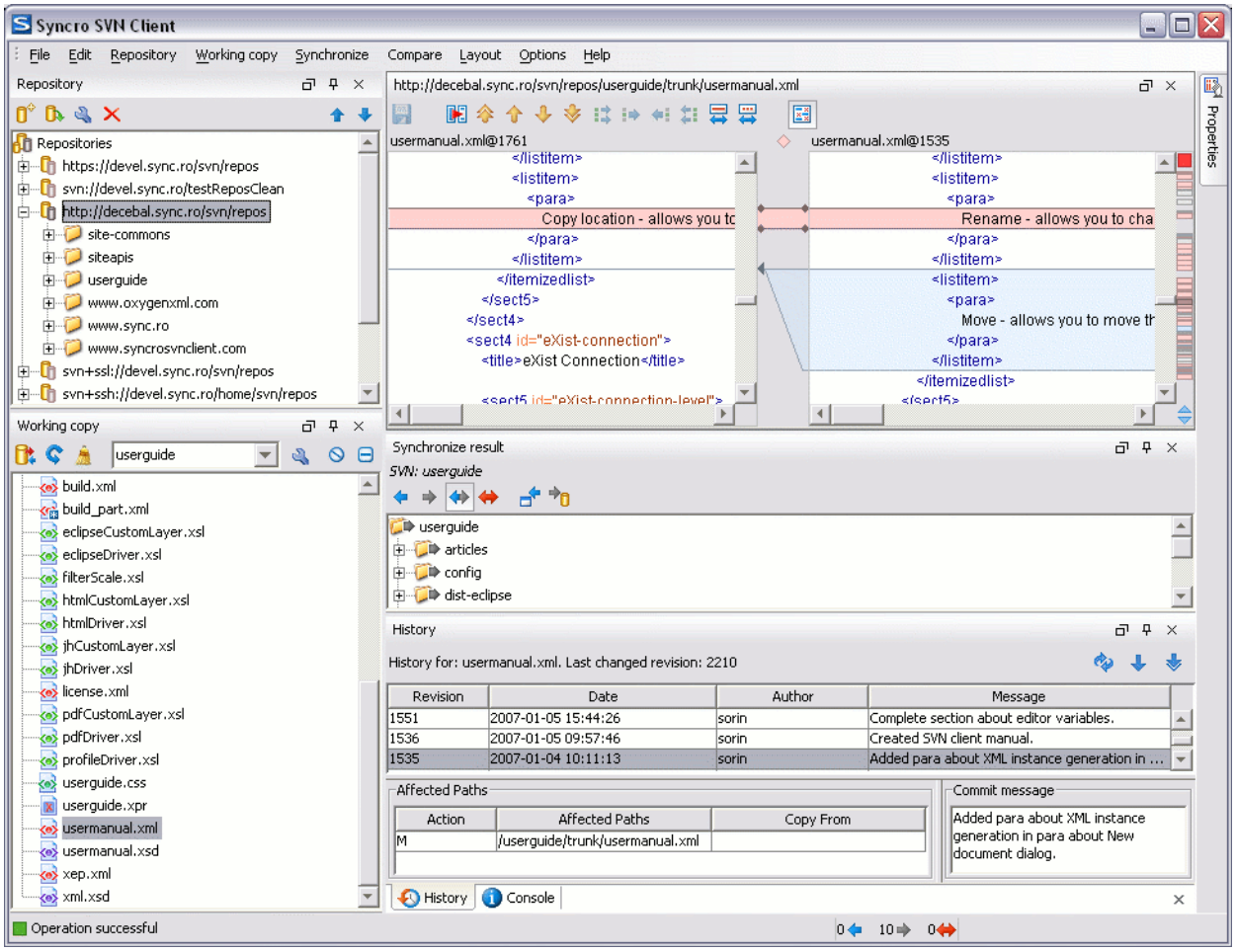
The next few chapters refer to the views of the application:

- Repository view
- Working copy view
- Synchronize view
- Compare resources view
- Editor
- Image preview
- History view
- Properties view

- Console view
- Help view
- Preferences dialog

Main window

Figure 17.1. The Syncro SVN Client main window



Starting Syncro SVN Client

The Syncro SVN Client can be used as a standalone application. To start the client follow the instructions for the installed package:

Procedure 17.1. Windows

- From the Windows Explorer double-click svnClient.exe .

Procedure 17.2. Linux

- At the prompt type: sh svnClient.sh .

Procedure 17.3. Mac OS X

- Double-click svnClient .

Procedure 17.4. All Platforms

- On Windows run svnClient.bat. On Mac OS X run svnClientMac.sh. On Linux/Unix run svnClient.sh.

The client can be started from inside <oXygen/> by using Tools → SVN Client action or the Project view contextual menu → Team → Open in SVN Client action. When the action from the *Project view* is performed, if the selected resource is under version control, its working copy root will be determined and opened in the SVN client Working copy view.

Views

The main window consists of the following views:

- Repository view allows you to define and manage Subversion repository locations.
- Working copy view allows you to manage with ease the content of the working copy.
- Synchronize view displays the modified resources from your working copy (outgoing) and from the repository (incoming).
- Compare view displays the differences between two revisions of a text file.
- Compare images view displays the compared images side by side.
- Editor view allows you to modify and save a file from the working copy.
- Image preview allows you to view the image files from the *Synchronize view*, *Working copy view*, *Synchronize view* or from the *History view*.
- History view displays the log messages for a given resource.
- Properties view displays the SVN properties for the currently selected resource from the *Synchronize view* or from the *Working copy view*.
- Console view shows the start and progress of an operation as if a Subversion command was run from the shell.
- Help view dynamically shows the help for 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 sub menus:

- File
  - Save - Saves the local file currently opened in the *Editor view* or the *Compare view*.
  - Exit - Exits the Subversion client.
- Edit
  - Undo - undos edit changes in the local file currently opened in the *Editor view* or the *Compare view*.
  - Redo - redos edit changes in the local file currently opened in the *Editor view* or the *Compare view*.
  - Cut - cut selection to clipboard from the local file currently opened in the *Editor view* or the *Compare view*.
  - Copy - copy selection to clipboard from the local file currently opened in the *Editor view* or the *Compare view*.
  - Paste - paste selection from clipboard in the local file currently opened in the *Editor view* or the *Compare view*.
  - Find/Replace - perform find/replace operations in the local file currently opened in the *Editor view* or the *Compare view*.
  - Find Next - 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 - 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 - operations from the *Repository* view:
  - New Repository Location - allows you to enter a new repository location by means of the *Add SVN Repository* dialog.
  - Edit Repository Location - context dependent, allows you to edit the selected repository location by means of the *Edit SVN Repository* dialog. It is active only when a repository location root is selected.
  - Remove Repository Location - 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.
  - Move Up - move the selected repository up with one position in the list of repositories in the Repository view.
  - Move Down - move the selected repository down with one position in the list of repositories in the Repository view.
- Working copy - operations from the *Working copy view*:

- Add/Remove Working Copy - opens the Working copies list dialog which displays the working copies the Subversion client is aware of. In this dialog you can add existing or remove no longer needed working copies.
- Synchronize - contacts the repository and determines the changes made by you to the working copy and by others to the repository. The synchronize result will be displayed in the Synchronize view. The action performs a synchronize operation on the root of the working copy.
- Refresh - refreshes (rescans) the content of the working copy. The action performs a refresh operation on the root of the working copy.
- Cleanup - performs a maintenance cleanup operation on the working copy.
- Show History ... - brings up the History view and displays the log history for the selected resource from the working copy.
- Edit conflict - opens a *Compare* view for editing the selected conflict.
- Show SVN Properties - brings up the Properties view and displays the SVN properties for the selected file.

- Synchronize - operations from the *Synchronize view*:
  - Update all - updates all resources with incoming changes. It is disabled when *Outgoing* mode is selected or the synchronization result does not contain resources with incoming changes. It will perform a recursive update on the synchronized resources.
  - Commit all - commits all resources with outgoing changes. It is disabled when *Incoming* mode is selected or the synchronization result does not contain resources with outgoing changes. It will perform a recursive commit on the synchronized resources.
  - Add - it is enabled for unversioned resources and performs a *svn add* command which adds the resources to version control.
  - Commit ... - it is enabled for outgoing changes and commits all selected resources, recursively in the case of directories, to the repository. This action collects the outgoing changes from the selected resources and presents them in a dialog.
  - Update - it is enabled for resources with incoming changes. Updates all selected resources to the synchronized revision. If one of the selected resources is a directory then the update for that resource will be recursive.
  - Override and Commit ... - it is enabled on conflicting resources. The action will drop any incoming changes and will send your local version of the resource to the repository. See also Drop incoming modifications.
  - Override and Update ... - it is enabled on resources with outgoing changes including the conflicting ones. It is used for dropping any outgoing change and replacing the local resource with the synchronized revision. See Revert your changes section.
  - Mark Resolved - it is enabled on resources with real content conflicts. Its function is to tell the Subversion system that you resolved the conflict and the resource can be committed. See also Merge conflicts part.

    - Expand All - expands the selected directories to leaf level.
    - Collapse All - collapses all child nodes of the selected tree node.
- Compare - operations from the *Compare view*:
    - Perform Files Differencing - used to perform file differencing on request.
    - Go to First Modification - used to navigate to the first difference.
    - Go to Previous Modification - used to navigate to the previous difference.
    - Go to Next Modification - used to navigate to the next difference.
    - Go to Last Modification - used to navigate to the last difference.
    - 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 - this action copies the selected change from the right editor to the left editor.
    - Show Modification Details at Word Level - because the differences are computed using a line differencing algorithm sometimes is useful to see exactly what words are different in a changed section.
    - Show Modification Details at Character Level - useful when you want to find out exactly what characters are different between the two analyzed sections.
    - 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.
- Layout - layout control actions:
    - Reset Layout - resets all the views to their default position.
    - Show View - Brings to front the specified view.
- Options
    - Preferences - opens the preferences dialog.
    - Reset Options - resets all your options to the default ones.
    - Import Options - allows you to import options you have previously exported.
    - Export Options - allows you to export the current options to a file.
    - Reset Authentication - resets the Subversion authentication information.
- Help
    - Dynamic Help - shows the Dynamic Help dialog.

- Help - opens the Help dialog.
- Check for New Versions - checks the availability of new Syncro SVN Client versions.

Note

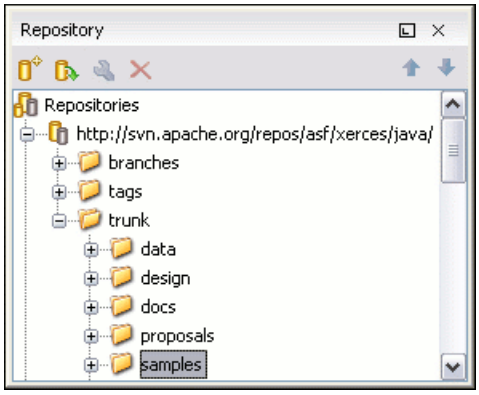
In order to avoid unusual situations you can currently execute only one action that involves operations with the working copy or with the repository at a time.

Getting started

Define a repository location

Usually team members do all of their work separately, in their own working copies and need to share their work. This is done via a Subversion repository. Syncro SVN Client supports the versions 1.3 and 1.4 of the SVN repository format.

Figure 17.2. Repository View



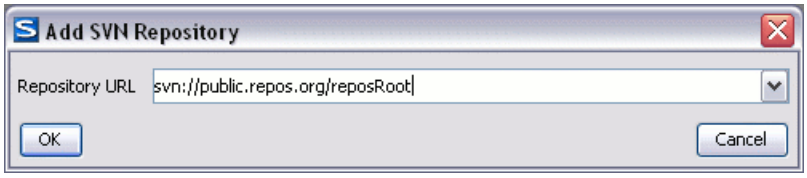
Add / Edit / Remove repository locations

Before you can begin working with a Subversion repository, you must define a repository location in the Repository View.

To create a new 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 with the mouse on a right click or with the keyboard by pressing the special context menu key available on Windows keyboards.

The *Add SVN Repository* dialog will prompt 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 will prompt you for a new password only when your password changes.

Figure 17.3. The Add SVN Repository dialog



To edit a repository location, click the *Edit Repository Location* toolbar button or right click inside the view on a repository entry and select *Edit Repository Location...* from the popup menu.

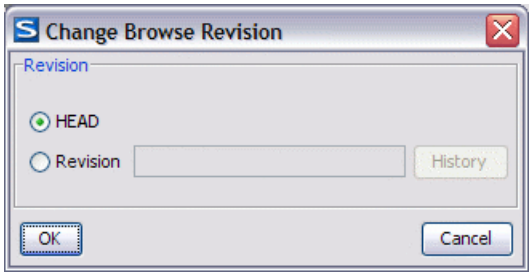
The *Edit SVN Repository* dialog works in the same way as the *Add SVN Repository* dialog. It will show the previously defined repositories URL and it will allow you to change them.

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 will appear in order to make sure you don't accidentally remove locations.

The order of the repositories can be changed in the Repository 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 the selected repository up in the list with one position.

To set the reference revision number of a SVN repository right-click on the repository in the list displayed in the Repository View and select the action *Change Browse Revision*.

Figure 17.4. The Change Browse Revision dialog



The revision number of the repository set with this dialog will be used for displaying the contents of the repository when it is viewed in the Repository 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 and for all the file open operations executed directly from the Repository View.

Authentication

Five protocols are supported: *HTTP*, *SVN*, *HTTPS*, *SVN + SSH* and FILE. If the repository that you are trying to access is password protected, the *Enter authentication data* dialog will request a username and a password. If the *Store authentication data* checkbox is checked the credentials will be stored in Subversion's default directory:

- Windows - %HOME%\Application Data\Subversion\auth. Example: C:\Documents and Settings\John\Application Data\Subversion\auth
- Linux & Mac OS X - $HOME/.subversion/auth. Example: /home/John/.subversion/auth

There will be 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 will cause Subversion to forget all your credentials.

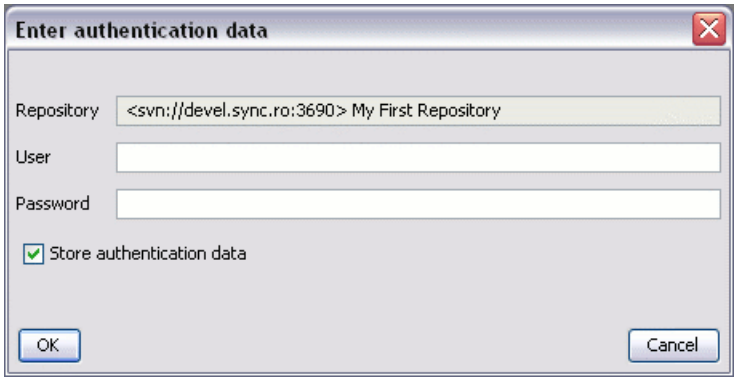
Note

When you reset the authentication data, you will have to restart the application in order for the change to take effect.

Tip

The FILE protocol is recommended if the SVN server and Syncro SVN Client are located on the same computer as it ensures faster access to the SVN server than the other protocols.

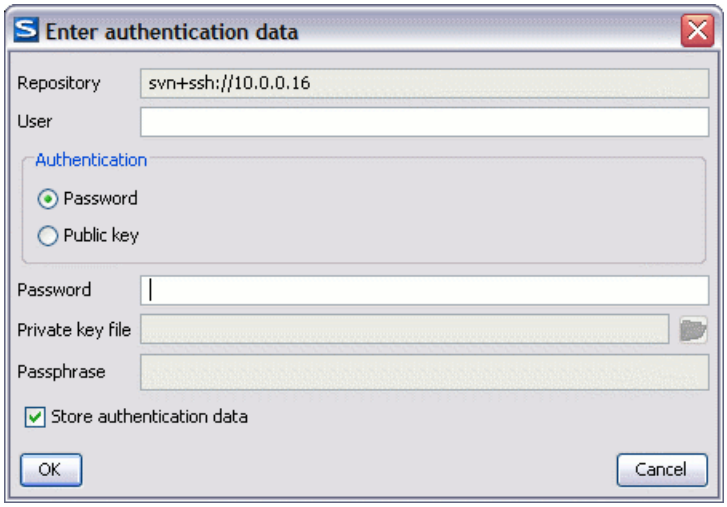
Figure 17.5. User & Password authentication dialog



When using a secure http (https) protocol for accessing a repository, a *Certificate information* dialog will pop up and ask you whether you accept the certificate permanently, temporarily or simply deny it.

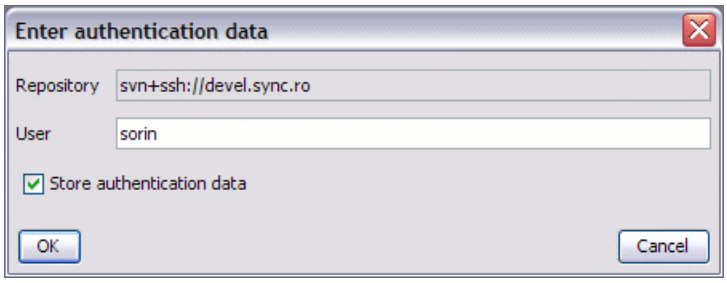
If the repository used has svn+ssh protocol the SSH authentication can also be made with a private key and a pass phrase.

Figure 17.6. User & Private key authentication dialog



After the SSH authentication dialog another dialog will pop up for entering the SVN user name that will access the SVN repository and will be recorded as the committer in SVN operations.

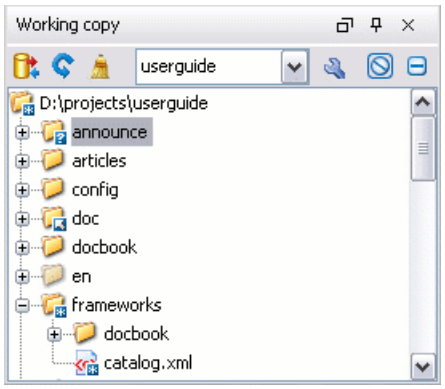
Figure 17.7. SVN user authentication dialog



Defining a working copy

A 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.

Figure 17.8. 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 filesystem tree. In this arrangement, a user's working copy will usually correspond to a particular subtree of the repository.

Check out a working copy

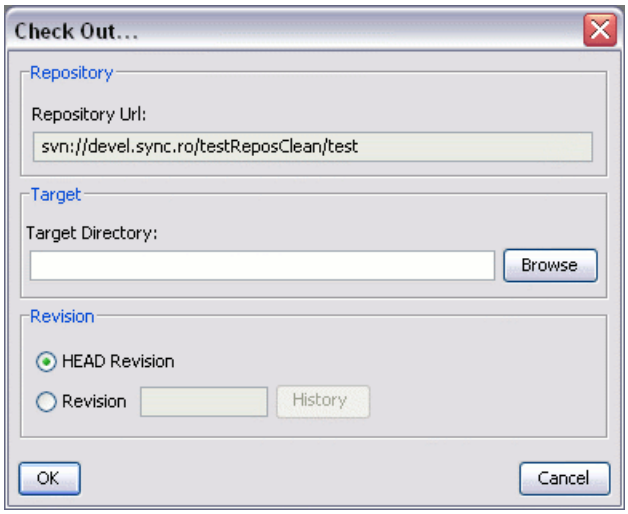
Check out is the term used to describe the process of making a copy of a project from a repository into your local filesystem. This checked out copy is called a working copy. A Subversion working copy is a specially formatted folder structure which contains additional *.svn* folders that store Subversion information, as well as a pristine copy of each item that is checked out.

You check out a working copy from the Repository View. If you have not yet defined a connection to your repository, you will need to add a new repository location.

To check out a new working copy, navigate inside the repository to the desired directory, right click on it and select *Check Out...* from the popup menu.

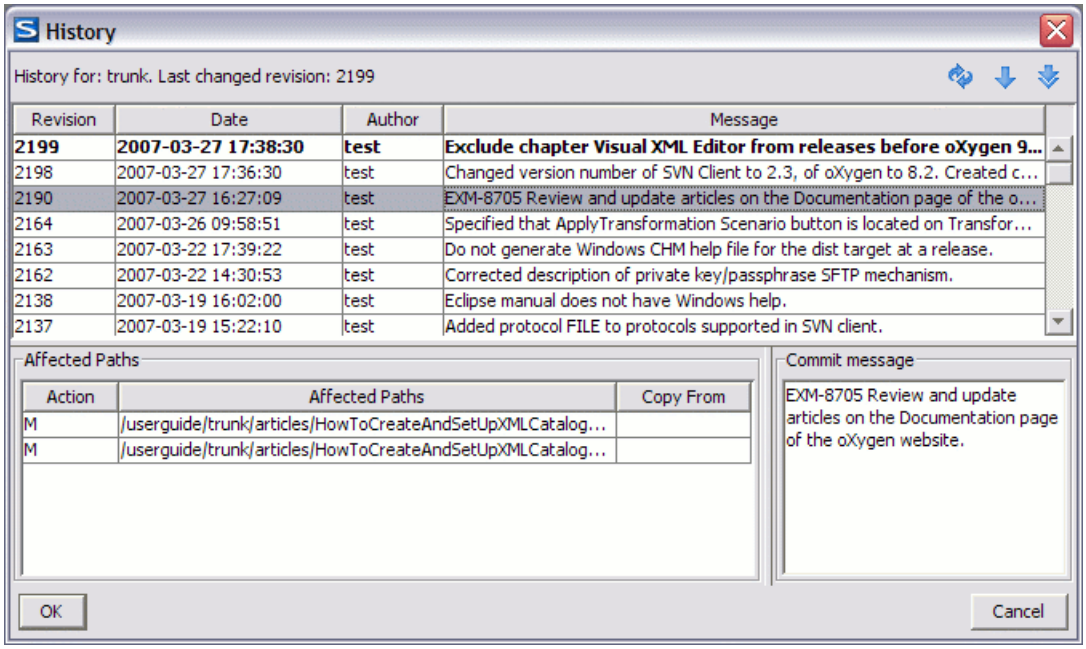
In the *Check out* dialog click on the *Browse* button and choose the location where the working copy will be checked out.

Figure 17.9. Check out dialog



By default the last (HEAD) revision will be checked out. If you need another revision you can select the *Revision* radio button and then click on the History button and choose a desired revision from the new dialog. Or you can simply type the revision number in the corresponding text field.

Figure 17.10. History dialog



The *History dialog* presents a list of revisions for a resource. There are presented information about revision, commit date, author and commit comment. 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.

The *Affected Paths* area displays all paths affected by the commit of the revision selected in history. On a revision selected in the Affected Paths area the contextual menu contains the actions:

Open	Opens the revision in the editor panel.
Save revision to ...	Save the revision to a new file.
Compare with previous version	Make a diff between the selected revision and the previous one. If there is no external application specified for executing diff operations the built-in diff tool is applied.
Update to revision	Make the selected revision the current revision in the working copy.
Revert changes from this revision	The changes committed by the selected revision are reverted in the current version of the file in the working copy. If the committed changes were in fact a SVN delete operation the result is restoring the deleted file in the working copy.
Show History	Display the history of the SVN resource of the selected revision.
Show Annotation	Open the Annotations View for the selected revision.

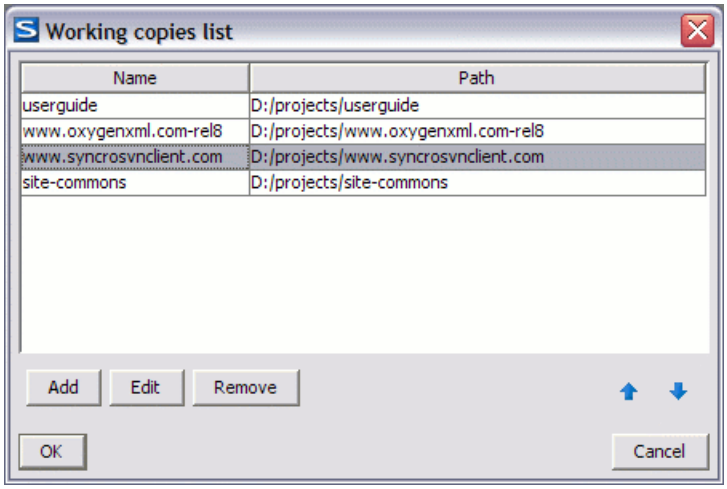
After a check out, the new working copy will be added to the list in the Working Copy view and its content will be displayed in that view.

Use an existing working copy

This is the process of taking an working copy that exists on your filesystem and connecting it to Subversion. If you have a brand new project that you want to import into your repository, then see the section Import resources into the repository

This assumes that you have an existing valid working copy on your filesystem. In the Working Copy View click on the *Add/Remove Working Copy* toolbar button.

Figure 17.11. Add/Remove Working Copy dialog



In the *Working copies list* dialog press the Add button and choose the working folder copy from the filesystem.

Select the new working copy from the list and press the OK button. The selected working copy will be loaded and presented in the Working Copy View.

The Edit button allows changing the name of the working copy. 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.

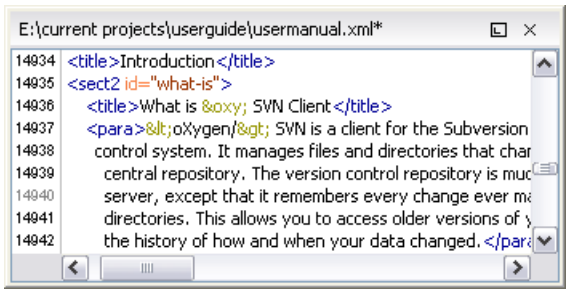
The order of the working copies can be changed in the list using the two arrow buttons which move the selected working copy with one position up or down.

Manage working copy resources

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 popup menu, or from the Synchronize View by using *Open* from the popup menu. Please note that only one file can be edited at a time; if you try to open another file it will be opened in the same editor window. The editor has syntax highlighting for known file types, meaning that a different color will be used for each type of recognized token in the file. If the selected file is an image, then it will be previewed in the editor, with no access to modifying it.

Figure 17.12. Editor View



When you edit a file from your working copy, you will notice that after modifying and saving it, a modified marker - an asterisk(*) - will appear on the file's icon in the Working Copy View.

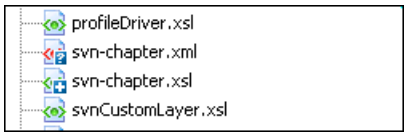
Add resources to version control

The new file(s) or folder(s) you create during your development process must be added to Version Control, using the *Add* command from the context menu in Working Copy View or Synchronize View. If you do not do this, the resource will be marked with a question mark (?), meaning that it is unversioned (unknown). After you have added it to version control, the resource will be marked as added(+) which means you first have to commit your working copy to make those resources available to other developers. Adding a resource to version control does not affect the repository.

If you try to add to version control an unversioned directory the entire subtree starting with that directory will be added.

When you commit your changes, if you forgot to add a resource, it will still be presented in the commit dialog, but will be de-selected by default. When you commit the unversioned resource, it will be automatically added to version control before being committed and the marking will also be removed.

Figure 17.13. Unversioned / Added



Ignore resources not under version control

Sometimes you will have files and folders inside your working copy that should not be subject to version control. These might include files created by the compiler, *.obj, *.class, *.lst, maybe an output directory used to store the executable. Whenever you commit changes, Subversion shows your modified files but also the unversioned files, which fills up the file list in the commit dialog. Though the unversioned files will not be 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 will never show up in the commit dialog and only genuine unversioned files which must be committed will be shown.

You can choose to ignore a resource by using the *Add to svn:ignore* action in the context menu from Working Copy View or Synchronize 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 wildcard characters such as:

- * - Matches any string of characters of any size, including the empty string.
- ? - Matches any single character.

For example you may choose to ignore all text documents by using the pattern: **.txt*

The action 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 will be visible in the *Working Copy view*. The ignored resources will be 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 Subversion working copy it will be removed from the filesystem and it will be also marked as deleted. If unversioned, added or modified resources will be encountered, a dialog will prompt you to confirm their deletion.

The delete command will not delete from the filesystem the directories under version control, it will only mark them as deleted. This is because the directories also contain the pristine copy of that directory content. In the Working Copy View this is transparent as all resources will have the deleted mark(-). The directories will be removed from the filesystem 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 a resource is deleted from the filesystem without Subversion's knowledge, your working copy will be in an inconsistent state. The resource will be considered and marked as missing (!). 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. The *Delete* action is not enabled when the selection contains *missing* resources.

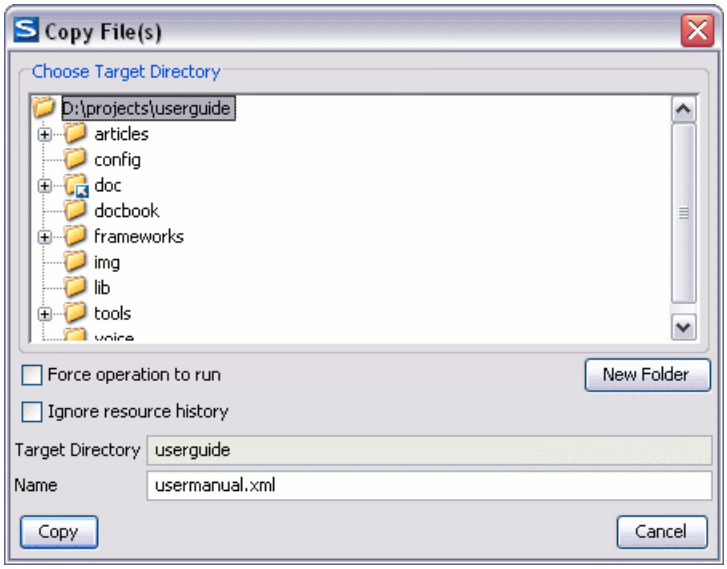
Copy / Move / Rename resources

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 context menu. This is not a simple file system copy but a 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.

Figure 17.14. Copy files dialog



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 Synchronize view and 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 operation on several resources at once. Just select the resources in the Working Copy View and choose the *Move* command from the context 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. If you try to move a directory that contains unversioned resources you will need to force the move operation by selecting the appropriate checkbox in the dialog.

Rename a resource

The rename action can be found in the context menu in 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. As in the case of the move command, if you try to rename a directory that contains unversioned resources, you will need to force the operation by selecting the appropriate checkbox in the dialog.

Note

Because the rename and move commands act as a copy followed by delete, when you want to commit a renamed or moved resource you must also commit the deleted original. It is also recommended that you commit the renamed or moved resources before changing their contents in order to avoid difficulties in resolving conflicts.

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 make modifications to 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.

A Subversion 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 will demand two pieces of information:

- User authentication. The user performing the commit must be the lock owner.

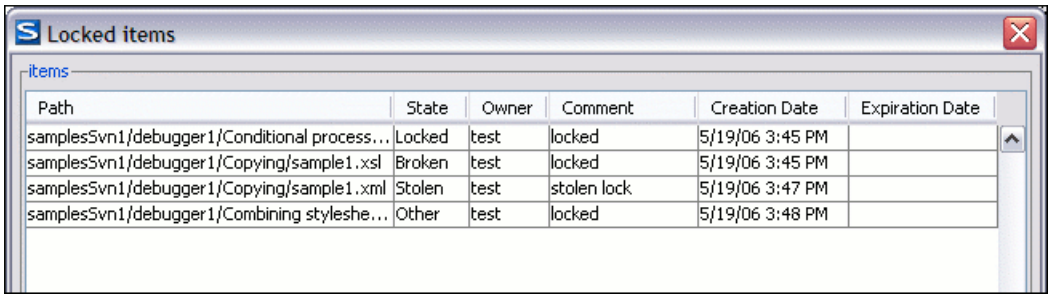
- Software authorization. The user's working copy must have the same lock token as the one from the repository, proving that it is the same working copy where the lock originated from.

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 isn't 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.

Locked items

Figure 17.15. 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:

- Other - if someone else locked the file.
- Locked - if you locked the file.
- Broken - if you locked the file but it was forcefully unlocked by someone else afterwards.
- Stolen - if you locked the file but it was forcefully locked by someone else afterwards.

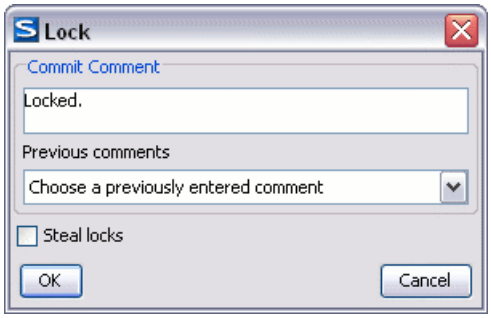
You can unlock a resource by selecting it and pressing the Unlock button.

Locking a file

A locked file allows you exclusive write access to a file from the repository, meaning that you are the only one who can modify and commit the file to the repository.

You can lock a file from the context menu in Working Copy View. Note that you can only lock several files at once but no directories. This is a restriction of Subversion which is used to discourage the use of the lock-modify-unlock model at large scale or when unnecessary.

Figure 17.16. The lock dialog



In the *Lock* dialog you can write a comment for the lock and if necessary steal (force) the lock. Note that you should only steal a lock 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, it may not allow you to steal a lock if a certain condition is not satisfied.

The lock will stay in place until you commit the locked file or until someone unlocks it. There is also the possibility that the lock will expire after a period of time specified in the Subversion server policy.

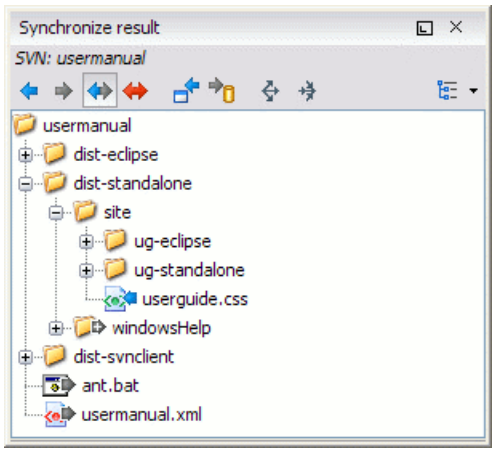
Unlocking a file

A file can be unlocked from the context menu in 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 the 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 Synchronize View was designed for, to help you send and receive modifications from the repository.

Figure 17.17. Synchronize View



In the *Synchronize view* you can see the overall status of your working copy resources when compared to the repository resources. The view focuses on incoming and outgoing changes, where 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* actions from the Working Copy view.

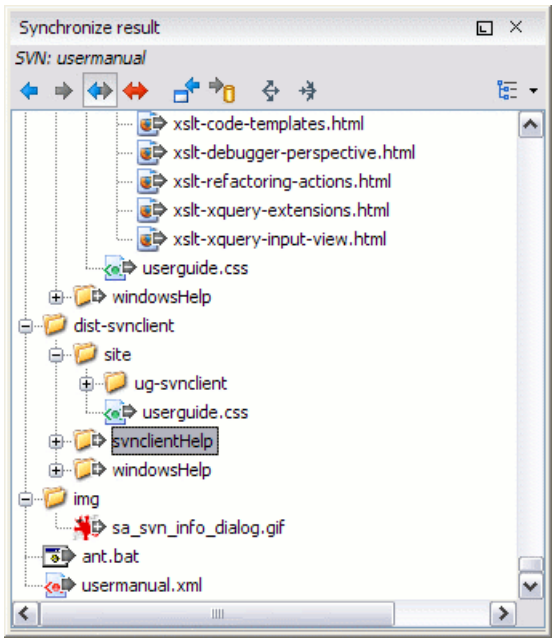
Presentation modes

The *Synchronize view* has three presentation modes:

Tree mode

The resources are presented in a tree layout as in the above image which mirrors the tree structure of the SVN repository and of the Working Copy view. This mode is more appropriate when you want a quick overview of the locations which need synchronization with the SVN repository or when you want to apply a synchronization operation (Commit, Update, Revert, Add) recursively on a folder.

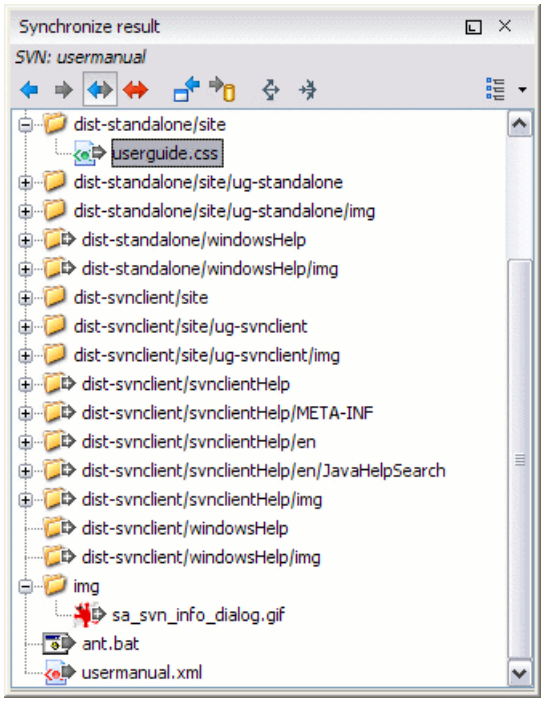
Figure 17.18. Synchronize View - Tree mode



Compressed mode

The resources are presented in a layout with two levels, that is a compressed path for each folder in the list as in the following image. This mode is useful when you need the full list of resources which need synchronization without having to expand a tree to get to the unsynchronized resources of that folder. Also it is useful when you do not want to apply a synchronization operation recursively, that is the operation applied to a folder resource must not have any effect on other unsynchronized resources located in the folder but displayed in other list entries in the view.

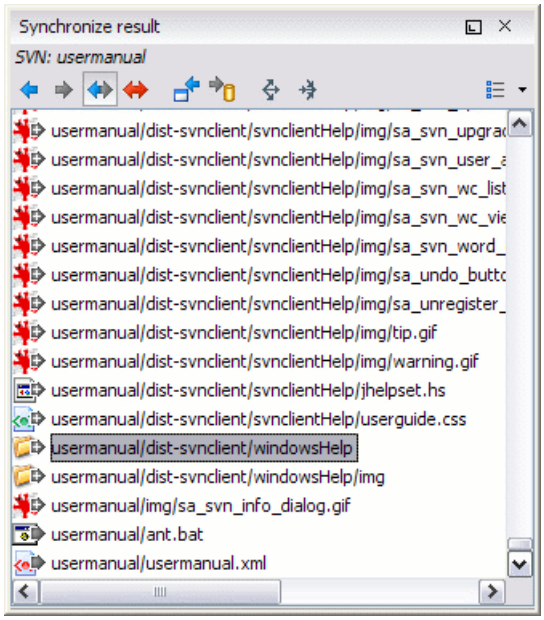
Figure 17.19. Synchronize View - Compressed mode



Flat mode

The full list of the resources that must be synchronized with the repository are presented in a flat list. As in the Compressed mode it is useful when you do not want to apply a synchronization operation recursively on a folder.

Figure 17.20. Synchronize View - Flat mode



Switching between the three presentation modes is done with the switch button on the right side of the toolbar of the *Synchronize view*.

View differences

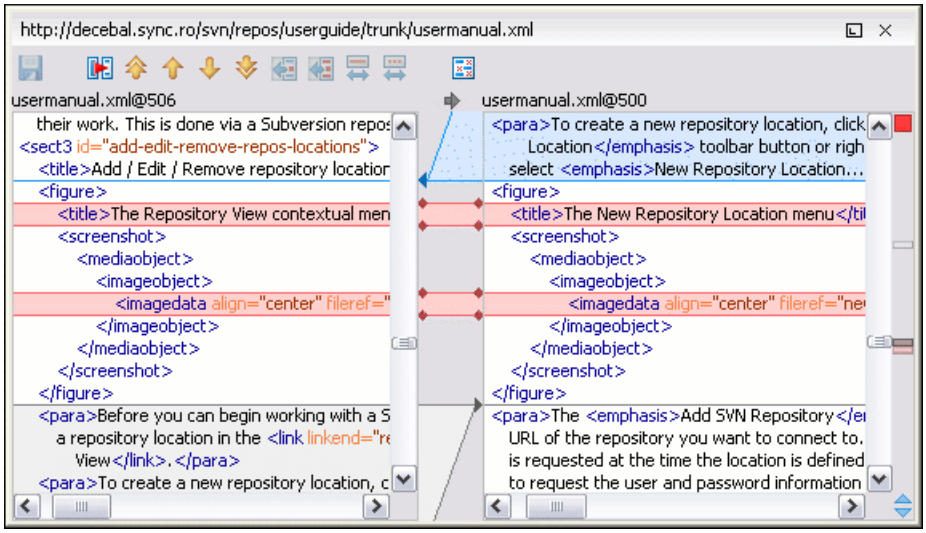
One of the most common requirements in project development is to see what changes have been made to the files from your Working Copy or to the files from the repository. You can examine these changes after a synchronize operation with the repository, by using the *Open in compare editor* action from the contextual menu. There are two types of files that can be compared: text files and binary files.

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 17.21. Compare View



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.

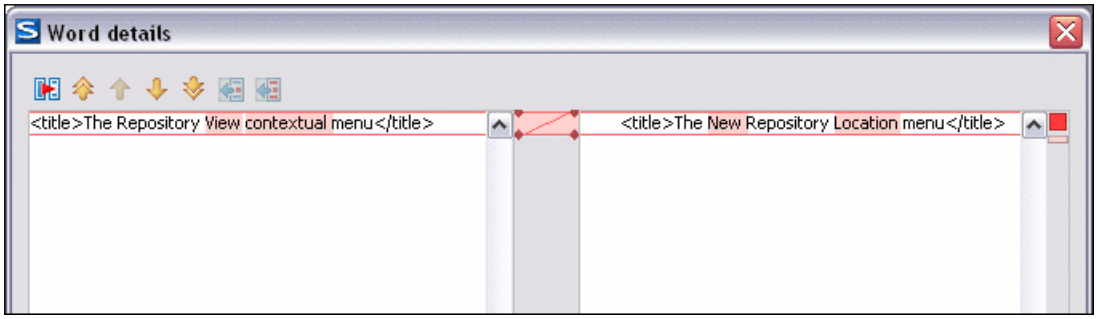
- outgoing changes - changes you have done in the content of the working copy file. They are marked with a gray highlight and the arrows on the divider are pointing from left to right.

- 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 / 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 *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: *Word Details* and *Character Details*.

Figure 17.22. Word details dialog



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 which allows you to enable or disable the white space ignoring feature of the compare algorithm.

The binary files are always compared two way (working file and HEAD revision file) byte to byte and the location of the first different byte is reported.

Resolve conflicts

Once in a while, you will get a conflict when you update your files from the repository. A 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. The real conflict (conflicted state) is obtained when a resource in the working copy has incoming and outgoing changes in the same section. When updated the differences cannot be merged automatically so the file is marked as conflicted. A file can be in real conflict state when its content or its properties are in conflict. A folder can be in real conflict only when its properties are in conflict.

A resource is in a mergeable conflict state when it contains both incoming and outgoing changes not necessarily in the same sections. A file is in mergeable conflict when its content has both incoming and outgoing changes but the changes can be merged by the update operation. A folder can be in mergeable conflict when it contains files in mergeable conflict and / or real conflict themselves. After an update it is possible that the state of conflict can be resolved automatically by merging the incoming changes into the working copy resource. A conflicting resource cannot be committed. In the conflict case the resource will be marked with a conflict icon and will appear in all the Synchronization trees.

Content conflicts vs Property conflicts

On the other hand depending on the situation the conflicts are separated in two categories: Content conflicts and Properties conflicts. *Content conflicts* - this type refers to the fact that the 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, 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:

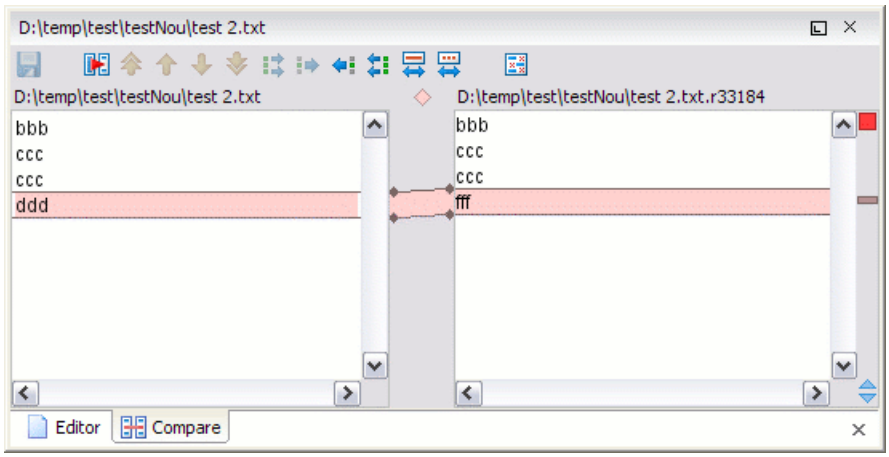
- filename.ext.mine - This is your file as it existed in your working copy before you updated your working copy - that is, without conflict markers. This file has your latest changes in it and nothing else.
- filename.ext.rOLDREV - This is the file that was the BASE revision before you updated your working 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 last synchronized 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. *Properties conflicts* - refer to the conflicts that are 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 one 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 to decide 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.

Figure 17.23. Compare view for editing a conflict



The *Compare* view is opened with the action *Edit Conflict* which is available on the context menus of the Synchronize view and 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).

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	Save the modifications of the local version of the file displayed in the left side of the view.
Perform Files Differencing	Apply 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	Scroll the view to the topmost difference.
Go to Previous Modification	Scroll the view to the previous difference. The current difference is painted with a darker color than the other ones.
Go to Next Modification	Scroll the view to the next difference. The current difference is painted with a darker color than the other ones.
Go to Last Modification	Scroll 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	Copy 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	Apply the previous operation for all the differences.
Show Modification Details at Word Level	Display a more detailed version of the current difference computed at word level.
Show Modification Details at Char Level	Display 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 usually run 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.

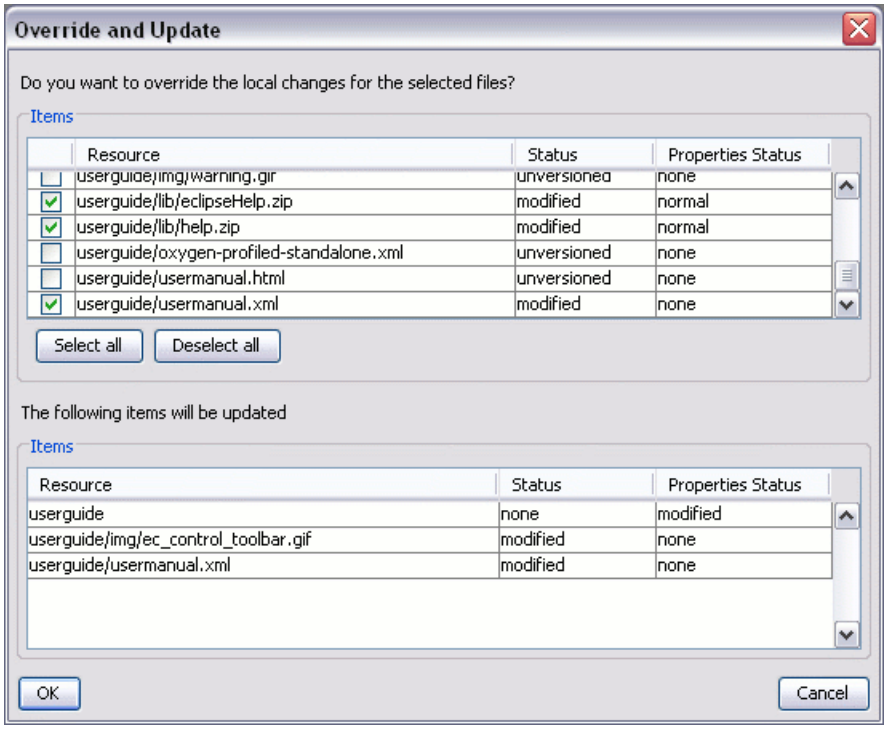
Revert your changes

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 context 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 repository file. This can be achieved either by editing directly the file or by using the action *Copy change from right to left* from Compare view toolbar. After editing the conflicting file you have to use *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 17.24. 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 in the *Synchronize view* will be 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 can:

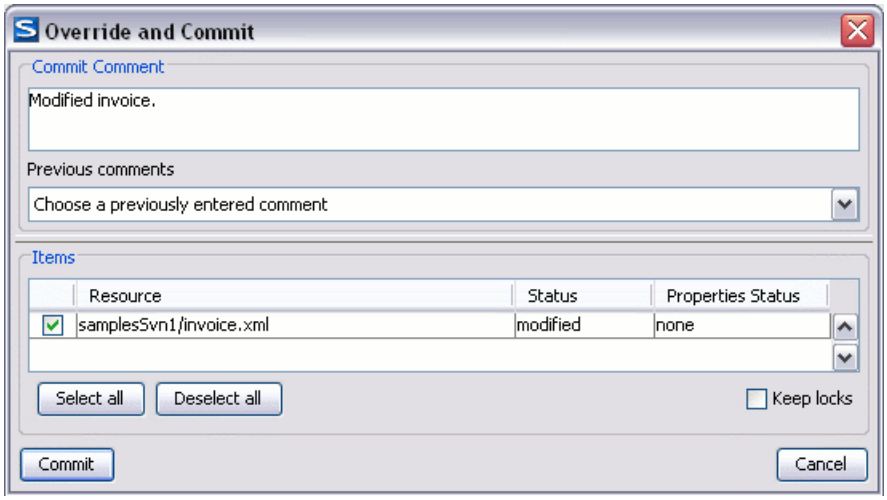
- open the file in the compare editor
- analyze the changes
- edit the changes
- decide which incoming changes need to be copied locally
- decide which outgoing changes must be overridden or modified

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 first use *Mark as merged* action. When you want to override completely the remote file with the local file you can use *Override and commit* which drops any remote changes and commits your file.

Figure 17.25. Override and commit dialog



In general it is much safer to analyze all incoming and outgoing changes using Compare view and only after to update and commit.

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 either from Working Copy view or Synchronize view. The Update action in the Working Copy view is different from the Update action in the Synchronize view. The Update action from the Working Copy view updates the selected resources to the HEAD revision on the repository. The Synchronize view action updates the selected resources to the revision against which the *Synchronize* operation was performed.

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.
- Conflicting - A conflicting change occurs when one or more of the same lines of a text file have been changed both remotely and locally. Binary files are never auto-mergeable and are conflicting by default.

If the resource contains only incoming changes or the outgoing changes do not intersect with incoming ones then the update will end normally, the Subversion system merging incoming changes into the local file. In the case of 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 *Update to revision* action from the History view contextual menu.

If you select multiple files and folders and then you perform an *Update*, all of those files/folders are updated one by one. The Subversion client makes sure that all files/folders belonging to the same repository are updated to the exact same revision, even if between those updates another commit occurred.

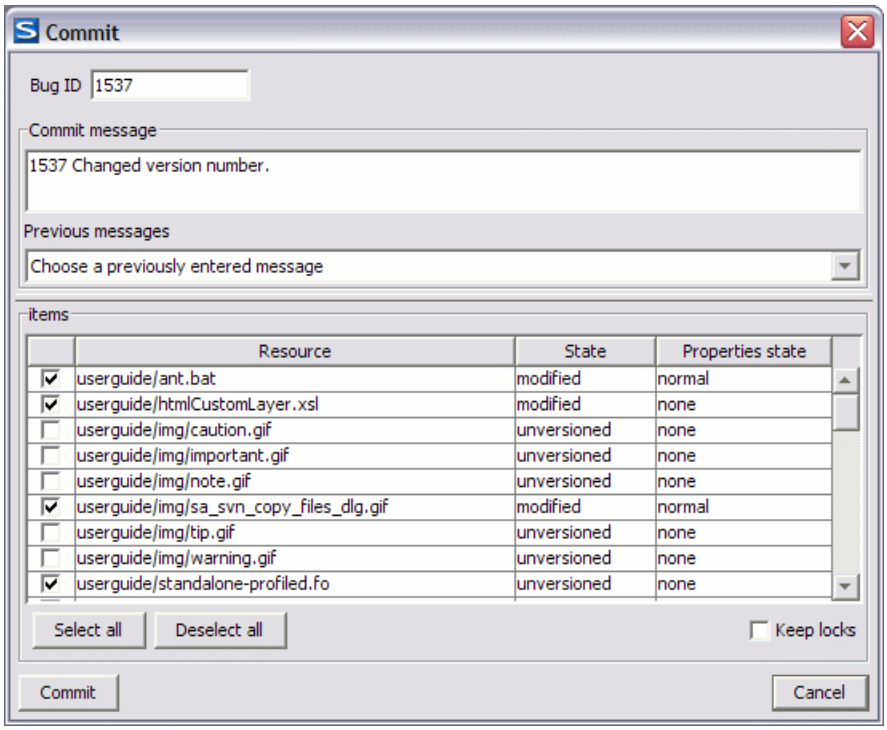
When the update fails with a message saying that there is already a local file with the same name Subversion tried to checkout a newly versioned file, and found that an unversioned file with the same name already existed in your working folder. Subversion will never overwrite an unversioned file unless you specifically do this with *Override and update*. 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 17.26. Commit dialog



Enter a comment to associate with the commit or choose a previously entered comment from the list. 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.

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. When the user enters a commit message, the bug ID is added to this message. 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", then 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. Any other value or if the property 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 regexp string. 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 regexp 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

Request status information for a resource

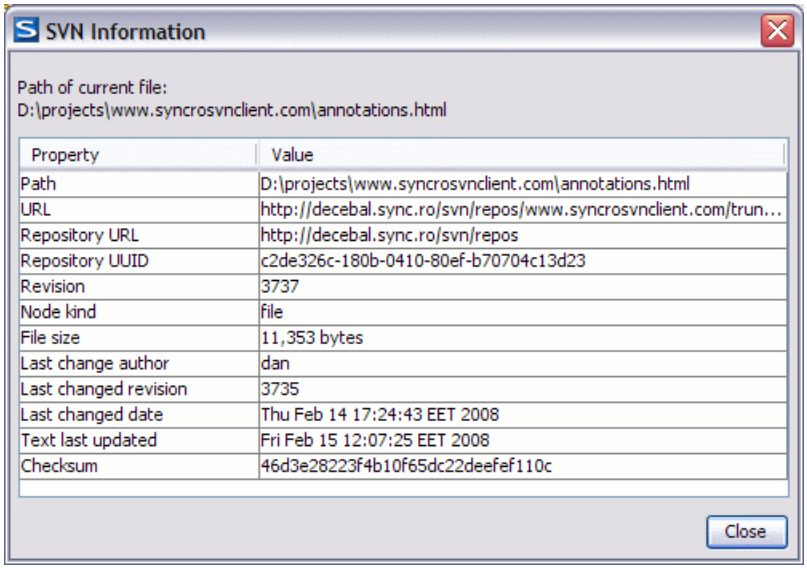
While you are working you often need to know which files you have changed, added, removed or renamed, or even which files got changed and committed by others. That's where the *Synchronize* action from Working Copy view comes in handy. The *Working Copy View* will show you every file that has changed in any way in your working copy, as well as any unversioned files you may have. If you use Synchronize view then you can also look for changes in the repository. That way you can check before an update if there's a possible conflict.

If you want more detailed information about a given resource you can use *Information* action from the *Working copy view*contextual menu or the *Synchronize 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.

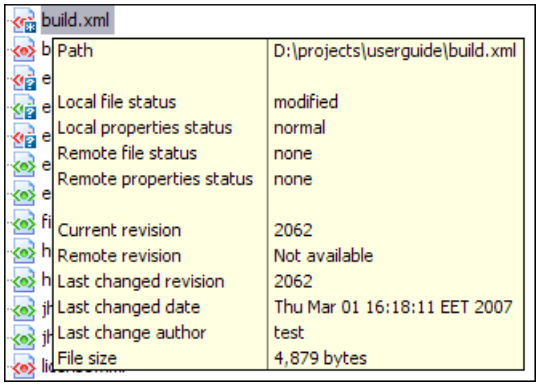
Figure 17.27. Information about a SVN resource



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.

Figure 17.28. Tooltip for a resource



Request history for a resource

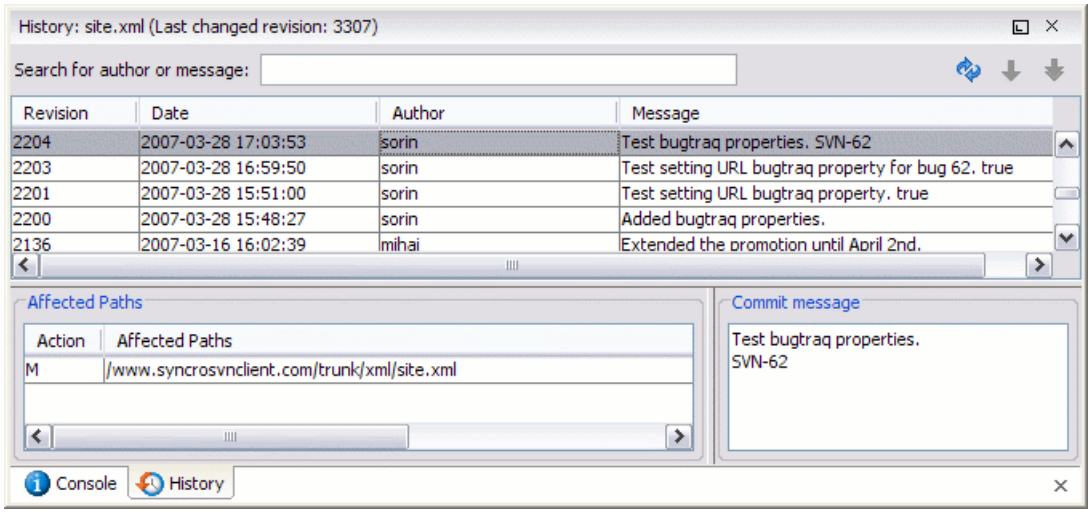
In Subversion, both files and directories are versioned and have a history. If you want to examine the history for a selected resource and find out what happened at a certain revision, what has been changed regarding

that resource and who did the changes, drop the modifications made in a certain revision, check out / update the resource to a selected revision, compare two revisions of the same file and other actions, you have to use the *Show history action*. This is available from any of the three views: Repository view menu, Working copy view menu or Synchronize view menu. From the *Repository view* you can display the log history regarding any remote resource residing in repository. From the *Working copy view* you can display the history of local versioned resources. From the *Synchronize view* you can show the history of any incoming or outgoing resources.

The view itself consists of three distinct areas:

- The revision table showing revision numbers, date/time of revision, name of the author, as well as the first line of the commit message. You can click on any revision to show its full details.
- The list of resources affected by this revision (modified, added, deleted or changed properties).
- The commit message for the selected revision.

Figure 17.29. History View



The *Resource history view* does not always show all the changes ever made to a resource because for a large repository 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 and that is why the number of revisions is limited by default from the options to 50. This can be changed by accessing the Preferences->SVN page.

Note

When using Subversion servers older than version 1.2, a history request may take a very long time because the server will reply with the entire history even if you limited the number of entries to a smaller number.

Using the resource history view

The *History view* provides a set of actions you can use to get even more information about the project history and make changes to your working copy related with older revisions.

History actions available in the popup menu displayed by a right click in the view when a single resource is selected:

- *Open* - opens the selected revision of the file into the Editor. This is enabled only for files.
- *Save revision as* - saves the selected revision to a file so you have an older version of that file. This option is only available when you access the history of a file, and it saves a version of that one file only.
- *Compare with working copy* - compares the selected revision with your working copy file. It is enabled only when you select a file.
- *Update to revision* - updates your working copy resource to the selected revision. Useful if you want to have your working copy 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 will be inconsistent and you will be unable to commit your changes.
- *Check out from revision* - gets the content of the selected revision for the resource into local file system.
- *Revert changes from this revision* - reverts changes which were made in the selected revision. The changes are reverted in your working copy so this operation does not affect the repository file! The action will undo the changes made only in selected revision. It does not replace your working copy file with the entire file at the earlier revision. This is useful for undoing an earlier change when other unrelated changes have been made since the date of the revision. This option is enabled when the resource history was launched for a local working copy resource.
- *Get Contents* - replace the current content of the local version of the selected file with the content of the selected revision.

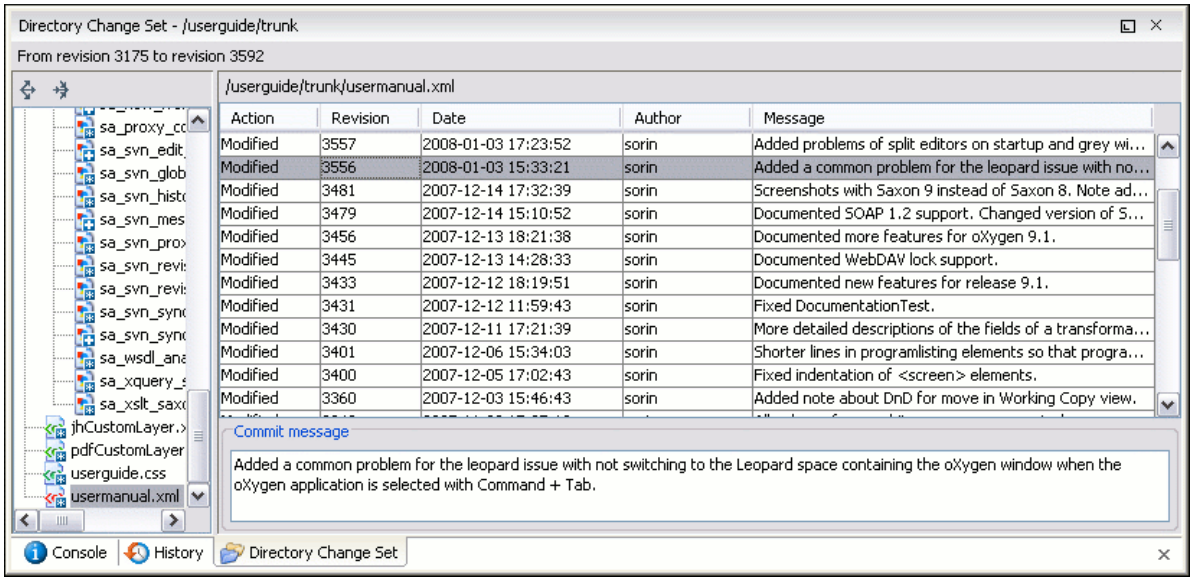
History actions available on the popup menu for double selection:

- *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.

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 and contained in the folder or in a subfolder of the folder. These resources are presented in a tree format and for each changed resource of the set all the revisions committed between the two reference revision numbers are presented.

Figure 17.30. 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 resivions 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 tree that 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 of the folder for which the change set was computed. 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:

Show Modifications	Performs a diff operation between the selected revision in the list and the previous one.
Open	Open the selected revision in the associated editor type.
Open with	Display a dialog with the available editor types and allow the user to select the editor type for opening the selected revision.
Save revision to ...	Save the selected revision in a file on disk.
Show Annotation	Request the annotations of the file and display them in the *Annotations* view.

Management of SVN properties

In the Properties view you can read and set the 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 Sub-

version 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.

Add / Edit / Remove SVN properties

If you want to change the properties of a given resource you need to select that resource from the Working copy view or the Synchronize view and access 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.

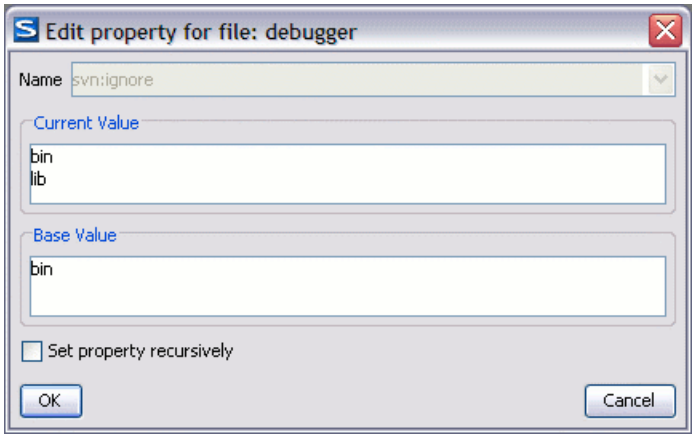
In the Properties view toolbar there are available actions which allow you to add, change and delete the properties.

If you choose the *Add a new property* action, a new dialog will pop-up. The sections in the dialog are:

- Name - it is a 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 - it is a 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.

Figure 17.31. Edit property dialog



If you want to change the value for a previously set property you can use *Edit property* action which will display a dialog where you can set:

- Name - the property name. It cannot be changed; only its value can.
- 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 *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.

Creation and management of Branches/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.

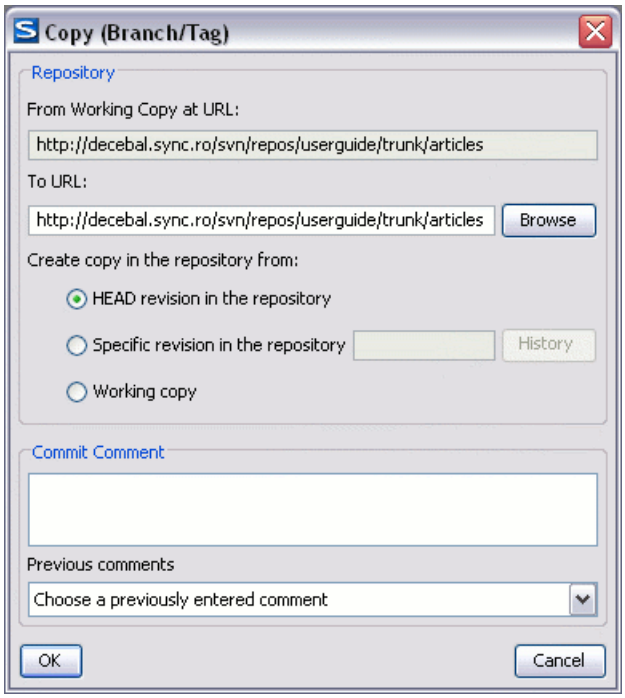
In Subversion there is no difference between a tag and a branch. On the repository both are ordinary directories that are created by copying. The trick is that they are cheap copies instead of physical copies. Cheap copies are similar to hard links in Unix, which means that they merely link to a specific 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

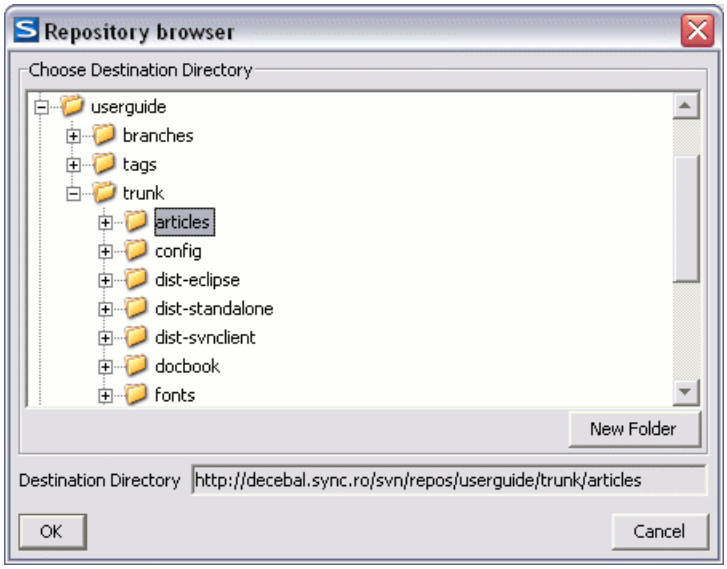
In the Working Copy view, select the resource which you want to copy to a branch or tag, then select the command *Branch/Tag...*.

Figure 17.32. 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. You will need to change that URL to the new path for your branch/tag. To do this, click on the Browse button and choose a repository target directory for your resource.

Figure 17.33. Repository Browser dialog



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.

Merge branches

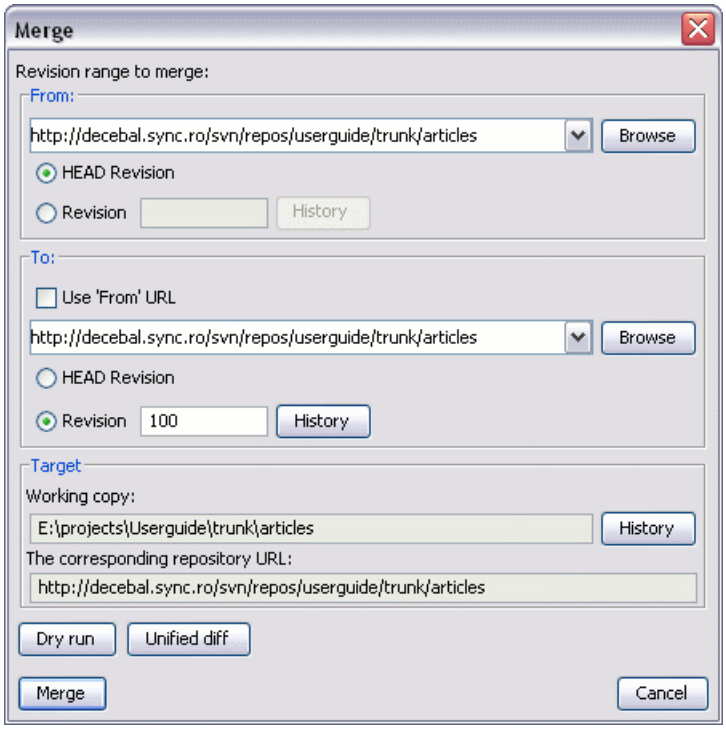
At some stage during the development you will want to merge the changes made on one branch back into the trunk, or vice versa.

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* command can be found in the *Modify* submenu of the context menu of the Working Copy view. The directory selected when you issued the command will be the result directory of the merge operation.

Figure 17.34. The Merge dialog



By default the start URL will be the URL of the selected file in the working copy. You can browse the repository and select a start URL and then choose a revision.

If you want to merge a range of revisions, leave the *Use 'From' URL* checkbox checked and simply choose the end revision. Be careful when using the HEAD revision. It may not refer to the revision you think it does if someone else committed changes.

If you want to merge a different branch uncheck the *Use 'From' URL* checkbox, browse the repository for the desired branch, and choose a revision.

You can choose to 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 will occur.

You can also perform a Unified diff and obtain the diff patch file without doing a merge in the working copy. The diff file is not always easy to read out of context, but for small scale changes it is sometimes useful.

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.

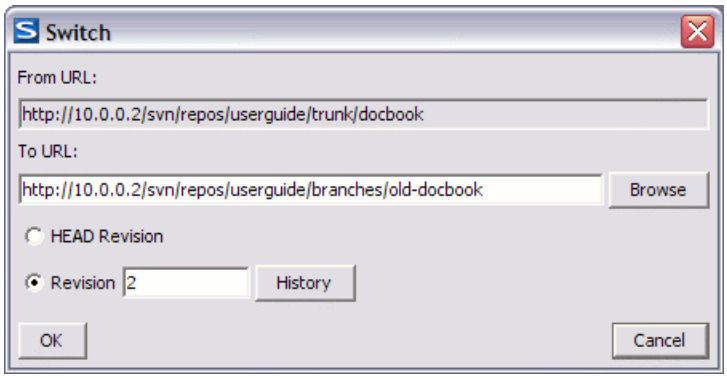
Press the Merge button in order for the operation to take place. You will obtain the result in the selected resource from the working copy.

When the merge is completed it's a good idea to look at the result of the merge and see if it meets your expectations. Because merging is sometimes complicated, when there are major changes, conflicts may appear.

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. It is available on the contextual menu of the working copy tree when the selected item is a versioned resource except an external folder.

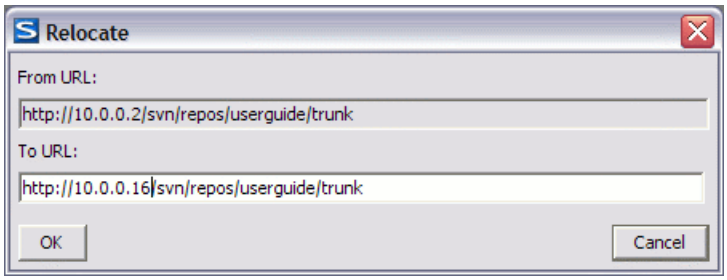
Figure 17.35. The Switch Dialog



Relocate a Working Copy

When the base URL of the repository changed, for example the repository itself was relocated to a different server, 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 available on the contextual menu of the Working Copy view only if the selected item of the working copy tree is a versioned folder.

Figure 17.36. The Relocate Dialog



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.

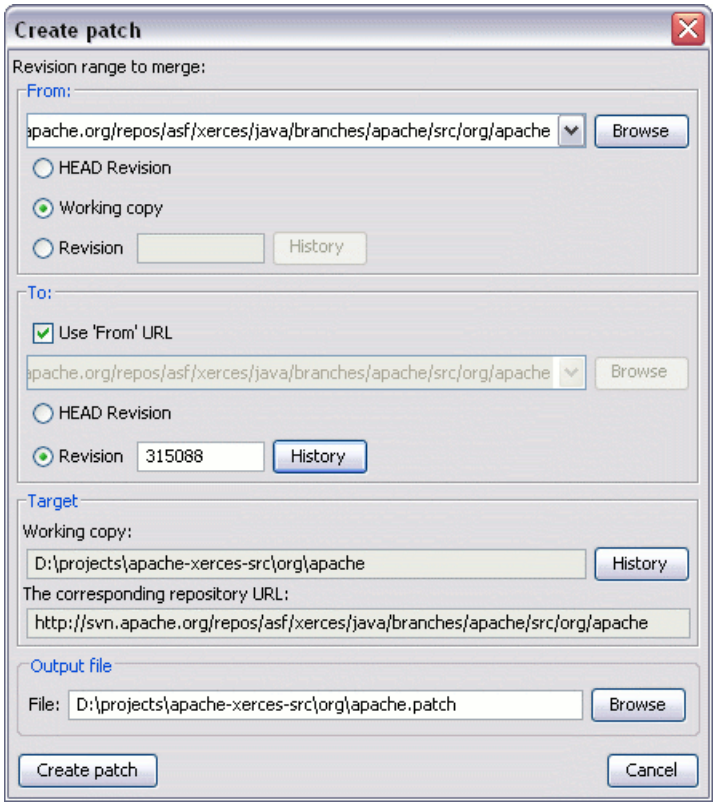
Create Patches

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.

Creating patches in Subversion implies the access to two states (revisions) of your project. If you have not committed yet your current working copy and prefer not to do it, it is possible to create a patch between the current working copy and a revision from the repository.

In order to create the patch, you will use the action from the submenu *Modify* of the contextual menu of the Working Copy view: Create Patch. This opens the Create patch dialog.

Figure 17.37. The Create Patch Dialog



The first section in the dialog shows the start state of the diff, and it can be:

- The HEAD revision from the repository
- The working copy - the current files from your working copy
- A revision number. If you do not know it, you can press the History button and see the history log for the root of the patch, including the commit messages.

The second section shows the end state of the diff, and it can be:

- An URL from the repository, indicating a tag or a branch.
- The HEAD revision from the repository
- A revision number.

The target panel of the dialog reminds you the location of the target resource from the working copy on which the patch will be created and its corresponding repository URL.

The output section lets you choose the patch file that will store the differences.

Working with repositories

Import / Export resources

Import resources into the repository

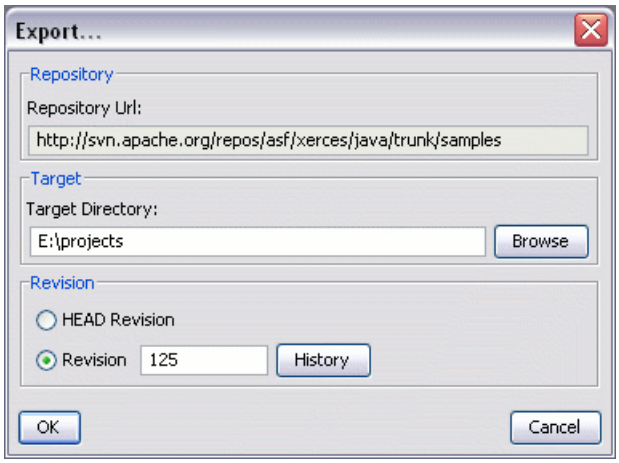
This is the process of taking a project and importing it into a repository so that it can be managed by Subversion. If you have already been using Subversion and you have an existing working copy you want to use, then you will likely want to follow the procedure for Use an existing working copy.

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.

Export resources from the 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.

Figure 17.38. The export dialog



The export dialog is very similar to the check out dialog. 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.

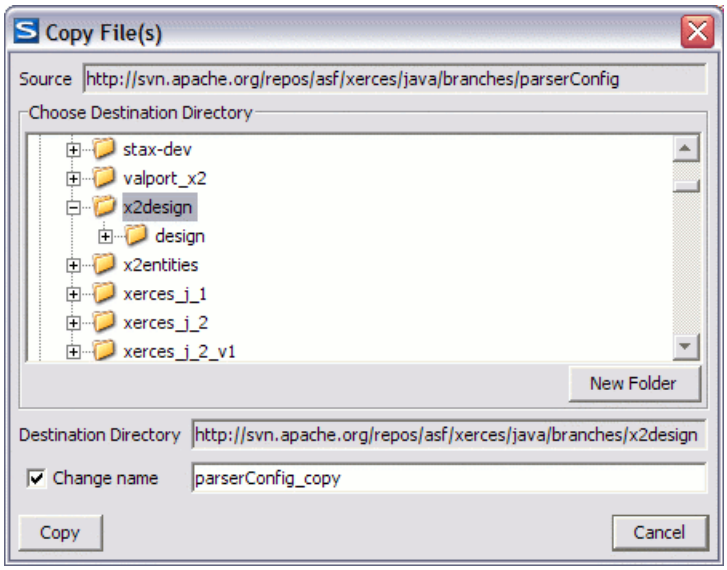
Please note that the content of the selected directory from the repository and not the directory itself will be exported to the file system.

Copy / Move / Delete resources from the repository

Once you have a location defined in the Repository 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* action allows you to copy individual or multiple resources. After invoking the action the *Copy file* dialog will pop up.

Figure 17.39. Copy files dialog



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 *Destination Directory*. If you choose to copy a single resource then an additional checkbox and a text field allow you to choose the new name of the copied resource.

The *Move action* will display a similar dialog allowing you to move the selected resources to a different folder. If you choose to move a single resource you can also change its name. This will allow you to *rename* a resource by moving it into the same parent directory but choosing a different name. The move operation is basically a *copy operation* followed by a *delete operation*. If you select a directory, any other selected descendants will be ignored when you have issued the move command.

Another useful action is *Delete*. This action allows you to delete resources directly from the repository. After choosing the action from the Repository 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.

Repository View

General description

The repository view allows you to define and manage Subversion repository locations. 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 Subversion Repository. When hovering with the mouse over a repository resource a tooltip window will display more detailed information regarding: URL, last change revision, last change author, last change date.

Toolbar

The toolbar for the repository view contains the following buttons:

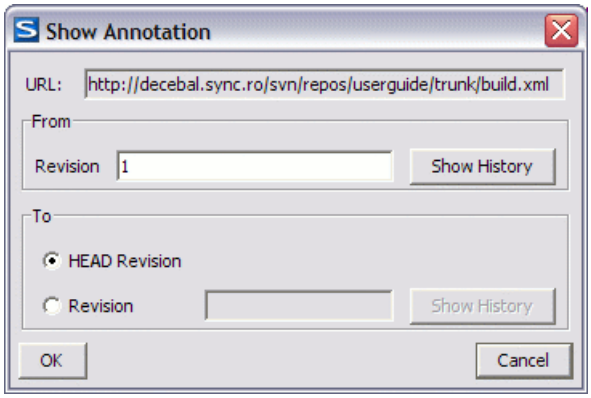
- New Repository Location - allows you to enter a new repository location by means of the *Add SVN Repository* dialog.
- Check Out - checks out a working copy from the selected directory in the repository. Displays the new working copy in the *Working Copy view*.
- Edit Repository Location - context dependent, allows you to edit the selected repository location by means of the *Edit SVN Repository* dialog. It is active only when a repository location root is selected.
- Remove Repository Location - 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.
- Move Up - move the selected repository up with one position in the list of repositories in the Repository view.
- Move Down - move the selected repository down with one position in the list of repositories in the Repository view.

Contextual menu actions

The repository view has one contextual menu for the repository locations (roots) and another contextual menu for the repository resources. Besides the actions described above, the locations context menu from the repository view contains the following actions:

- Import ... - imports a directory from the file system into the selected directory from the repository.
- Export ... - exports a directory from the repository to the local file system.
- Show History ... - brings up the History view and displays the log history for the selected resource from the repository.
- Show Annotation ... - brings up a dialog for selecting the start revision and the end revision of the interval of revisions for which the SVN annotations will be computed and marked in the selected resource in the editor panel.

Figure 17.40. The Show Annotation dialog



After selecting the start revision and the end revision and pressing OK the Annotations view and the History view are displayed and the annotations are marked on the SVN resource in the editor panel.

- New Folder ... - allows you to create a new folder in the selected repository path.
- Show SVN Properties - brings up the Properties view and displays the SVN properties for the selected repository resource. This view does not allow adding, editing or removing SVN properties of a repository item. These operations are allowed only for working copy resources.
- File Information ... - provides additional information for the selected repository. For more details please see the section Information view.
- Refresh - refreshes the currently selected repository.

The repository resources context menu from the view contains the following actions:

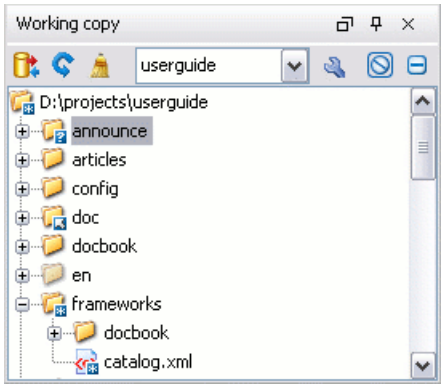
- Check Out ... - checks out a working copy from the selected directory in the repository.
- Import ... - imports a directory from the file system into the selected directory from the repository.
- Export ... - exports a directory from the repository to the local file system.
- Show History ... - brings up the History view and displays the log history for the selected resource from the repository.
- Show Annotation ... - brings up the Annotations view .
- New Folder ... - allows you to create a new folder in the selected repository path.
- Open - opens the selected file in the Editor view in read only mode.
- Open with ... - Displays the 'Open with...' dialog for specifying the editor in which the selected file will be opened.
- Copy ... - displays the *Copy Files* dialog which allows you to select the location where the selected resources will be copied.
- Copy URL Location - copies the encoded URL for the selected resource from the repository to the clipboard.
- Move ... - displays the *Move Files* dialog which allows you to select the location where the selected resources will be moved.
- Delete - deletes the selected resources. It will ask for confirmation.
- Show SVN Properties - brings up the Properties view and displays the SVN properties for the selected resource from the repository.
- File Information ... - provides additional information for the selected resource from the repository. For more details please see the section Information view.
- Refresh - refreshes the currently selected resources from the repository.

Working Copy View

General description

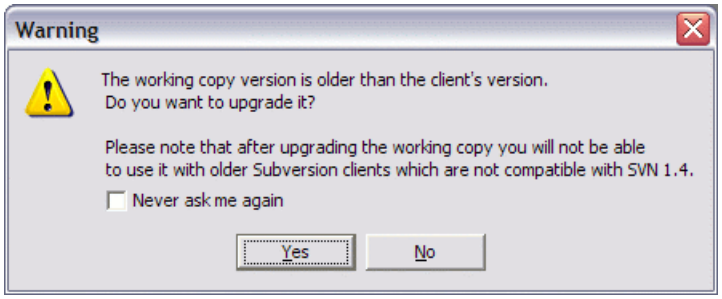
The working copy view allows you to manage with ease the content of the working copy. Resources(files and folders) are presented in a tree view with the root of the tree representing the location of the working copy on the file system. Each resource has an icon representation which describes the type of resource and also depicts the state of that resource with a small overlay icon.

Figure 17.41. The Working Copy View



When a SVN working copy is loaded in the view by selecting it in the combo on the toolbar of the view Syncro SVN Client first checks the format of the working copy. If it is a SVN 1.4 format the admin data of that working copy is loaded and displayed in a tree like form in the view using the icons specific for the status of each resource: normal, unversioned, modified, etc. If it is the old format, that is the SVN 1.3 one, a confirmation dialog is displayed allowing the automatic conversion to the working copy to the new format, that is the SVN 1.4 one.

Figure 17.42. The Working Copy format warning dialog



If you select the *Never ask me again* checkbox and press the *Yes* button then the option Automatically upgrade working copies to the client's version is automatically checked.

Toolbar

The toolbar from the working copy view contains the following buttons:

- Synchronize - contacts the repository and determines the changes made by you to the working copy and by others to the repository. The synchronize result will be displayed in the Synchronize view. The actions performs a synchronize operation on the root of the working copy.

- Refresh - refreshes the content of the working copy. The content of the working copy is always scanned(refreshed) when starting the Subversion client or when changing the working copy from the combo box in the toolbar. However, if you make modifications from other applications outside the Subversion client, while the client is started, you will have to manually refresh the working copy. The action performs a refresh operation on the root of the working copy.

- Cleanup - performs a maintenance cleanup operation on the working copy. Sometimes, when an operation fails, the working copy will enter an inconsistent state in which some resources will remain locked by SVN. Cleanup removes those maintenance locks and allows you to continue your work. When the SVN client determines that an operation failed because the working copy is locked by SVN you will be asked if a *Cleanup* operation should be performed first.

- Combo box - The combo box list contains all the working copies the Subversion client is aware of. When you select another working copy from the combo, the newly selected working copy content will be scanned and displayed in the view.

- Add/Remove Working Copy - opens the *Working copies list* dialog which displays the working copies the Subversion client is aware of. In this dialog you can add existing or remove no longer needed working copies. If you try to add a directory which is not a valid Subversion working copy, a warning dialog will inform you that the selected directory is not under version control. Please note that removing a working copy from this dialog will NOT remove it from your file system; you will have to do that manually.

- Show ignored files - shows in the working copy tree the resources that were listed in the svn:ignore property of their parents. This option is off by default.

- Show deleted files - shows in the working copy tree the resources that were marked to be deleted but are not yet committed. This option is off by default.

Contextual menu actions

The contextual menu in the Working Copy view contains the following actions:

- Open - This action will open the selected file in an editor where you can make modifications to it. The action is active only when a single file is selected.

- Open with ... - Displays the 'Open with...' dialog for specifying the editor in which the selected file will be opened.

- Synchronize - it contacts the repository and determines the working copy and the repository changes made to the selected resources. It displays the result of the operation in the *Synchronize view*. This is useful when you have a large working copy and you only want to verify the changes to a specific part you are currently working on.

- Update - This command updates your selected resources from the working copy to the HEAD revision from the repository (latest modifications). It differs from the update action from the *Synchronize view* in that it always brings you the HEAD revision from the repository. If a directory is involved it will be updated recursively. The action is active only on resources that are under version control.

- Commit - This action collects the outgoing changes from the selected resources in the working copy and presents them in a dialog. Then you can choose exactly what to commit by selecting or deselecting resources accordingly. A directory will always be committed recursively. The unversioned resources will be deselected by default. In the commit dialog you will also have to enter a commit comment before sending your changes to the repository.

- Compare with:

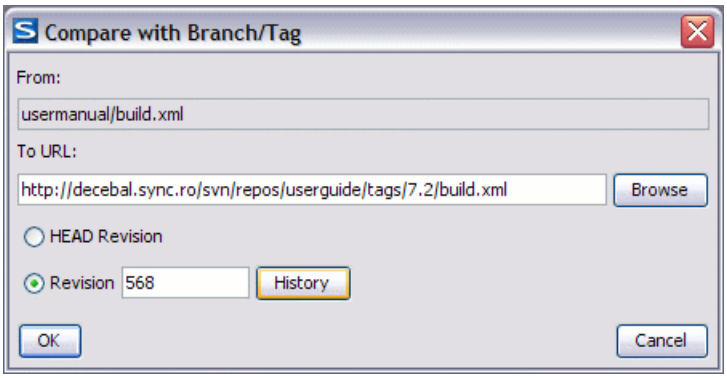
  - Latest from Head - This action will perform a compare between the selected file and the HEAD revision from the repository and will display the result in the Compare view.

  - Base revision - This will compare the working copy file with the file from the pristine copy (BASE revision).

  - Revision - This command will bring to front the History view with the log history for that resource.

  - Branch/Tag - This will compare 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).

Figure 17.43. Compare with Branch/Tag dialog



These actions are enabled only if the selected resource is a file.

- Show History ... - It will display the *History view* where the log history for the selected resource will be presented. For more details about resource history see the sections Using the resource history view and Request history for a resource.

- Show Annotation - 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 the section Annotations View.

- New:

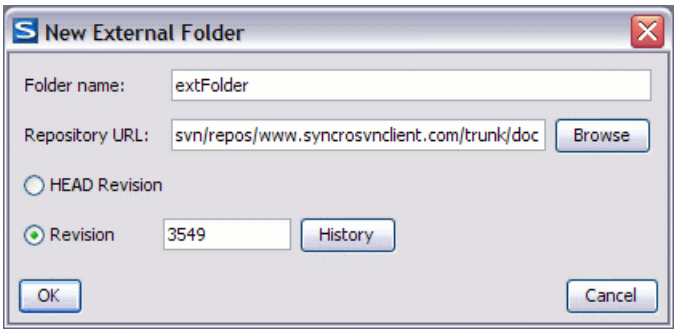
  - New Folder ... - This operation creates a new folder and adds it to version control. If the selected path is not under version control, the newly created directory will not be added to version control.

  - New File ... - This operation creates a new file and adds it to version control. If the selected path is not under version control, the newly created file will not be added to version control.

  - New External Folder ... - 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 will point and the revision

number of that repository URL can be selected easily with the *Browse* and *History* buttons of the dialog.

Figure 17.44. New External Folder dialog



- Edit:
  - Delete - This action 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. This is because their content cannot be recovered. The action it is not enabled when the selection contains *missing* resources.
  - Copy ... - This action copies resources from the working copy. Each copy will also have the original resource's history. For more details please read the section Copy / Move / Rename resources.
  - Move ... - This command actually performs as if a copy and then 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 ... - You can only rename a 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.
- Revert - Undoes all local changes for the selected resources. It does not contact the repository, the files will be obtained from Subversion's pristine copy. It is enabled only for modified resources. Read the Revert your changes section for more information.
- Mark resolved - This action is only enabled on *conflicted* resources and its function is to tell the Subversion system that you resolved the conflict. See the section Merge conflicts.
- Cleanup - 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.
- Add - This operation adds the selected resources to version control. A directory will be added recursively to version control. It is not mandatory to explicitly add resources to version control but it is recommended. At commit time unversioned resources will have to be manually selected in the commit dialog. It is only active on unversioned resources.
- Add to svn:ignore ... - This action can only be performed on resources not under version control. It allows you to keep inside your working copy, files that should not participate to the version control operations. The action actually modifies the value of the *svn:ignore* property of the resource's parent directory.

- Show SVN Properties - brings up the Properties view and displays the SVN properties for the selected resource.
- Lock:
  - Scan for locks ... - This action 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 the section Scanning for locks.
  - Lock ... - It 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 please read the section Locking a file.
  - Unlock ... - This action releases(unlocks) the exclusive access to a file from the repository. You can also choose to unlock it by force(break the lock).
- Modify:
  - Branch/Tag ... - This action displays the Branch/Tag dialog where you can select the revision of the resource and the destination URL in the repository. For more details about creating branches and tags see the section Create a branch/tag.
  - Merge ... - The selected resource will be considered the destination for the merge operation. From the displayed Merge dialog you will be able to specify the start URL and revision and also the end URL and revision. See section Merge branches for more details.
  - Switch ... - The repository location of the working copy or only of a resource of the working copy is changed within the same repository. It is available when the selected item is a versioned resource except an external folder.
  - Relocate ... - Change the repository path of the selected item. This action is available on the contextual menu only if the selected item is a versioned folder. It is useful when the base URL of the repository changed, for example the repository itself was relocated to a different server. 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.
  - Create patch ... - The selected resource will be used to create a patch. From the displayed Create patch dialog you will be able to specify the two sources of the patch, the first one being either the working copy files or a revision/tag and the second a repository URL or a revision/tag. See section Create patches for more details.
- File Information ... - provides additional information for the selected resource from the working copy. For more details please see the section Obtain information for a resource.
- Refresh - This action will rescan the selected resources recursively and refresh their status in the working copy view.

Drag and drop operations

New 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 into the Working Copy view. Also the structure of the file tree can be changed with drag and drop operations inside the view.

Note

When moving multiple files and folders around inside the Working Copy view by a single drag and drop operation you have to hold down the Shift or Ctrl key when you make the selection and when you start the drag operation but for a move operation you have to release the Ctrl key or Shift key before the drop action otherwise a copy operation will be executed.

Icons

The icons in the working copy view have a small overlaid icon which describes the current state of the resource in the working copy. These state icons are:

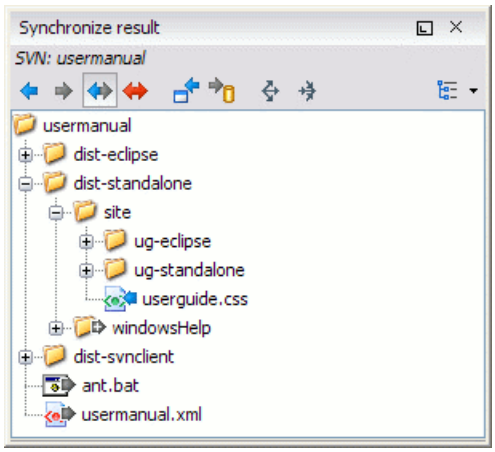
- Unversioned - The resource marked with this symbol is not under version control. This is how new files are represented when they are created or copied from the file system. Unversioned resources can be filtered from the Working Copy view by setting ignore filters in the Preferences.
- Added - This resource has been added to version control but has not been committed. This state is obtained after issuing an *Add* command on an unversioned resource.
- Added with history - This resource has been copied with history. This state is obtained by copying, moving or renaming a resource from the working copy.
- Modified - The resource has been locally modified since the last update. This is obtained after editing a file and making changes.
- Deleted - This resource has been deleted from the working copy. This state appears after deleting, moving or renaming files with Subversion.
- Missing/Incomplete - This resource is in an inconsistent state. If it's *missing*, it means it has been deleted from the file system without Subversion's knowledge. If it's *incomplete*, a check out or update action has probably failed or has been interrupted before finishing. A directory in such a state must be restored with an update action before any other action can be performed.
- Conflicted - This resource has conflicting changes. A resource can be in this state after an update, if it was modified both locally and on the repository and the modifications were overlapping.
- 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.
- Normal - A resource with no overlaid icon is an unmodified resource under version control.
- Grayed - A resource with a grayed icon but no overlaid icon is an ignored resource. It is obtained with the action *Add to svn:ignore*.
- 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.

Synchronize View

General description

The synchronize view is visible in the default layout configuration. It displays the result of a *Refresh* or *Synchronize* operation in a hierarchical form. The nodes represent synchronized or refreshed resources and their status.

Figure 17.45. Synchronize View



Synchronize trees

The results are presented using four tree structures:

- Incoming changes tree - presents items which contain incoming changes. This includes resources modified and committed by others or resources newly added or newly deleted from the repository.
- Outgoing changes tree - presents resources with outgoing changes meaning that they have been modified locally or have been added or deleted from your working copy.
- Incoming - Outgoing tree - includes all the resources with incoming and outgoing changes
- Conflict tree - includes resources with conflicting state meaning they contain both incoming and outgoing changes (pseudo-conflicting state) or they are in a state of real conflict.

A resource which is in a real conflict state will not appear in the *Incoming tree*.

Toolbar

The *Synchronize view toolbar* consists of the following buttons:

- Incoming Mode - filters synchronized resources displaying only the ones with incoming changes.
- Outgoing Mode - filters synchronized resources displaying the ones with outgoing changes.
- In-Out Mode - displays resources with incoming or outgoing changes, basically all resources with any type of change.

-  Conflicts Mode - filters synchronized resources displaying the ones in pseudo or real conflict state.
-  Update All - updates all resources with incoming changes. It is disabled when *Outgoing* mode is selected or the synchronization result does not contain resources with incoming changes. It will perform a recursive update on the synchronized resources.
-  Commit All - commits all resources with outgoing changes. It is disabled when *Incoming* mode is selected or the synchronization result does not contain resources with outgoing changes. It will perform a recursive commit on the synchronized resources.
-  Expand All - expands all the descendant nodes of the node currently selected in the view.
-  Collapse All - collapses all the descendant nodes of the node currently selected in the view.

Contextual menu actions

The contextual menu contains the following actions:

- Open in compare editor - if the selected file has a text content type it will be opened in the Compare view and a file differencing will be performed. If the file has a binary content type then the position of the first different byte will be displayed. It is disabled for directories. See also View differences section.
-  Open - it is enabled only for existing local files and opens the selected one into the Editor. See also Edit files section.
- Update - it is enabled for resources with incoming changes. Updates all selected resources to the synchronized revision. If one of the selected resources is a directory then the update for that resource will be recursive.
- Commit ... - it is enabled for resources with outgoing changes. Commits all selected resources, recursively in the case of directories, to the repository. This action collects the outgoing changes from the selected resources and presents them in a dialog. You can choose exactly what items will be committed by checking or unchecking them in the table. Also you will have to enter a commit comment. See also Sending your changes to the repository section.
-  Show History ... - It will display the *History view* where the log history for the selected resource will be presented. For more details about resource history see the sections Using the resource history view and Request history for a resource.
- Revert ... - it is useful when you want to undo all local changes made to a resource. It is enabled on resources which contain outgoing changes. Read the Revert your changes section for more information.
- Mark Resolved - it is enabled on real conflicting resources. Its function is to tell the Subversion system that you resolved the conflict and the resource can be committed. See also Merge conflicts part.
- Mark as Merged - the action is enabled on pseudo-conflicting resources. It is used after you resolved the pseudo-conflict by merging the changes and you want to commit the resource. Read the Merge conflicts section for more information on methods to solve the pseudo-conflicts.
- Override and Update ... - it is enabled on resources with outgoing changes including the conflicting ones. It is used for dropping any outgoing change and replacing the local resource with the synchronized revision. See Revert your changes section.

- Override and Commit ... - it is enabled on conflicting resources. The action will drop any incoming changes and will send your local version of the resource to the repository. See also Drop incoming modifications.
- Add - it is enabled for unversioned resources. It performs a *svn add* command by adding the resources to version control. You can directly commit unversioned items because in this case the *Commit* action will perform first a *svn add* command.
- Add to svn:ignore ... - it is also enabled for unversioned resources. It is useful when you decide that some resources, for example some compiler generated Java classes, should be ignored by the Subversion system. The action modifies the value of the *svn:ignore* property of the parent directory. For more information read the section Ignore resources not under version control.
-  Show SVN Properties - brings up the Properties view and displays the SVN properties for the selected resource.
-  File Information ... - provides additional information for the selected resource from the working copy. For more details please see the section Obtain information for a resource.
-  Expand All - expands the selected directories to leaf level.
-  Collapse All - collapses all child nodes of the selected tree node.
-  Refresh - This action will rescan the selected resources recursively and refresh their status in the working copy view.

Icons

The icons for the items displayed into the synchronized trees are the same icons used in the <oXygen/> XML Editor decorated with overlay images. The overlay icons correspond to the status of the resource as follows:

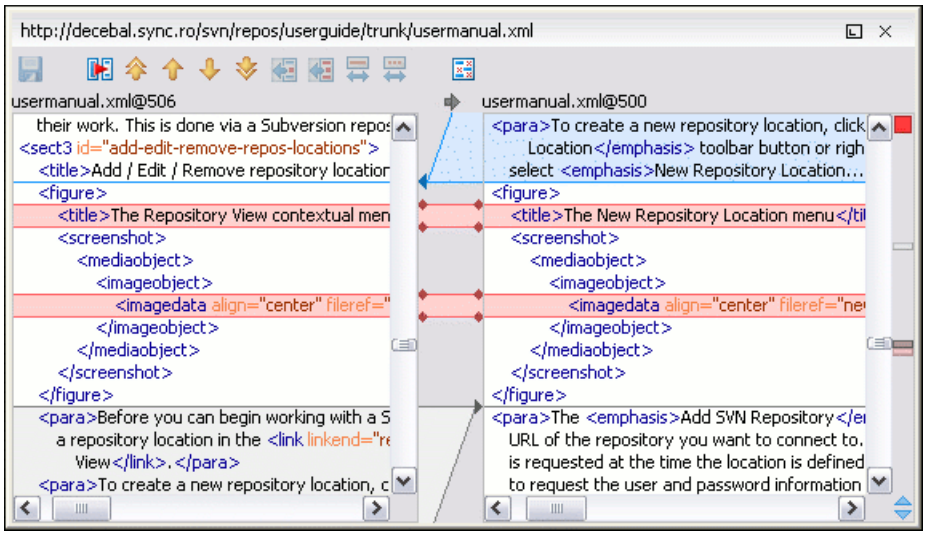
-  Incoming resource - resource with incoming changes.
-  Remote added resource - resource that was added on the repository and is not present in your working copy.
-  Remote deleted resource - resource that no longer exists in the repository.
-  Outgoing resource - resource with outgoing changes.
-  Locally added or unversioned resource - resource added locally to version control or a resource not yet under version control.
-  Locally deleted or missing resource - a resource that you deleted with *Delete* action or that was deleted from the file system in some other way.
-  Conflicting resource - resource in a pseudo or real conflicting state.

Compare View

Description

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 17.46. Compare View



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 synchronized 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.

If in any of the cases one of the involved files cannot be loaded then you will be prompted with a dialog informing you about the file that cannot be opened. 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 you can read the section View differences.

Toolbar

The list of actions available in the toolbar consists of:

- Save action - it allows you to save the content of the left editor when it can be edited.
- Perform files differencing - used to perform files differencing on request.

- Go to first modification - used to navigate to the first difference.
- Go to previous modification - used to navigate to the previous difference.
- Go to next modification - used to navigate to the next difference.
- Go to last modification - used to navigate to the last difference.
- Copy change from right to left - this action copies the selected change from the right editor to the left editor.
- 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.
- Show modification details at word level - because the differences are computed using a line differencing algorithm sometimes is useful to see exactly what words are different in a changed section.
- Show modification details at character level - useful when you want to find out exactly what characters are different between the two analyzed sections.
- 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.

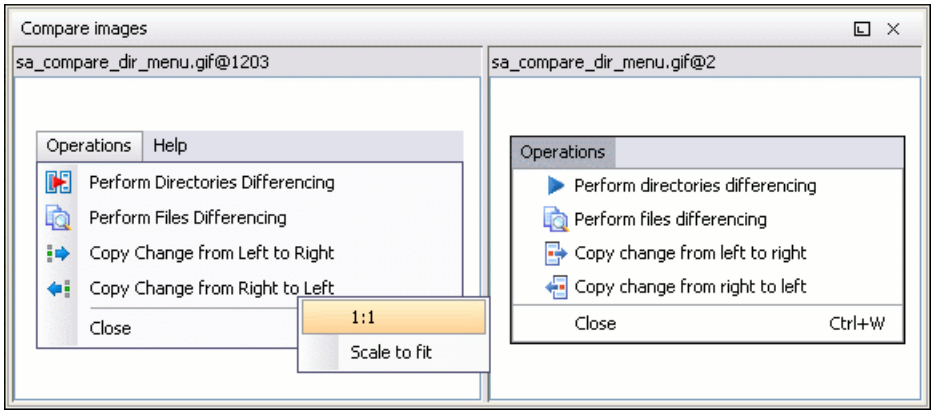
These actions are available also from the Compare menu.

Compare images view

The images are compared using the Compare images view. The images are presented in the left and right part scaled to fit the view's available area. You can use the contextual menu actions to scale the images at its original size or scale it down to fit in the view's available area.

The supported image types are: GIF, JPG / JPEG, PNG, BMP.

Figure 17.47. Compare images view



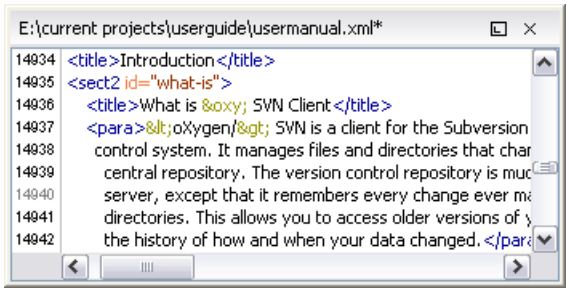
Editor

Description

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 Synchronize view. The editor can also be used from the History view to view a selected revision of a file. In this case there are no edits allowed.

Figure 17.48. Editor View



Only one file can be edited in an internal editor at a time. If you try to open another file it will be opened in the same editor window. The editor has syntax highlighting for known file types. This means that a different color will be used for each type of recognized token in the file. If the content type of the file is unknown you will be prompted to choose the proper way the file should be opened.

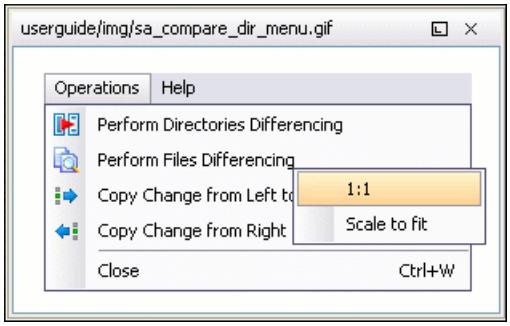
After editing the content of the file in an internal editor you can save it to disk by using the *Save* action from the File menu or the Ctrl + S key shortcut. After saving your file you can see the file changed status into Working copy view and Synchronize view.

Image preview

Description

You can view your local files by using the built-in *Image preview component*. The view can be accessed either from the Working copy view, Synchronize view or from the Repository view. It can also be used from the History view to view a selected revision of a image file.

Figure 17.49. Image preview



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).

History View

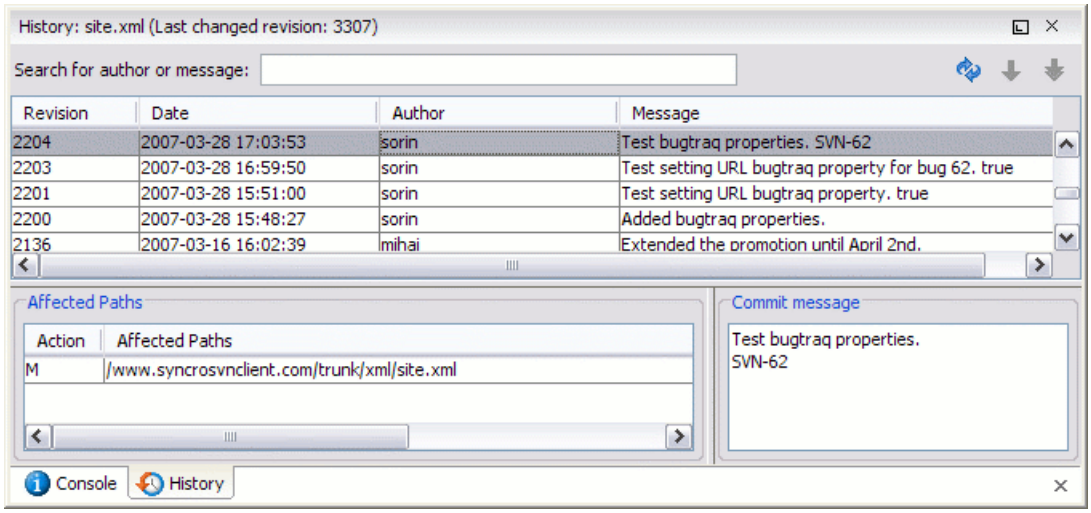
Description

In 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 any of the three views: Repository view menu, Working copy view menu or Synchronize view menu. From the *Repository view* you can display the log history regarding any repository resource. From the *Working copy view* you can display the history of local versioned resources. From the *Synchronize view* you can show the history of any incoming or outgoing resources.

The view consists of three distinct areas:

- The revision table showing revision numbers, date/time of revision, the name of the author, as well as the first line of the commit message.
- The list of resources affected by this revision (modified, added, deleted or changed properties).
- The commit message for the selected revision.

Figure 17.50. History View

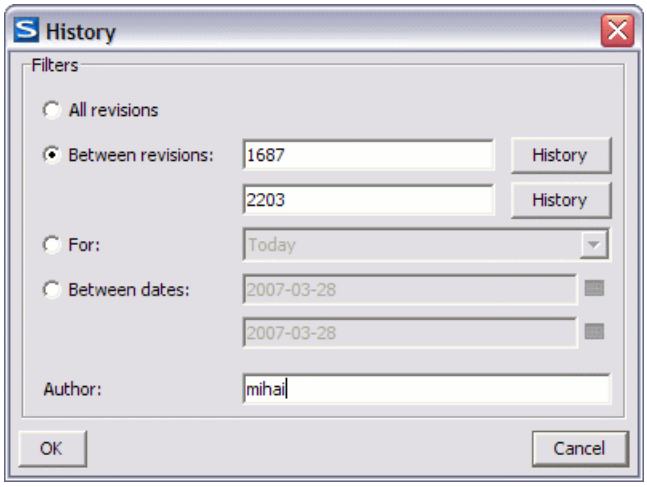


History Filters

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 17.51. History filters dialog



The options for the set of revisions presented in the History view are:

- all the revisions of the selected resource
- only the revisions between a start revision number and an end revision number

- only the revisions added in a period of time like today, last week, last month, etc.
- only the revisions between a start calendar date and an end calendar date
- only the 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*.

Note

When using Subversion servers older than version 1.2, a history request may take a very long time because the server will reply with the entire history even if you limited the number of entries to a smaller number.

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 common substring in the field next to the label *Search for author or message* to keep in the History view only the items with an author or commit message which match the substring.

Features

Single selection actions:

- Open - opens the selected revision of the file into the Editor. This is enabled only for files.
- Open with ... - Displays the 'Open with...' dialog for specifying the editor in which the selected file will be opened.
- Save revision to - saves the selected revision to a file so you have an older version of that file. This option is only available when you access the history of a file, and it saves a version of that one file only.
- Compare with working copy - compares the selected revision with your working copy file. It is enabled only when you select a file.
- Update to revision - updates your working copy resource to the selected revision.
- Check out from revision - gets the content of the selected revision for the resource into local file system.
- Revert changes from this revision - reverts changes made in the selected revision.

Double selection 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.

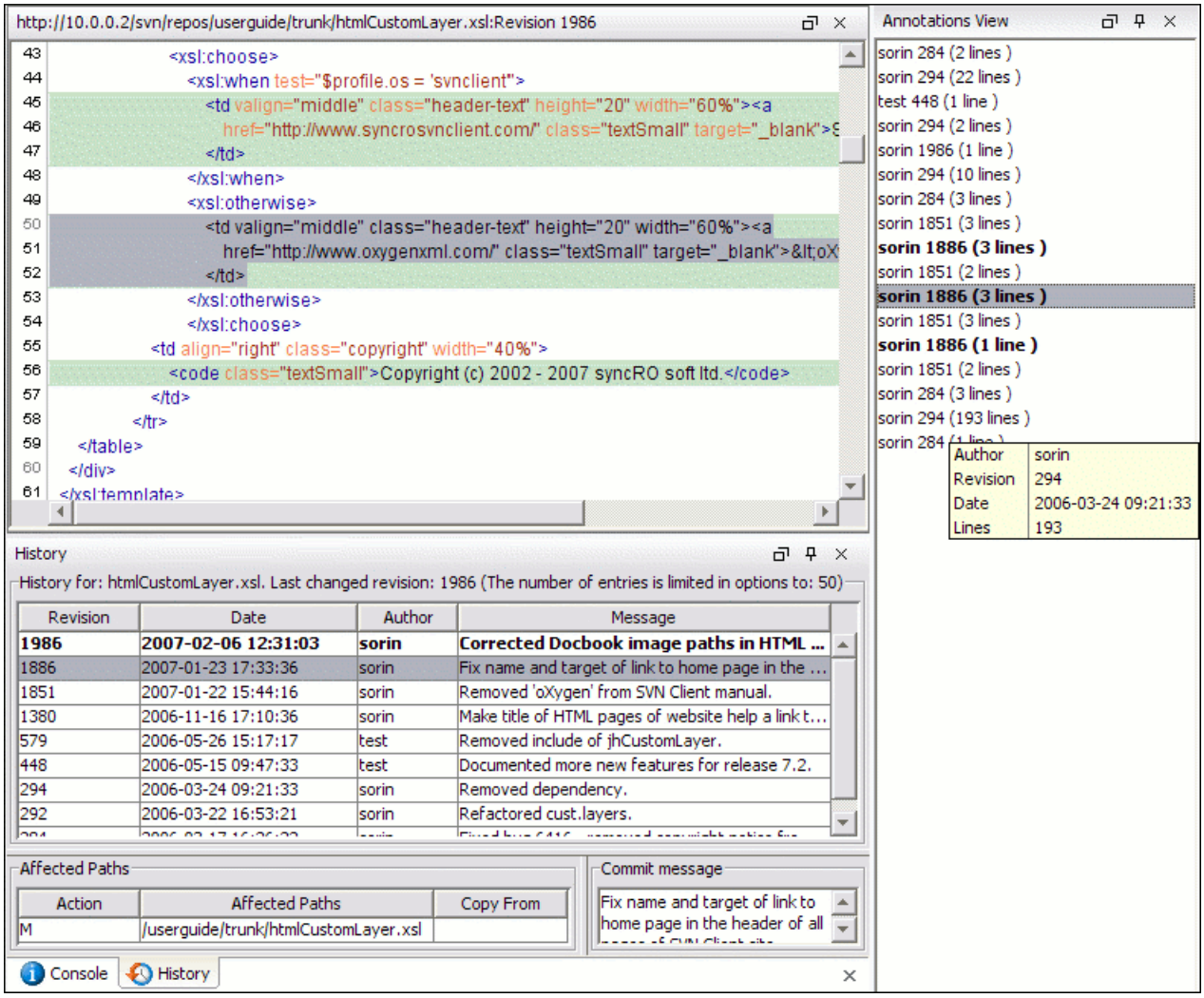
For more information about the *History view* and its features please read the sections Request history for a resource and Using the resource history view

Annotations View

Description

Sometimes you need to know not only what lines have changed, but also who changed specific lines in a file. 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 17.52. The Annotations View

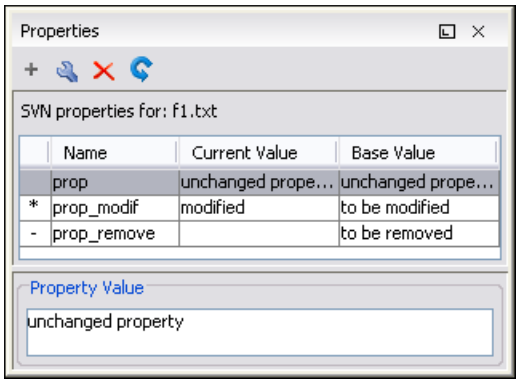


Properties View

Description

The properties view presents the Subversion properties for the currently selected resource from either the *Working copy view* or the *Synchronize view*.

Figure 17.53. 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) - new property.
  - -(minus) - removed property.
- Name - the property name.
- Current value - the current value of the property.
- Base value - the base(original) value of the property.

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

Description

The *Console View* shows the communication between your client and the Subversion repository. 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*. In the right toolbar there is available a *Remove all* action which clears the content of the view.

The maximum number of lines displayed in the console (the length of the buffer) can be modified from Preferences. By default this is set to 100.

Help View

Description

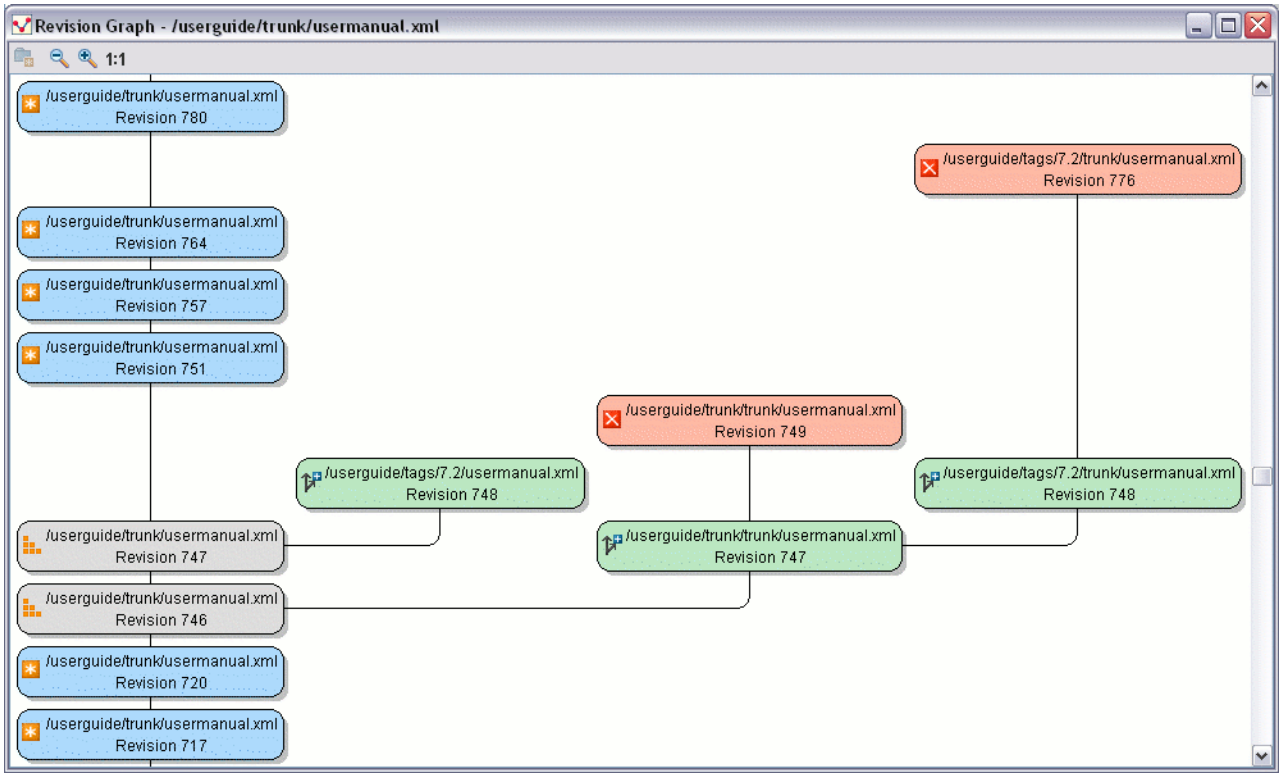
The *Help view* is a dynamic help window. It changes its content displaying the help section referring to the currently selected view. As you change the focused view you will be able to read a short description of it and its functionality.

The Revision Graph of a SVN Resource

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 is easy to view.

The graphical representation of a resource history is invoked with the action Revision graph available on the right click menu of a SVN resource in the *Working Copy* view and the *Repository* view.

Figure 17.54. 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 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 17.55. The Revision Graph of a Directory (Direct Changes)

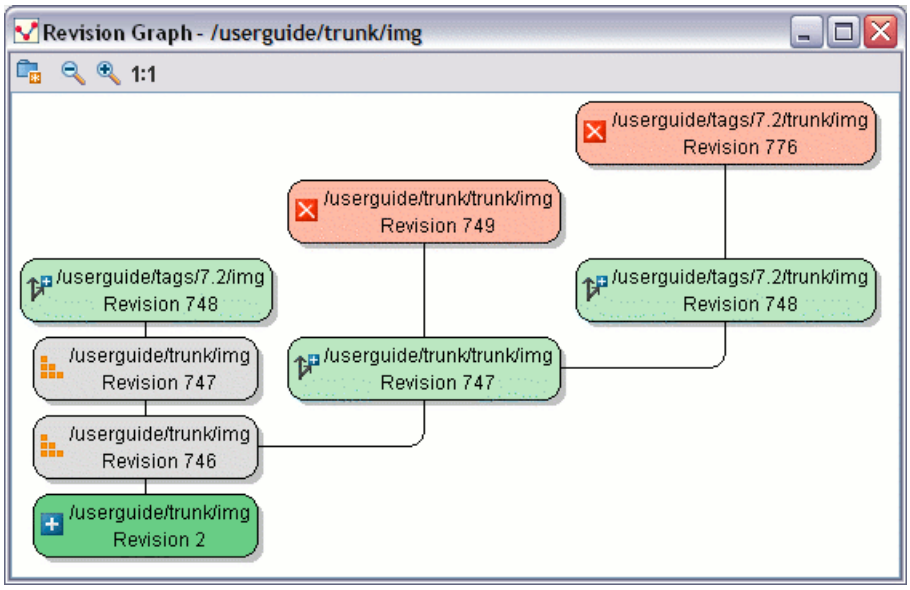
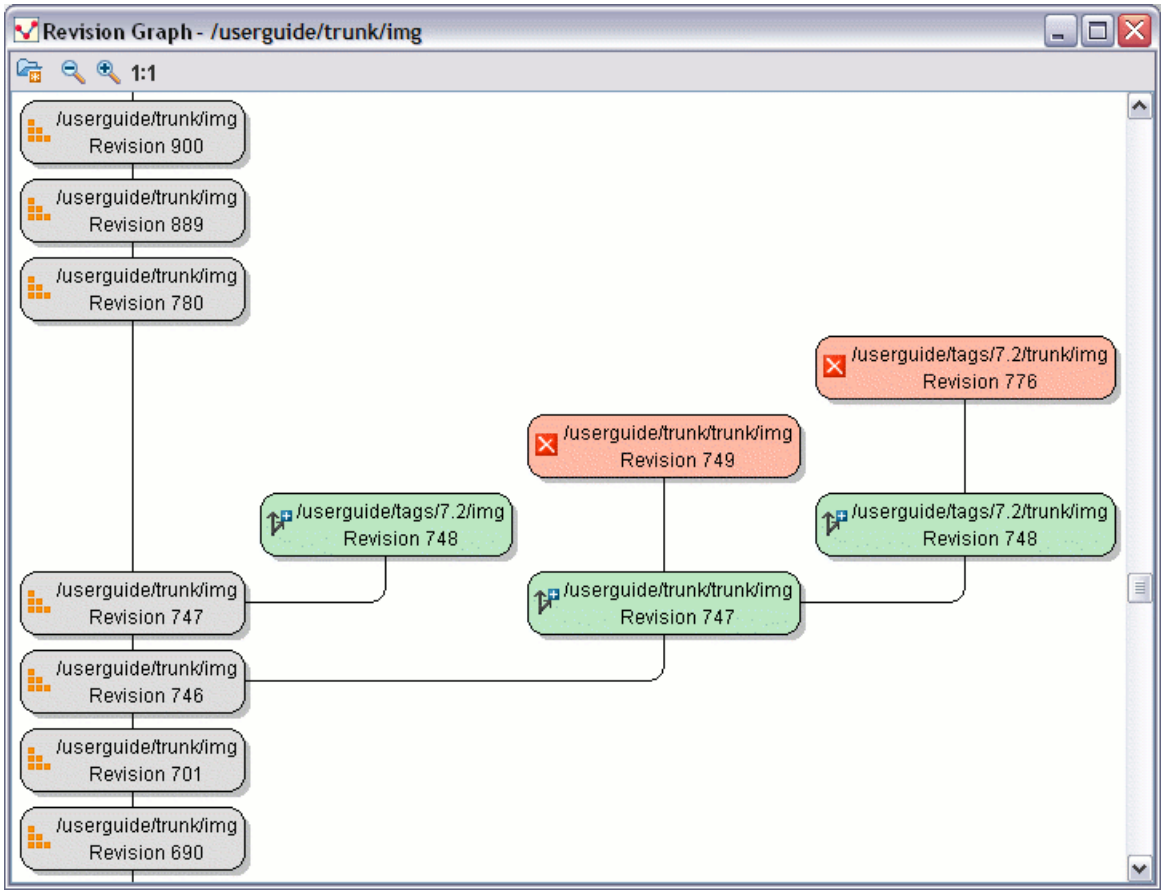


Figure 17.56. The Revision Graph of a Directory (Also Indirect Changes)



You can switch between the two graphs with the Show/Hide indirect modifications button of the toolbar of the *Revision graph* dialog.

The toolbar also contains buttons for zooming in and zooming out the graph and also for resetting the scale of the graphical representation.

The right click menu of a node of the graph contains the following actions:

Open	available only for files, opens the selected revision in the editor panel.
Show History	available for both files and directories, displays the history of the resource in the History view.
Compare with HEAD	available only for files, compares the selected revision with the HEAD revision and displays the result in the diff panel.
Check Out	available only for directories, checks out the selected revision of the directory.

When two nodes are selected in the revision graph of a file the right click menu of this selection contains only one item: *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 item *Compare* 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 in the same way as for the compare action invoked from the History view on two revisions of a folder.

Warning

Generating the revision graph of a resource with many revisions may be a slow operation.

Syncro SVN Client Preferences

The options used in the SVN client are saved and loaded independently from the <oXygen/> XML Editor 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 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.

Command line interface cross reference

This section specifies the equivalent Subversion commands for each action in the Syncro SVN Client action.

Actions commands reference

Checkout

svn checkout [--revision rev] URL PATH	*--revision rev* specifies the desired revision(if necessary). *URL* is the repository URL you want to check out from. *PATH* is the location on the file system.

Update

svn update [--revision rev] PATH	*--revision rev* specifies the desired revision(if necessary). *PATH* is the location on the file system of the resource to update.

There are two behaviours for the update action in Syncro SVN client. If invoked from the Synchronize View, it updates the resources to the synchronized revision. If invoked from the Working Copy view it always updates to the HEAD revision.

Commit

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* is the location on the file system of the resource to commit. Can be more than one.

Diff

svn diff --revision rev1:rev2 PATH

--revision rev1:rev2 specifies the desired revisions to be compared.

PATH is the location on the file system of the resource to be compared.

If you use the *Compare with latest from HEAD* 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. From the Synchronize view you can compare the working copy file with the synchronized revision file. 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

svn log [--revision rev1:rev2] [--limit N] --verbose PATH

--revision rev1:rev2 - specifies the range of revisions for which to obtain the log.

--limit N - limits the number of log messages to N.

--verbose - gives detailed information about the operation.

Syncro SVN Client uses by default the *--limit* option in order to obtain only 50 log messages.

Refresh

svn status --verbose PATH

--verbose - specifies that the status of all files should be reported.

PATH - The location on the file system to get status for.

Synchronize

svn status --show-updates PATH

--show-updates - get the resource status by contacting the repository.

PATH - The location on the file system to get status for.

Import

svn import -m "log message" PATH URL

-m "log message" - specifies the commit log message

PATH - the local path to the resource on the file system.

URL - the URL on the repository where the resource will be imported.

Export

svn export [--revision rev] URL PATH

--revision rev specifies the desired revision(if necessary).

URL is the repository URL you want to export from.

PATH is the location on the file system where to export.

Information

svn info [--revision HEAD] PATH | URL

--revision HEAD - specifies that the information will be for the HEAD revision of the resource.

PATH - the local file system path to the resource.

URL - the repository URL for the resource.

This command can obtain information for a resource from a working copy or from a Subversion repository.

Add

svn add PATH...

PATH- the local file system path for 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 - the predefined property name for ignoring resources.

PATH - the relative path from the working copy root for the resource to be ignored.

PARENTPATH - the path to the parent of the resource to be ignored.

Delete

svn delete --recursive PATH | URL

--recursive - specifies that he operation should be performed recursively.

PATH- the local file system path for the resource to delete.

URL- the repository URL for the resource to delete.

This command can delete resources from a working copy or from a Subversion repository.

Copy

svn copy (SRCPATH DSTPATH) | (SRCURL DSTURL)

SRCPATH - the working copy path of the resource to be copied.

DSTPATH - the working copy path to be copied to.

SRCURL - the repository path of the resource to be copied.

DSTURL - the repository path to be copied to.

Move / Rename

svn move (SRCPATH DSTPATH) | (SRCURL DSTURL)

SRCPATH - the working copy path of the resource to be moved.

DSTPATH - the working copy path to be moved to.

SRCURL - the repository path of the resource to be moved.

DSTURL - the repository path to be moved to.

Mark resolved

svn resolved --recursive PATH

--recursive - specifies that he operation should be performed recursively.

PATH - the path to the resource in the local working copy.

Revert

svn revert [--recursive] PATH

--recursive - specifies that he operation should be performed recursively.

PATH - the local working copy path to revert.

Cleanup

svn cleanup PATH

PATH - the working copy path to cleanup.

Show / Refresh Properties

svn proplist PATH & *svn propget PROPNAME PATH*

PATH - the local path for the resource

PROPNAME - the 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 or *svn copy -m "log message" URL1@rev1 URL2* or *svn copy -m "log message" PATH URL*

-m "log message" - the commit comment

URL1 - the source repository URL.

rev1 - the revision of the source.

URL2 - the destination repository URL.

PATH - the source working copy path.

URL - the destination repository URL.

Merge

Merge - *svn merge [--dry-run] rev1:rev2 URL PATH* or *svn merge [--dry-run] URL1@rev1 URL2@rev2 PATH*

--dry-run - specifies that the operation will be simulated without making any modifications.

URL - the repository URL for the resource to merge.

URL1 - the repository URL for the start branch to merge.

rev1 - the start revision for the resource to merge.

URL2 - the repository URL for the end branch to merge.

rev2 - the end revision for the resource to merge.

PATH - the destination path in the working copy for the result of the merge

Scan for locks

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.

The command will obtain the repository status for all the resources in the path.

Lock

svn lock [--force] [-m "log message"] PATH

--force - forces(steals) the lock

-m "log message" - the lock comment.

PATH - the path to the file from the working copy..

Unlock

svn unlock [--force] PATH

--force - forces(breaks) the lock

PATH - the path to the file from the working copy..

Mark as merged

Mark as merged - *rename FILE FILE.TMP, svn update FILE* and *rename FILE.TMP FILE*

FILE - the file to be marked as merged.

FILE.TMP - a temporary filename.

Override and update

svn revert PATH, svn update PATH

PATH - the path of the resource to be overridden.

Override and commit

If the resource is in conflict it performs first *mark resolved* and if the resource has incoming changes *mark as merged* and then *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 is the location on the file system of the resource to be committed.

Add / Edit property

svn propset [--recursive] PROPNAME PROPVALUE PATH

--recursive - specifies that the property should be set recursively.

PROPNAME - the property name.

PROPVALUE - the property value.

PATH - the resource path.

Remove property

svn propdel [--recursive] PROPNAME PATH

--recursive - specifies that the property should be deleted recursively.

PROPNAME - the property name.

PATH - the resource 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

svn merge rev1:rev2 URL

rev1 - first revision number.

rev2 - second revision number.

URL - The SVN URL corresponding to the resource.

Chapter 18. How to develop an <oXygen/> plugin

This chapter explains how to write and install a plugin for <oXygen/> XML Editor 9.1 or higher. It treats the standalone version, that is not the Eclipse plugin.

Introduction

<oXygen/> defines a couple of extension points to allow providing custom functionality via plugins. The plugin support includes four types of plugins:

- General plugins
- Selection plugins
- Document plugins
- Custom protocol plugins
- Resource locking custom protocol plugins

Requirements

In order to develop a plugin a Java development environment must be installed. Apart from any library that the specific plugin will require the file `oxygen.jar` is necessary for plugin compilation. Also an <oXygen/> installation will be helpful for testing the deployment and plugin the functionality.

Implementing plugins

On the <oXygen/> website there is a plugin development kit [http://www.oxygenxml.com/InstData/Plugins/OxygenPluginsDevelopmentKit.zip] with some sample plugins (source code and compiled code) and the Javadoc API necessary for developing custom plugins. On the Plugins page [http://www.oxygenxml.com/plugins.html] there is a developer manual [http://www.oxygenxml.com/doc/HowToDevelopOxygenPlugins.pdf] with instructions for developing custom plugins.

The minimal implementation of a plugin must provide two classes: one that extends the *Plugin* class and another that implements the plugin extension and a plugin descriptor file. There are four available extensions *SelectionPluginExtension*, *DocumentPluginExtension*, *GeneralPluginExtension* and *URLStreamHandler-PluginExtension*.

A *PluginDescriptor* object is passed to the plugin class on constructor containing information about the plugin

- *basedir* - *File* - the base directory of the plugin.
- *description* - *String* - the description of the plugin.
- *name* - *String* - the name of the plugin.

- *vendor* - *String* - the vendor name of the plugin.
- *version* - *String* - the plugin version.

The *PluginDescriptor* fields are filled with information from the plugin descriptor file.

The plugin descriptor defines how the plugin will be integrated in <oXygen/> and what libraries should be loaded. The structure of the plugin descriptor file is given below:

```
<!-- the document root -->
<!ELEMENT plugin (#PCDATA | runtime | extension)*>
<!-- the name of the plugin -->
<!ATTLIST plugin name CDATA #IMPLIED>
<!-- the description of the plugin -->
<!ATTLIST plugin description CDATA #IMPLIED>
<!-- the plugin version -->
<!ATTLIST plugin version CDATA #IMPLIED>
<!-- the plugin vendor -->
<!ATTLIST plugin vendor CDATA #IMPLIED>
<!-- the plugin class -->
<!ATTLIST plugin class CDATA #IMPLIED>

<!ELEMENT runtime (#PCDATA | library)*>

<!ELEMENT library (#PCDATA)>
<!-- the jar archive -->
<!ATTLIST library name CDATA #IMPLIED>

<!ELEMENT extension (#PCDATA)>
<!-- the extension type. Currently are available three types:
selectionProcessor, documentProcessor and generalExtension -->
<!ATTLIST extension type CDATA #IMPLIED>
<!-- the class that implements PluginExtension and
contains the method process -->
<!ATTLIST extension class CDATA #IMPLIED>
```

General plugins

GeneralPluginExtension - this interface is intended for general purpose plugins - kind of external tools but triggered from the *Plugins* main menu. The implementing classes must contain the method *process(GeneralPluginContext)* which should provide the plugin processing. This method takes as a parameter an *GeneralPluginContext* object.

GeneralPluginContext - represents the context in which the general plugin extension does its processing. The only method available is *getFrame()* which returns the currently editing frame (*java.awt.Frame*). It is useful if the plugin wants to display graphical components as they in general need a parent in order to appear properly on screen.

Selection plugins

SelectionPluginExtension - This interface is intended for selection processing plugins. It works as follows: the user makes a selection in the editor and then goes to the contextual menu and selects from the *Plugins*

section the corresponding entry. The context containing the selection is passed to the extension and the processed result is going to replace the initial selection.

The context is represented by an *SelectionPluginContext* object, this provides two methods:

- *getSelection()* - *String* - returns the current selection of text.
- *getFrame()* - *Frame* - returns the currently editing frame.

The process method must return a *SelectionPluginResult* object which contains the result of the processing.

Document plugins

DocumentPluginExtension - This interface is intended for document processing plugins. This type of plugins can be started from the contextual menu, *Plugins* section, by selecting the corresponding entry. The context containing the current document is passed to the extension in order to be processed.

The context is represented by an *DocumentPluginContext* object, this provides two methods:

- *getDocument()* - *Document* - returns the current document.
- *getFrame()* - *Frame* - returns the currently editing frame.

The process method can return a *DocumentPluginResult* object containing a new document.

Custom protocol plugins

URLStreamHandlerPluginExtension allows the developer to work with a protocol that he designed for retrieving and storing files. There is one method that has to be implemented: *getURLStreamHandler()*. It takes as an argument the name of the protocol and returns the handler for it, or null if it was not able to find it.

With the help of the *URLChooserPluginExtension* interface, it is possible to write your own dialog that will work with the custom protocol. This interface provides two methods:

- *chooseURL()* - *URL* - returns the URL with the custom protocol
- *getMenuName()* - *String* - returns the name of the entry that will be added in the File submenu of the editor

Resource locking custom protocol plugins

URLStreamHandlerWithLockPluginExtension allows the developer to work with a protocol that he designed for retrieving and storing files and lock a resource on opening it in <oXygen/>. This type of plugin extends the custom protocol plugin type *URLStreamHandlerPluginExtension* with resource locking support. The plugin receives callbacks following the simple protocol for resource locking and unlocking imposed by <oXygen/> as you can read in the developer manual [http://www.oxygenxml.com/doc/HowToDevelopOxygenPlugins.pdf]. There are two additional methods that must be implemented: *getLockHandler()* and *isSupported()*. With *getLockHandler()*<oXygen/> requests the handler class with the implementation of the lock specific methods from the plugin. <oXygen/> calls the method *isSupported()* with a protocol scheme like 'ftp', 'http', 'https', etc. as parameter for finding if the plugin supports that protocol.

Example - *UppercasePlugin*

The following plugin is an example. It is used in <oXygen/> for capitalizing the characters in the current selection. This example consist of two classes and the plugin descriptor:

```
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;
    }
}
```

```
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());
     }
}
```

```
<!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>
```

Example - a custom protocol plugin

1. Write the handler class for your protocol (implement the *java.net.URLStreamHandler* interface)

   Note

   You must be careful to provide ways to correct and uncorrect the URLs of your files.

2. Write the plugin class (the (*ro.sync.exml.plugin.*)*Plugin* class must be extended in order to create the new plugin)

3. Write the plugin extension class. It is necessary that the plugin extension for the custom protocol implements the *URLStreamHandlerPluginExtension* interface. Without it, you can't use your plugin,because <oXygen/> will not be able to find the protocol handler.

   You can choose to implement also the *URLChooserPluginExtension* interface. It will allow you to write and use your own customized dialog for this protocol.

4. Write the plugin.xml file (remember to change 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 and install your new plugin.

Installing the plugin

In the directory where <oXygen/> is installed there exists a directory called `plugins`. This contains all the available plugins. In order for <oXygen/> to use the new functionality you provided follow the next steps:

1. In the directory `plugins` create a new directory, generally named after your plugin. For instance in the uppercase plugin example this can be `Uppercase.`
2. Put in this new folder the plugin descriptor file, "plugin.xml" and the plugin files.
3. Restart <oXygen/> and try your plugin.

Chapter 19. Text editor specific actions

<oXygen/> provides user actions common in any text editor:

Undoing and redoing user actions

- Edit → Undo (**Ctrl+Z**)or the toolbar button  Undo to reverse a maximum of 100 editing actions to return to the preceding state. Complex operations like "Replace All", "Indent selection", etc are treated as a single undo event.
- Edit → Redo (**Ctrl+Y for Windows, Ctrl+Shift+Z for Mac OSX and Linux**)or the toolbar button  Redo to recreate 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 to remove the current selected node from the document and places it in the clipboard.
- Edit → Copy (**Ctrl+C**)or the toolbar button  Copy to place 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 to place 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

The Find/Replace dialog

The Find/Replace dialog opened with the menu entry Find → Find/Replace... (**Ctrl+F**) or the toolbar button  Find/Replace enables you to define "search for" or "search for and replace" operations on the current document. The find works on multiple lines, which means a find match can cover characters on more than one line. To insert a new line in the find or replace text area press **CTRL + Enter** instead of **Enter**. 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 *<tag-name(\s+)(.*)>* and as replace text *<tag-name1$1$2>*.

- Find occurrences of a word or string of characters including white spaces represented on a line or on multiple lines and highlight the position in the editor.
- Replace occurrences of target defined in the Find area with a word or string of characters, including white spaces, that can be on a line or on multiple lines, defined in the Replace area.

- Find all occurrences of a word or string of characters including white spaces that can be on a line or on multiple lines and return a result list to the Message Panel.
- Replace all occurrences of a word or string of characters including white spaces that can be on a line or on multiple lines.

Figure 19.1. Find/Replace Dialog

Complete the dialog as follows:

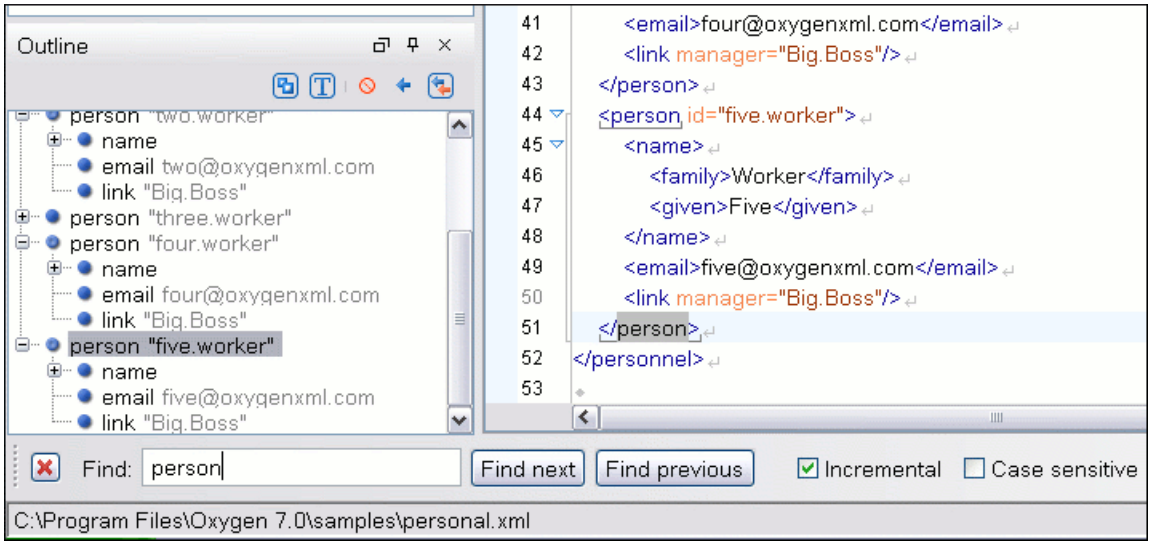
Text to find	The target character string to search for. The string can be on a line or on multiple lines. Special characters like newline and tab can be inserted using the contextual menu. You can search for Unicode characters specified in the \uNNNN format. Also, hexa notation (\xNNNN) and octal notation (\0NNNN) can be used. Note that in this case you have to check the *Regular expression* checkbox. For example to search a space character you can use \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. Special characters like newline and tab can be inserted using the contextual menu. Unicode characters can also be used in the *Replace with* area.
The Find and Replace history buttons	The last find and replace operations history is available using the History buttons from the top of the find or replace text area. The character string with which to replace the target. It may contain regexp group markers if the search expression is a regular expression and the regular expression checkbox is checked.

XPath	The XPath 2.0 expression entered in this combo is used to restrict the search scope. It is applied only at the first search command (Find, Replace, Find all, Replace to end) after the user changes the content of this combo so that he is able to replace tag names covered by the current XPath expression. The content completion assistant that helps in entering XPath expressions in attributes of XSLT stylesheets elements is also available in the XPath console and offers always proposals dependent of the current context of the cursor inside the edited document.
Direction	Specify if the search direction is from current position to end of file (forward direction) or to start of file (backward direction).
Scope	Specify if the search is executed on all file or only on the lines that were selected when the dialog was invoked. If the selection was on a single line the search is executed on all the file.
Find	Execute a find operation for the next occurrence of the target and stop.
Replace	Execute a replace operation for the target followed by a find operation for the next occurrence.
Find all	Executes a find operation and returns all results to the Message Panel.
Replace to end	Execute 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).
Replace all	Execute a replace operation in the entire scope of the document.
Case sensitive	When checked, operations are case sensitive.
Whole words only	When checked only whole occurrences of a word will be included in the operation.
Search also in tags	When checked, operation will include content of the start and end tags of the XML elements.
Incremental	When checked, search operation is started for every letter typed in or deleted. The first match that obeys the checked conditions will be highlighted.
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.

The Quick Find toolbar

A reduced version of the Find/Replace dialog is available as a toolbar, activated by the shortcut **Ctrl + Alt + F** and displayed by default at the bottom of the <oXygen/> window, above the status bar.

Figure 19.2. The Quick Find toolbar



The Find, Find next, Find previous, Incremental and Case sensitive controls work in the same way as in the Find/Replace dialog. Also 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. The toolbar becomes invisible again when the **ESC** key is pressed.

The enabling shortcut can be changed in Options → Preferences+Menu Shortcut Keys+Quick FindAs 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.

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

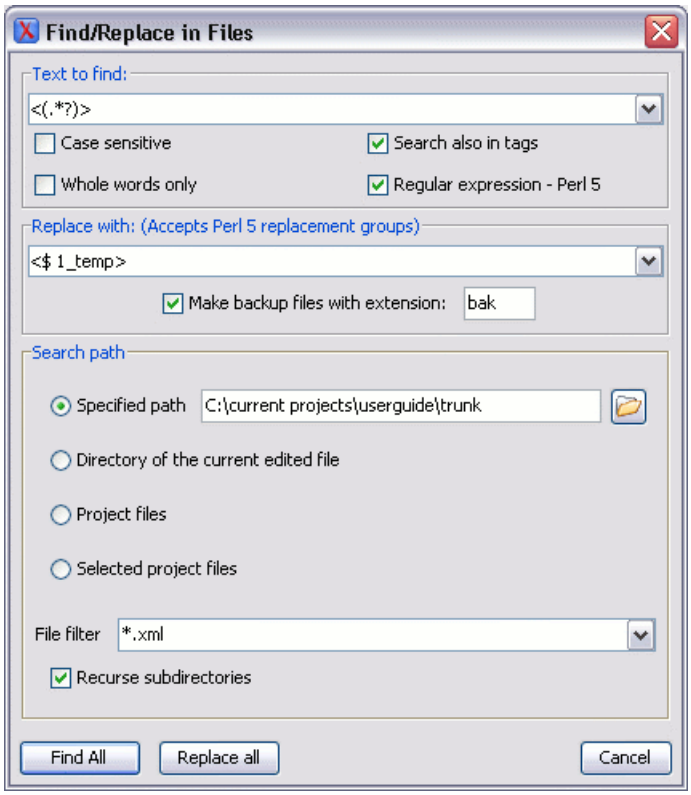
The Find and Replace in Files option (Find → Find/Replace in Files... or the toolbar button Find/Replace in Files) enables you to define "search for" or "search for and replace" operations across a number of files. The find works at line level, which means a find match cannot cover characters on more 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 *<tag-name(\s+)(.*)>* and as replace text *<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/> uses the UTF-8 encoding for files of type XML, that

is one of the extensions: xml, xsl, fo, xsd, rng, nvdl, nrl, sch, wsdl or an extension associated with the XML editor type, or 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.

Figure 19.3. Find/Replace in Files



Complete the dialog as follows:

Text to Find	The target character string to search for.
Case Sensitive	When checked, operations are case sensitive.
Whole words only	When checked only whole occurrences of a word will be included in the operation.
Search also in tags	When checked, operation will include content of the start and end tags of the XML elements.
Regular Expression	When checked allows using any regular expression in PERL syntax.
Replace with	The character string with which to replace the target. It may contain regexp group markers if the search expression is a regular expression and the regular expression checkbox is checked.
Make Backups with extension	In the replace process <oXygen/> makes backup files of the modified files. The default extension is *bak, but you can change extension as you prefer.

Specified Path	Choose the search path
Directory of the current edited file	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.
Project Files (File Filter)	Search the files from the current project using the specified file filter.
Selected project files	Search only in the selected files of the current opened project

Note

The search is performed only on local files. If you have added to the project remote files from an FTP or WebDAV server these will be skipped from the search.

Recurse subdirectories	The search is performed recursively in the sub-directories found in the specified directory path only when this option is checked.
Recurse subdirectories	When checked, the search is performed recursively in the sub-directories found in the specified directory path.
Find All	Executes a find operation and returns the result list to the Message Pane
Replace All	Replaces all occurrences of the target contained in the specified files.

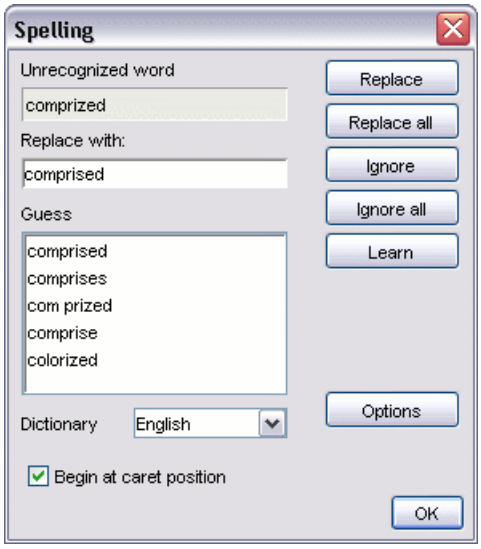
Use this option with caution.

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.

Using Check Spelling

The Check Spelling option (Edit → Check Spelling (**F4**) or the toolbar button  Check spelling) enables you to perform the check spelling on the current document:

Figure 19.4. Check Spelling Dialog



Complete the dialog as follows:

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 clicking a word in this list automatically inserts it in the document and continues the spell checking process.
Dictionary	Displays a list with the available dictionaries.
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	Allows you to continue checking the document while ignoring the first occurrence of the unknown word. The same word will be flagged again if it appears in the document.
Ignore all	Ignores all instances of the unknown word in the whole document.
Learn	Includes the unrecognized word in the list of valid words so that the spell checker will not consider it for correction.
Options	Sets the configuration options of the Spell Checker.
Begin at caret position	When checked, the spell checker begins checking from the current cursor position.
OK	Closes the Spell Checker dialog.

<oXygen/> provides dictionaries only for the languages English (EN, GB, CA, US), French (FR, BE, CA, CH) and German in the form of .dar files located in the directory `[oXygen-install-dir]/dicts`. A pre-built dictionary can be added by copying the corresponding .dar archive to the same directory and restarting <oXygen/>. A dictionary can be built with the tool available at http://www.xml-mind.com/spellchecker/dictbuilder.shtml.

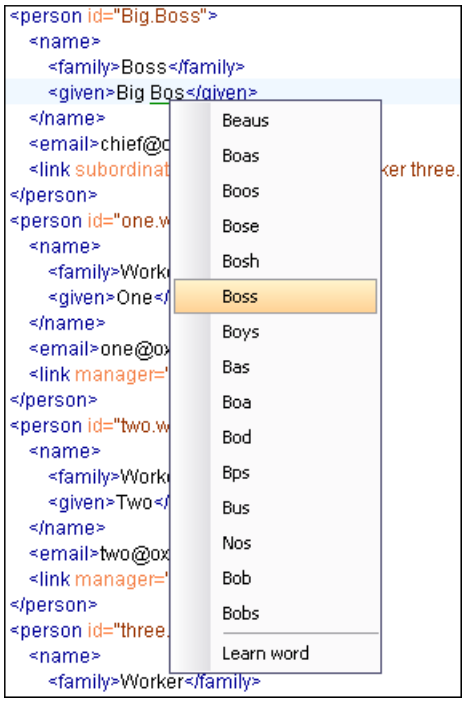
Learned words are stored into an persistent learned-words dictionary with the .tdi extensions located in [user-home-dir]/Application Data/com.oxygenxml/spell directory on Windows and [user-home-dir]/Library/Preferences/com.oxygenxml/.spell directory on Mac OS X. There is one dictionary for each language-country variant combination. If the Learn button is pressed by mistake the only possibility to delete the learned word from the learned-words dictionary is to edit this dictionary manually and restart <oXygen/> because the spell-check component does not allow its editing by the user interface.

Note

The Czech check spelling dictionary may be downloaded from http://www.kosek.cz/sw/xxe/cs.dar

Spell checking feature can be also used as you type by enabling it from the Preferences panel. Also for words with wrong spelling the suggestions of the Spelling dialog are available on the context menu of the editor panel in the Spell check suggestions submenu:

Figure 19.5. Spell check suggestions in the editor context menu



Note

Words with lengths in excess of 100 characters are ignored by the spell checker.

Note

The check spelling is available when editing documents in the text editor as well as in the Author editor.

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 + +**)	Increase the font size with one point for each execution of the action.
Document → Font size → Decrease editor font (**Ctrl + NumPad + -**)	Decrease the font size with one point for each execution of the action.
Document → Font size → Normal editor font (**Ctrl + 0**)	Reset the font size to the value of the editor font set in Preferences.

Dragging and dropping the selected text

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

Document+File → Insert file... inserts in a file under the current position of the caret in the current document.

Opening edited file in system application

Document+File → Open in system application opens edited file with default application associated on current machine.

Opening the file at caret position

Document+File → Open file at cursor : Opens in a new panel the file with the name under the current position of the caret in the current document. If the file does not exist at the specified location the error dialog that is displayed contains a button Create which tries to create a new empty file in the specified location and if it succeeds it also opens the file 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.

Switching between open tabs

Ctrl + Tab	Switch between the tabs with opened files in the order from the recent ones to the not recent ones.
Ctrl + Shift + Tab	Switch between the tabs with opened files in the reverse order.

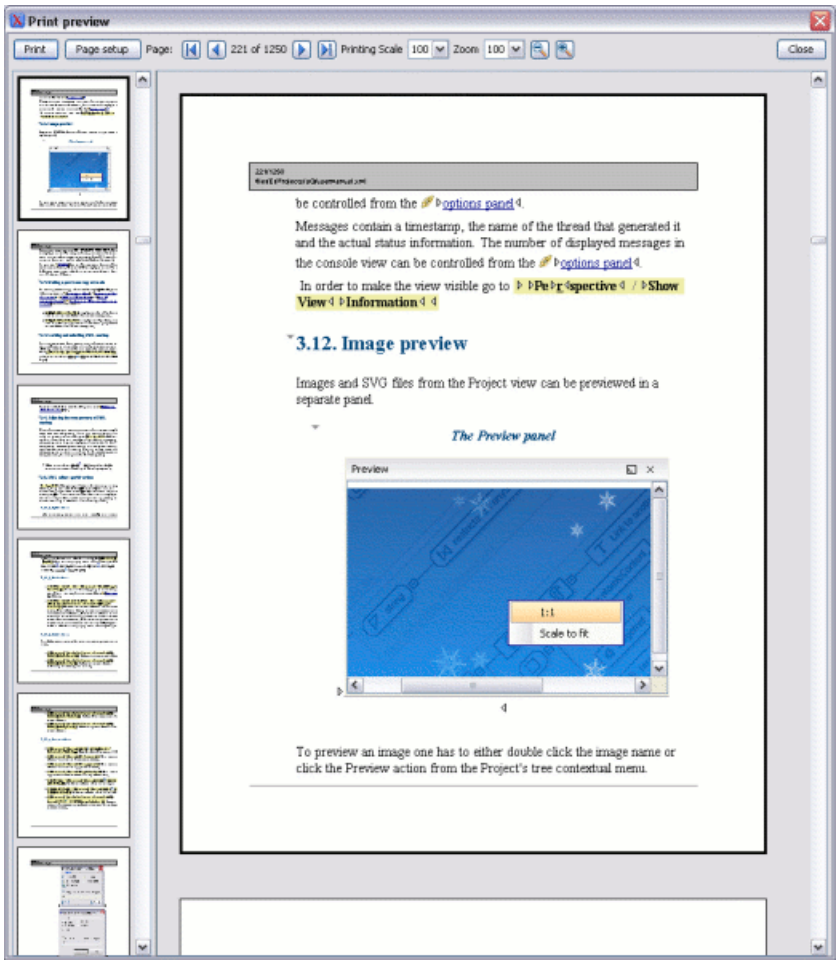
Printing a file

File → Print (**Ctrl+P**) displays the Page Setup dialog used to define the page size and orientation properties for printing.

Printing is supported for Text, Grid and Author page of the editor.

A *Print Preview* action is available in the File menu. This allows you to manage the format of the printed document:

Figure 19.6. Print Preview Dialog



The main window is split in three sections:

Preview area	Displays the printed document page formatted.
Left stripe	The left-hand side stripe which displays a list of thumbnail pages. Clicking any of them will display the page in the main preview area.
Toolbar	The toolbar top area which contains controls for printing, page settings, page navigation. print scaling and zoom.

Exiting the application

File → Exit (**Ctrl+Q**) : Terminates <oXygen/> . Session information such as the current Project, open Documents and Option settings is made persistent. When <oXygen/> is re-opened, the persistence information returns to the last saved state.

Chapter 20. Configuring the application

Importing/Exporting Global Options

In the Options menu you can find the Import/Export preferences operations which allow you to move your global preferences in XML format from one computer to another.

Note

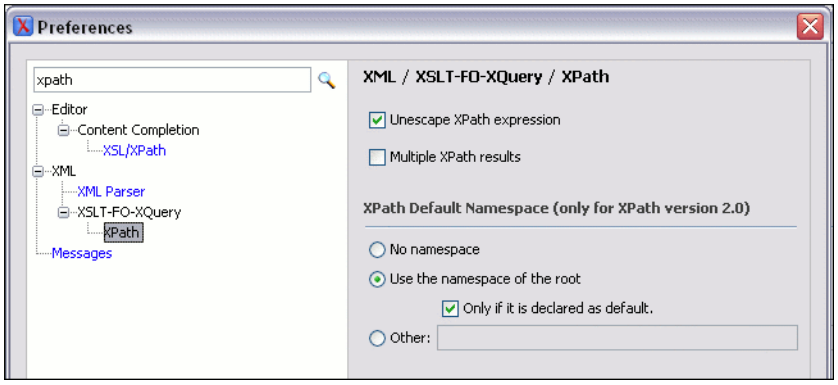
Starting with version 8, there is support for project level options. In this way sharing the options with your team becomes simpler, as you can choose to store the settings directly into the project file, with no need for export/import operations. We recommend to use the project level options. See the Preferences Sharing section for more details.

Preferences

Once the application is installed you can use the Preferences dialog accessed from Options → Preferences to customize the application for your requirements and network environment.

There is a search field available in the dialog for selecting only the preferences panels containing required words in the panel title or in the text of a label or a button contained in the panel.

Figure 20.1. The Search field from the Preferences dialog

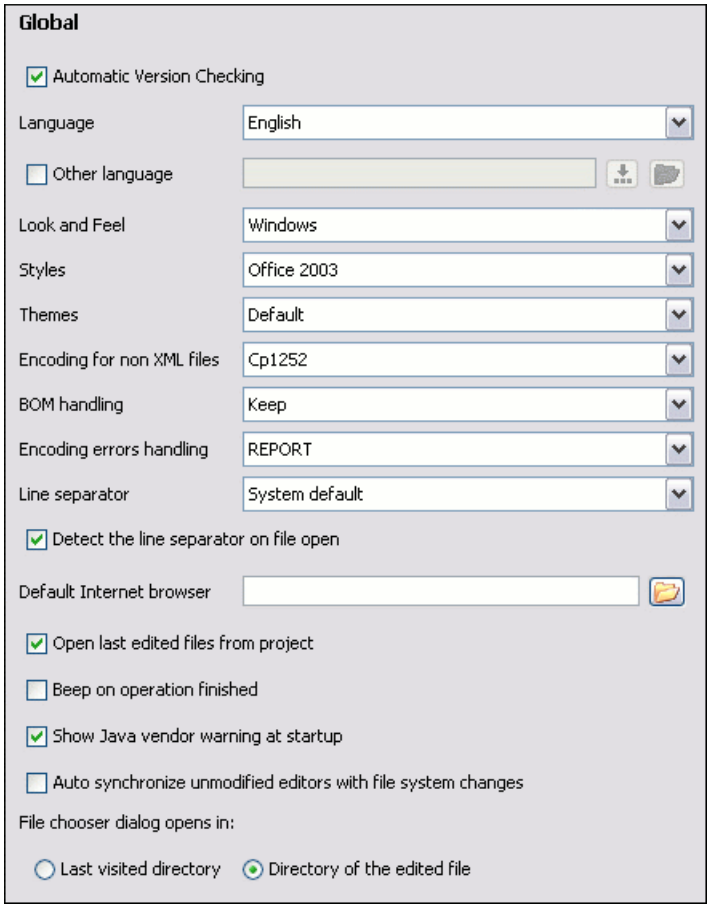


You can always revert modifications to their default values by using the Restore Defaults button, available in each preference page.

Global

The Global preferences panel is opened from menu Options → Preferences+Global

Figure 20.2. The Global preferences panel



Automatic Version Checking

When enabled, checks the availability of new <oXygen/> versions at http://www.oxygenxml.com. .

Language

The application supports a number of languages for localization of the GUI. Select Options → Preferences → Global+Language drop-list to display the language choices.

Note

After restarting the application, if some GUI labels are not rendered correctly you will need to install the corresponding language pack from your OS installation kit.

Other language

To change the user interface language of <oXygen/> you must set here the properties file with all the user interface messages and labels translated to your preferred language. For details about creating this file see the section describing the creation process. After setting the file you have to restart <oXygen/> in order to change the user interface language to your preferred language.

Look and Feel

Use this option to change graphic style (look and feel) of the GUI.

Styles

On Windows there are available the following styles:

- Office 2003
- Vsnet
- Eclipse
- Xerto
- Default

Note

After changing the style one has to 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 one has 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 if the Office 2003 or Default styles. In these cases, the following themes are available:

- NormalColor
- HomeStead
- Metallic
- Default
- Gray

On Linux this option is not available.

On Mac OS X this option is not available.

Encoding for non XML files

This option defines the default encoding to be used when opening non XML documents.

BOM handling

This option defines how to handle the BOM (Byte Order Mark) on document save.

The available options are:

- Don't Write - Don't write the BOM bytes, the loaded BOM bytes are ignored;

	• Write - Write the BOM bytes accordingly with chosen encoding; • Keep - If the loaded document has BOM then write them accordingly with chosen encoding. This is the default option.
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 - Show an error dialog with the character that cannot be represented in the specified encoding and allow the user to decide how to continue (ignore that character, replace it with a standard replacement character). This is the default option. • IGNORE - The character is ignored and it will not be included in the document displayed in the editor panel. • 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 character code is 63.
Line separator	This option defines line separator to be used. The System Default choice sets the line separator from the platform.
Detect the line separator on file open	When this option is checked the editor will detect the line separator when the edited file is loaded and it will use 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 executable. The browser is used to open XSLT or PDF transformation results, to open the <oXygen/> home page or to point to specific paragraphs in the W3C recommendation of XML Schema on the W3C website in case of validation errors.
Open last edited files from project	When enabled, <oXygen/> will open the last edited files from project at start-up. Filer larger than 50 KB are not opened.
Beep on operation finished	If checked, it notifies the user through a beep that an action has ended. It will notify the user only at the end of validate, wellformed and transform actions.
Show Java vendor at startup	Sun Microsystems Java VM or Apple Computer Java VM (on Mac OS X) is required to run <oXygen/>. If a different VM is used, then a warning is generated. This option allows the user to choose whether the warning dialog is shown in this case or not.
Auto synchronize unmodified editors with file system changes	If checked, the synchronization of the unmodified editors with the system changes is done automatically, without the user's interaction.
Last visited directory	The dialog used for opening files remembers the last visited directory and the next time it starts directly in this directory.
Directory of the edited file	The dialog used for opening files starts in the directory where the currently edited file is stored.

Consider application bundles to be directories when browsing

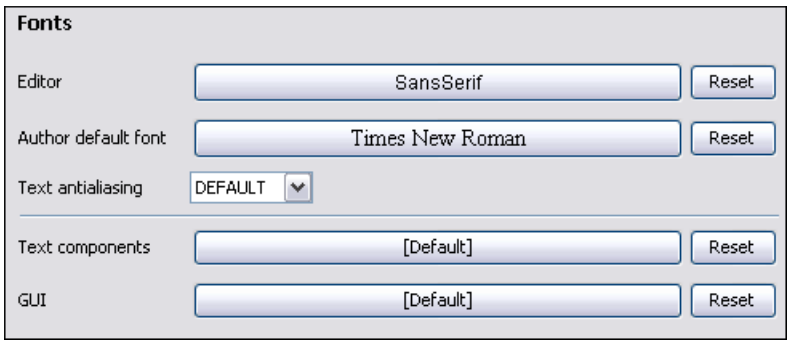
This option is available only on the Mac OS X platform. When checked the file browser dialog allows browsing inside an application bundle as in a regular folder. When unchecked the file browser dialog does not allow browsing inside an application bundle, as the Finder application does on Mac OS X. The 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/> application by adding two lines in this descriptor file:

```
<key>apple.awt.use-file-dialog-packages</key>
<string>false</string>
```

Fonts

The Fonts preferences panel is opened from menu Options → Preferences+Fonts

Figure 20.3. The Fonts preferences panel



Editor

Use this option to select the font family and size used to display text in the editor. This option affects both the text and grid page of the editor.

Author default font

Use this option to select the font family and size used to display text in the author editor. This value will be used in the case another one is not specified in the CSS associated with the opened document.

Text antialiasing

Enable text antialiasing at the specified level. On JVM versions prior to 1.6 this combo box contains only the values Default, On and Off. Default means that <oXygen/> will not set anything special for text antialiasing but the JVM will use the setting of the operating system if it is available. The On option sets the text antialiasing to pixel level and the Off option disables it. Starting with version 1.6 the combo contains also values specific for subpixel antialiasing, like GASP, LCD_HRGB, LCD_VRGB which sets the respective antialiasing mode for the text displayed in the <oXygen/> editors and views.

Text components

Use this option to select the font family and size used to display text in text components. After changing the font one has to restart the application.

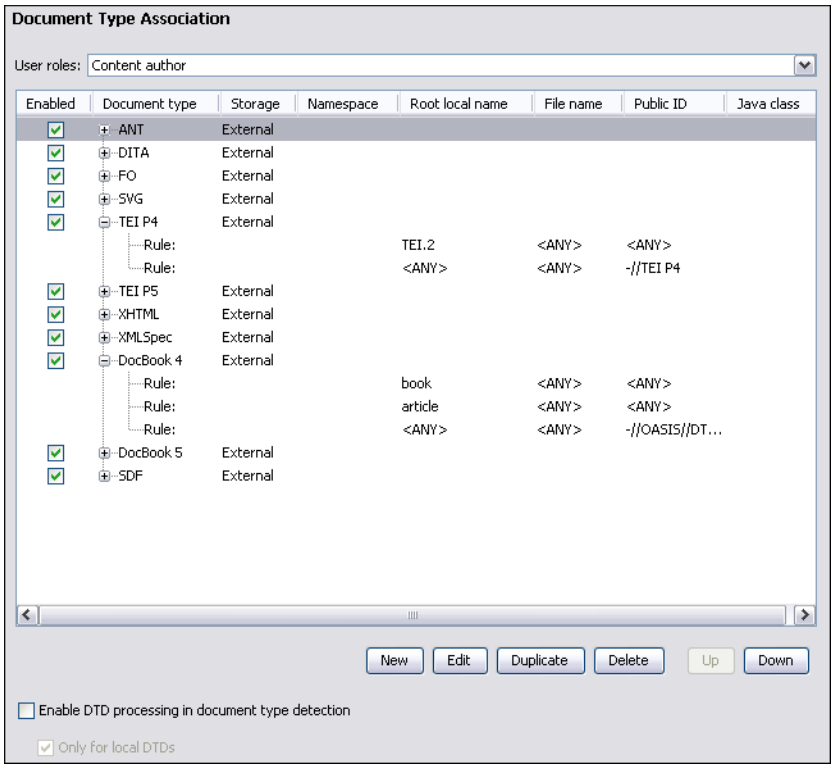
GUI

Use this option to select the font family and size used to display GUI labels. After changing the font one has to restart the application.

Document Type Association

The Document Type Association preferences panel is opened from menu Options → Preferences+Document Type Association

Figure 20.4. Document Type Association preferences panel



User roles

You can select between two user roles *Content author* and *Developer*. When the selected role is *Content author* you can modify only the properties of the Document Type Associations stored in the user preferences. The externally stored associations cannot be modified and you will have to duplicate them in order to further customize these associations. The *Developer* user can change any document type association.

Document types table

The table presents the currently defined document type associations. The columns are:

Document type — Contains the name of the document type.

Enabled — When checked the corresponding document type association is enabled, it is analyzed when trying to determine the type of a document opened in oXygen.

Storage — Presents the location where the document type association is stored.

When expanding a Document Type Association its defined rules are presented. A rule is described by:

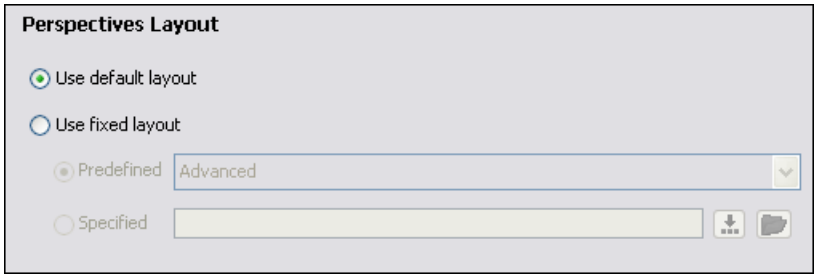
	Namespace	Specifies the namespace of the root element from the association rules set (any by default). If you want to apply the rule only when the root element is in no namespace you must leave this field empty (remove the *<ANY>* string).
	Root local name	Specifies the local name of the root element (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 class which will be used to determine if a document matches the rule.
New	Opens a new dialog allowing you to add a new association.	
Edit	Opens a new dialog allowing you to edit an existing association.	
Delete	Deletes one of the existing association.	
Up	Moves the selected association one level up (the order is important because the first document type association in the list that can be associated with the document will be used).	
Down	Moves the selected association one level down.	
Enable DTD processing in document type detection	When this is enabled the matching process will examine also the DTD associated with the document. For example the fixed attributes declared in the DTD for the root element will be analyzed also if this is specified in the association rules.	
Only for local DTDs	When the previous feature is enabled you can choose to process only the local DTDs.	

Perspectives Layout

The Perspectives Layout preferences panel is opened from menu Options → Preferences+Perspectives Layout

<oXygen/> has a large number of helper views that can be arranged in different layouts. Use this options to select a different layout for the editor.

Figure 20.5. The Perspectives Layout preferences panel



Use default layout
: This option is checked by default. It indicates that the editor must use the default layout for all the perspectives. Any modification of this layout (for instance closing/showing views or a new view arrangement) is saved when the program exits and is reloaded at the next start up.

Used fixed layout
: Check this when you want the editor to always start with a certain view layout. Modifications of the selected layout are lost when the program exists.

  There are two kinds of fixed layout:

  Predefined
  : <oXygen/> has several predefined layouts to choose from, depending on the type of work you intend to do:

    Advanced
    : All the views are visible.

    Basic
    : Just the project view and the outline view are visible. This is recommended when you edit XML content and you need screen space.

    Intermediate
    : The project, outline, attributes and model view are visible.

    Schema development
    : The project, outline, attributes, model view and schema components are visible.

    Schema development
    : The project, outline, attributes, model view and schema components are visible.

    XQuery development
    : Only the project and the editing area are visible.

    XSLT development
    : The project, outline, attributes, model view and XSLT input are visible.

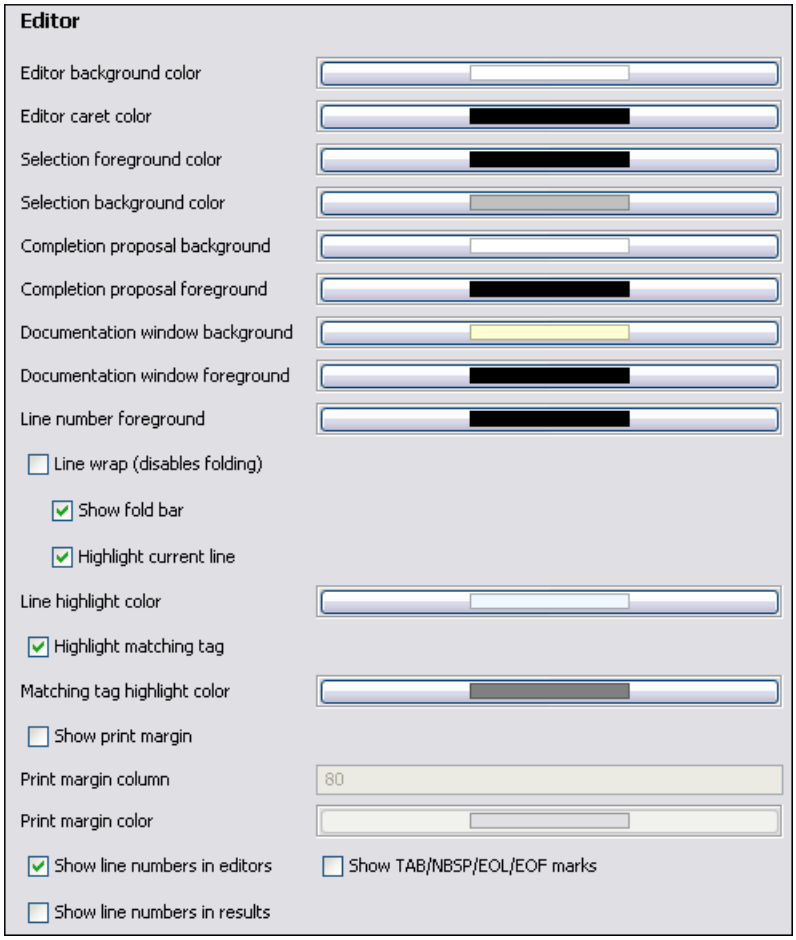
  Specified
  : You can choose an existing layout file from disk. In order to create such a file, you can arrange the views in the desired order and then use the action: Perspective → Save layout..

Editor

The Editor preferences panel is opened from menu Options → Preferences+Editor

Use these options to configure the visual aspect of the text editor.

Figure 20.6. The Editor preferences panel



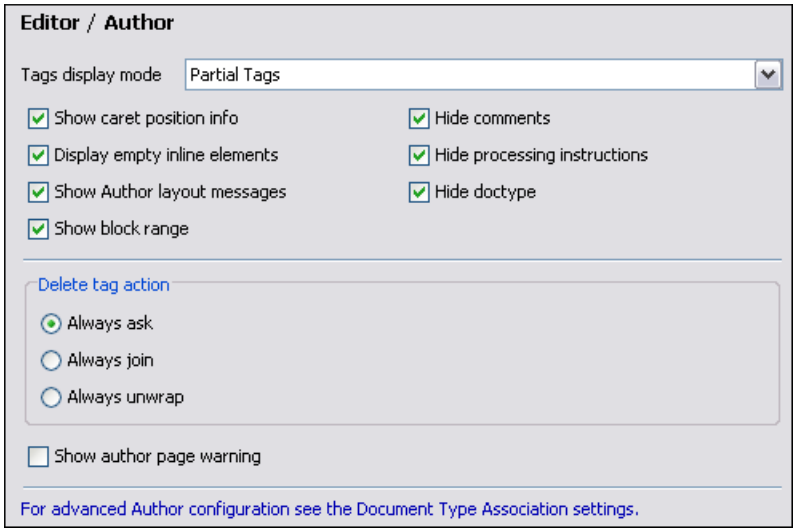
Editor background color	Use this option to set the background color of the editor.
Editor caret color	Use this option to set the background color of the editor.
Selection foreground color	Use this option to set the text color of selected text.
Selection background color	Use this option to set the background color of selected text.
Completion proposal background	Use this option to set the background color for the content completion window.
Completion proposal foreground	Use this option to set the foreground color for the content completion window.
Documentation window background	Use this option to set the background color for the window containing documentation for the content completion elements.

Documentation window foreground	Use this option to set the foreground color for the window containing documentation for the content completion elements.
Line number foreground	Use this option to set the foreground color for the line numbers displayed at the right of editor panel.
Line Wrap (disables folding)	This option will do a soft wrap of long lines, that is automatically wrap lines in edited documents. When this option is checked line folding will be disabled.
Show fold bar	This options enables the display of the document folding bar.
Highlight current line	Enables highlight for the current line.
Line highlight color	Use this option to set the highlight color for the line on which the caret is situated.
Highlight matching tag	This option enables highlight for the tag matching the one on which the caret is situated.
Matching tag highlight color	Use this option to set the color of the matching tag highlight.
Show print margin	Enables displaying a vertical line in the editor panel representing the paper margin if the current content of the editor panel is printed with the action File → Print
Print margin column	The number of characters included on a line which the print format allows.
Print margin color	The color used to paint the print margin line in the <oXygen/>'s editor panel.
Show line numbers in editor	This option enables the line numbers column located in the left part of the editing space. When unchecked, line numbers option is disabled.
Show line numbers in results	This option enables the line numbers column located in the left part of the Results panel in the Debugger perspective.
Show TAB/NBSP/EOL/EOF marks	Marks the TAB/NBSP/EOL/EOF using small icons, for a better visualisation of the document.

Author

The Author preferences panel is opened from menu Options → Preferences+Editor+Author

Figure 20.7. The oXygen Author preferences panel



Tags display mode	Default display mode for element tags presented in Author mode. You can choose between *Full Tags*, *Block Tags*, *Partial Tags* and *No Tags*.
Show caret position info	If checked, the position information tooltip will be displayed. More information about the position information tooltip can be found in the section Position information tooltip.
Display empty inline elements	When checked all inline elements will be displayed, including the empty ones.
Show Author layout messages	If checked, all errors reported during layout creation will be presented in the *Errors* view.
Show block range	If checked, a block range indicator will be shown in a stripe located in the left side of the editor.
Hide comments	When checked, comments from the documents edited in Author mode will be hidden.
Hide processing instructions	When checked, processing instructions from the documents edited in Author mode will be hidden.
Hide doctype	When checked, doctype sections from the documents edited in Author mode will be hidden.
Delete tag action	Specifies the default behavior when you delete the start or end marker of an element. You can choose between: • *Always ask* • *Always join* • *Always unwrap* You can read more about this in Editing the XML markup section.

Show author page warning	When checked, a warning dialog will be displayed when switching to Author mode. The warning reminds you that the whitespaces from the text content are evaluated according to the value of the CSS *white-space* property associated to the enclosing elements.

Grid

The Grid preferences panel is opened from menu Options → Preferences+Editor+Grid

Figure 20.8. The Grid editor preferences panel

Compact representation	If checked a child element is displayed at the same height level with the parent element. If unchecked a child elements is presented nested with one level in the parent container, that is lower than the parent with one row.
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 an element name and its text content, an attribute name and its value. If the total width of the grid structure is too large you can resize any column with the mouse but the change is not persistent. To make it persistent set the new column width in this user option. the

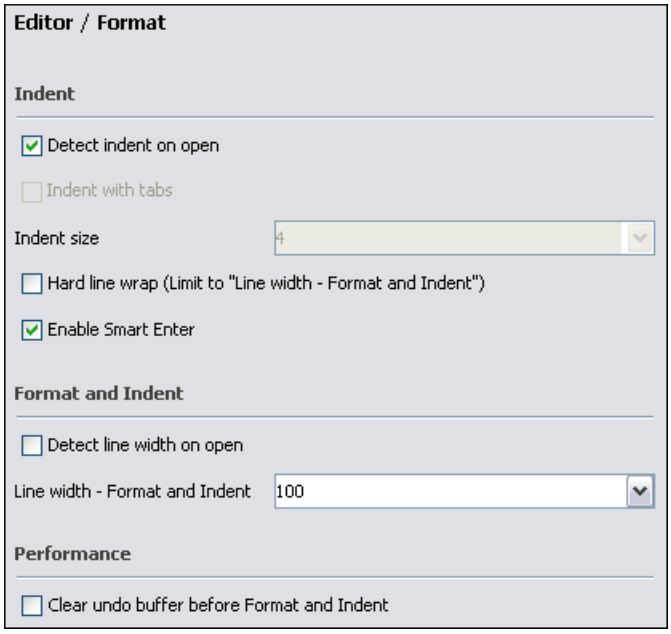
Current selection color	The background color used in the focused selected cell of the grid to make it different in the set of selected cells. For example when an entire row is selected only one cell of the row is the focused selected one.
Selection color	The background color used in the selected cells of the grid except the focused selected cell which uses a different background color.
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 color of the text used for the element names, text content of elements, attribute names and attribute values.
Row header colors - Background color	The background color of row headers that are not selected.
Row header colors - Current selection color	The background color of the row header that is currently selected and has the focus.
Row header colors - Selection color	The background color of the row header that is currently selected and does not have the focus.
Column header colors - Background color	The background color of column headers that are not selected.
Column header colors - Current selection color	The background color of the column header that is currently selected and has the focus.
Column header colors - Selection color	The background color of the column header that is currently selected and does not have the focus.

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.

Format

The Format preferences panel is opened from menu Options → Preferences+Editor+Format

Figure 20.9. The Format preferences panel



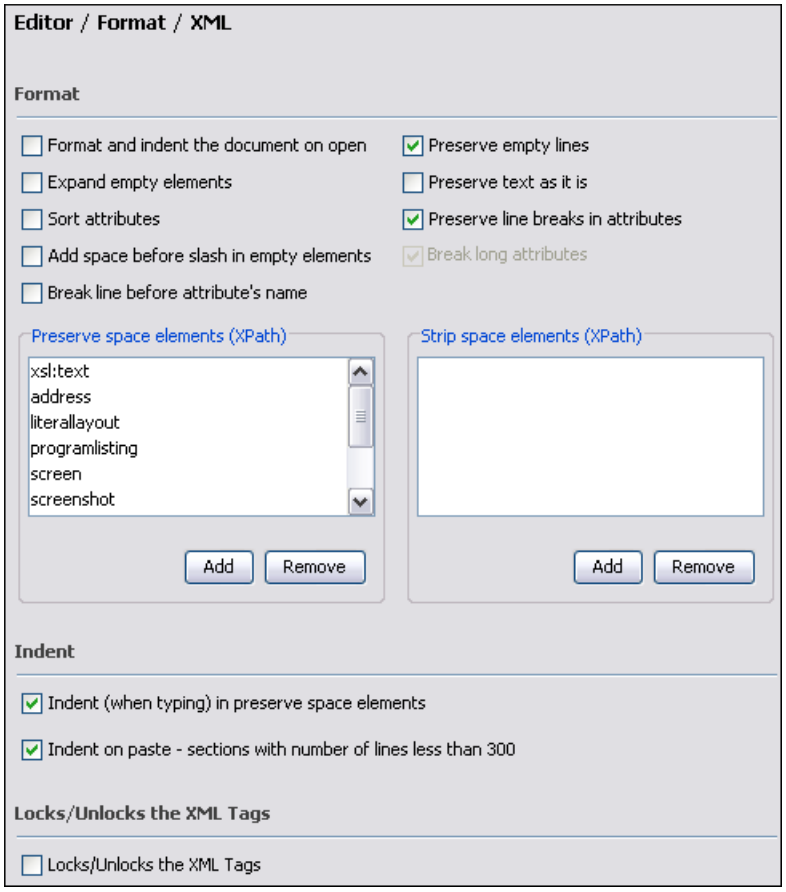
Detect indent on open	The editor tries to detect the indent settings of the opened XML document. In this way you can correctly format (pretty-print) files that were created with different settings, without changing your options. More than that you can activate the advanced option for detecting the maximum line width to be used for formatting and hard wrap. These features were designed to minimize the differences created by the pretty print operation when working with a versioning system, like CVS for example.
Indent with tabs	When checked enables 'Indent with tabs' to sets the indent to a tab unit. When unchecked, 'Indent with tabs' is disabled and the indent will measure as many spaces as defined by the 'Indent size' option.
Indent size	Sets the number of spaces or the tab size that will equal a single indent. The Indent can be spaces or a tab, select the preference using the Indent With Tabs option. If set to 4 one tab will equal 4 white spaces or 1 tab with size of 4 characters depending on which option was set in the Indent With Tabs option.
Hard line wrap	This feature saves time when writing a reach text XML document. You can set a limit for the length of the lines in your document. When this limit is exceeded the editor will insert a new line before the word that breaks the limit, and indent the next line. This will minimize the need of reformatting the document.
Enable Smart Enter	If checked, it inserts a new indented line between start and end tag.
Detect line width on open	If checked, it detects the line width automatically when the document is opened.
Line width - Format and Indent	Defines the point at which the "Format and Indent" (Pretty-Print) function will perform hard line wrapping. So if set to 100 Pretty-

	Print will wrap lines at the 100th space inclusive of white spaces, tags and elements.
Clear undo buffer before Format and Indent	If checked, the undo buffer is cleared. The undo action can now only undo the Format and Indent action

XML

The XML Format preferences panel is opened from menu Options → Preferences+Editor+Format+XML

Figure 20.10. The XML format preferences panel



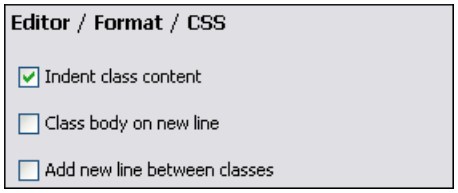
Format and indent the document on open	When checked, the *Format and indent the document on open* operation will format and indent the document before opening it in the editor panel.
Expand empty elements	When checked the *Format and Indent* operation will output empty elements with a separate closing tag, ex. <a atr1="v1">. When not checked the same operation will represent an empty element in a more compact form: <a atr1="v1"/>
Add space before slash in empty elements	When checked the *Format and Indent* operation will add a space before the closing slash of an empty element, for instance an empty *br* will appear as <*br* />.

Sort attributes	When checked the *Format and Indent* operation will sort the attributes of an element alphabetically. When not checked the same operation will leave them in the same order as before applying the operation.
Preserve empty lines	When checked the *Format and Indent* operation will preserve all empty lines found in the document on which the pretty-print operation os applied.
Preserve text as it is	If checked, the "Format and Indent" (Pretty-Print) function will preserve text nodes as they are without removing or adding any whitespace.
Preserve line breaks in attributes	If checked, the "Format and Indent" (Pretty-Print) function will preserve the line breaks found in attributes. When this option is checked, *Break long lines* option will be disabled.
Break long attributes	If checked, the "Format and Indent" (Pretty-Print) function will break long attributes.
Break line before attribute's name	If checked, the "Format and Indent" (Pretty-Print) function will break the line before the attribute's name.
Preserve space elements (XPath)	This list contains simplified XPath expressions for the names of the elements for which the contained white spaces like blanks, tabs and newlines are preserved by the *Format and Indent* operation exactly as before applying the operation. The allowed XPath expressions are of one of the form: • author • //listing • /chapter/abstract/title • //xs:documentation The namespace prefixes like *xs* in the previous example are treated as part of the element name without taking into account its binding to a namespace.
Strip space elements (XPath)	This list contains the names of the elements for which contiguous white spaces like blanks, tabs and newlines are merged by the *Format and Indent* operation into one blank.
Indent (when typing) in preserve space elements	If checked, automatic tags indentation while editing will take place for all elements including the ones that are excluded from Pretty Print (default behaviour). When unchecked, indentation while editing will not take place in elements that have the 'xml:space' attribute set on 'preserve' or are in the list of Preserve Space Elements.
Indent on paste	Indent paste text corresponding to the indent settings set by the user. This is useful for keeping the indent style of text copied from other document.
Locks/Unlocks the XML tags	The default state of the opened editors. For more information see the Locking and unlocking XML markup section.

CSS

The CSS Format preferences panel is opened from menu Options → Preferences+Editor+Format+CSS

Figure 20.11. The CSS format preferences panel

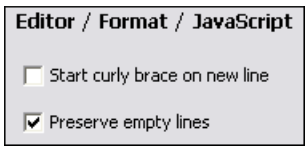


Indent class content	If checked, the class content is indented during a "Format and Indent" (Pretty-Print) operation.
Class body on new line	If checked, the class body (including the curly brackets) are placed on a new line after a Pretty-Print operation.
Add new line between classes	If checked, an empty line is added between two classes after a Pretty-Print operation is performed.

JavaScript

The JavaScript Format preferences panel is opened from menu Options → Preferences+Editor+Format+JavaScript

Figure 20.12. The JavaScript Format preferences panel



Start curly brace on new line	If true, opening curly braces will start on a new line.
Preserve empty lines	If true, empty lines in the JavaScript code will be preserved.

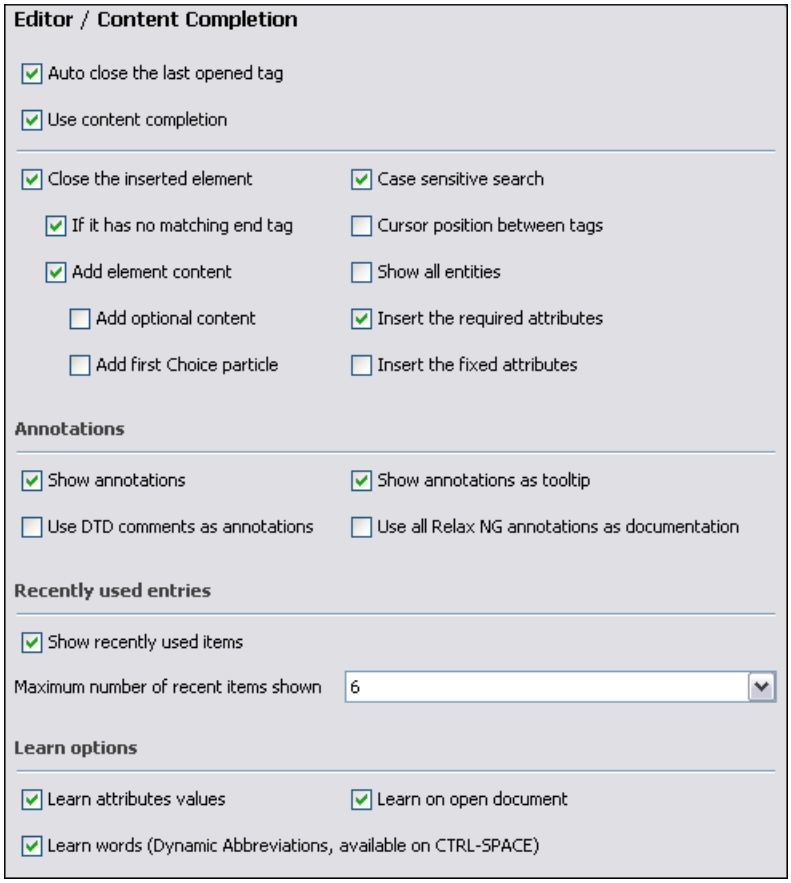
Content Completion

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

Figure 20.13. The Content Completion Features preferences panel



Auto close the last opened tag	If the Use Content Completion option is not checked and if this option is checked, <oXygen/> will close the last opened tag when </ is typed.
Use Content Completion	This option enables Content Completion feature. When unchecked, all Content Completion features are disabled.
Close the inserted element	When inserting elements from the Content Completion assistant, both start and end tags are inserted.
If it has no matching tag	When checked, the end tag of the inserted element will be automatically added only if it is not already present in the document.
Add element content	When checked, <oXygen/> will insert automatically the required elements from the DTD or XML Schema. This option is applied also in the Author mode of the XML editor.
Add optional content	When checked, <oXygen/> will insert automatically the optional elements from the DTD or XML Schema. This option is applied also in the Author mode of the XML editor.
Add first Choice particle	When checked, <oXygen/> will insert automatically the first Choice particle from the DTD or XML Schema. This option is applied also in the Author mode of the XML editor.

Case sensitive search	When it is checked the search in the content completion 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 checked, <oXygen/> will set the cursor automatically between tags. Even if the auto-inserted elements have attributes that are not required, the position of cursor can be forced between tags.
Show all entities	When checked, <oXygen/> will display 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	When checked, <oXygen/> will insert automatically the required 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.
Insert the fixed attributes	When checked, <oXygen/> will insert automatically 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 annotations	When checked, <oXygen/> will display the annotations that are present in the used schema for the current element, attribute or attribute value. This option is applied also in the Author mode of the XML editor.
Show annotations as tooltip	If checked, it shows the annotations of elements and attributes as tooltips. This option is applied also in the Author mode of the XML editor.
Use DTD comments as annotation	When checked, <oXygen/> will use all DTD comments as annotation.
Show recently used items	When checked, <oXygen/> will remember the last inserted items from the Content Completion window. The number of items to be remembered is limited by *Maximum number of recent items shown* combo box. These most frequently used items are displayed on the top of 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 window. This option is applied also in the Author mode of the XML editor.
Use all Relax NG annotations as documentation	When checked any element that is not from the Relax NG namespace, that is "http://relaxng.org/ns/structure/1.0" will be considered annotation and will be displayed in the annotation window next to the content completion window and in the Model View. When unchecked only elements from the Relax NG annotations namespace, that is "http://relaxng.org/ns/compatibility/annotations/1.0" will be considered annotation.

Learn attributes values	When checked, <oXygen/> will display a list with all attributes values learned from the current document. This option is applied also in the Author mode of the XML editor.
Learn on open document	When checked, <oXygen/> will automatically learn 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/> will automatically learn the typed words and will make them available in a Content Completion fashion by pressing CTRL+SPACE.

Note

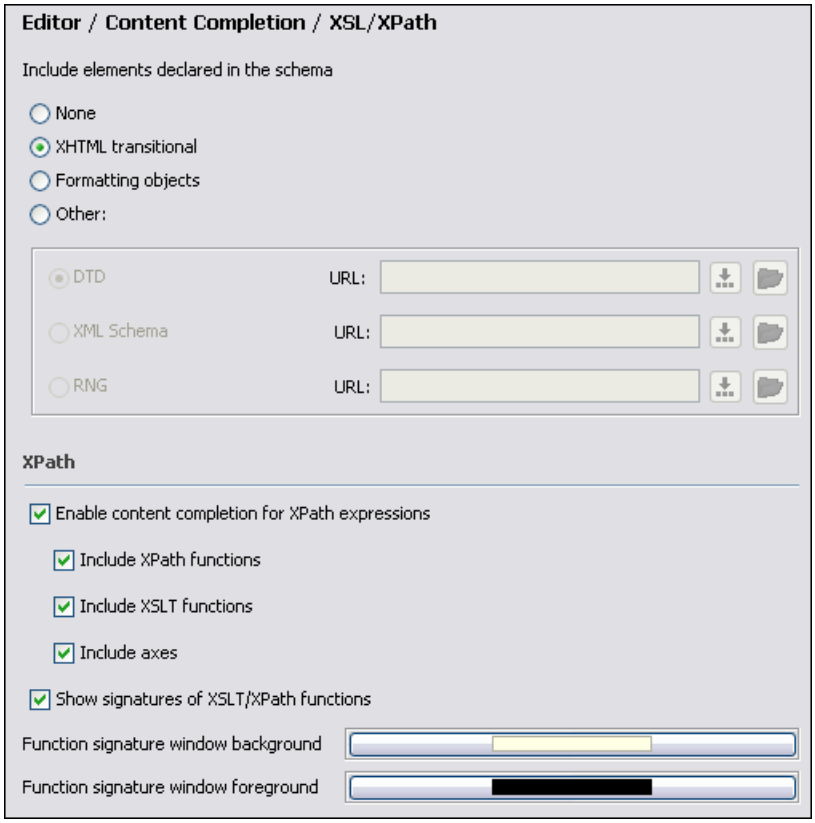
In order to be learned, the words need to be separated by space characters.

XSL/XPath

These settings define what elements are suggested by the content assistant in addition to the XSL ones.

The XSL/XPath preferences panel is opened from menu Options → Preferences+Editor+Content Completion+XSL/XPath

Figure 20.14. The Content Completion XSL/XPath preferences panel



None	The Content Completion will offer only the XSL information.

XHTML transitional	Includes XHTML Transitional elements as substitutes for xsl:element.
Formating objects	Includes Formating Objects elements as substitutes for xsl:element.
Other	Includes elements from a DTD file, a XML Schema file or a RNG Schema file specified from a URL as substitutes for xsl:element.
Enable content completion for XPath expressions	Disables and enables content completion in XPath expressions entered in the XSL attributes *match*, *select* and *test* and also in the XPath toolbar. Options are available to allow the user to include XPath functions, XSLT functions or axes in the content completion suggestion list.

The XPath section controls if the functions, axes are presented in the content completion list when editing XPath expressions.

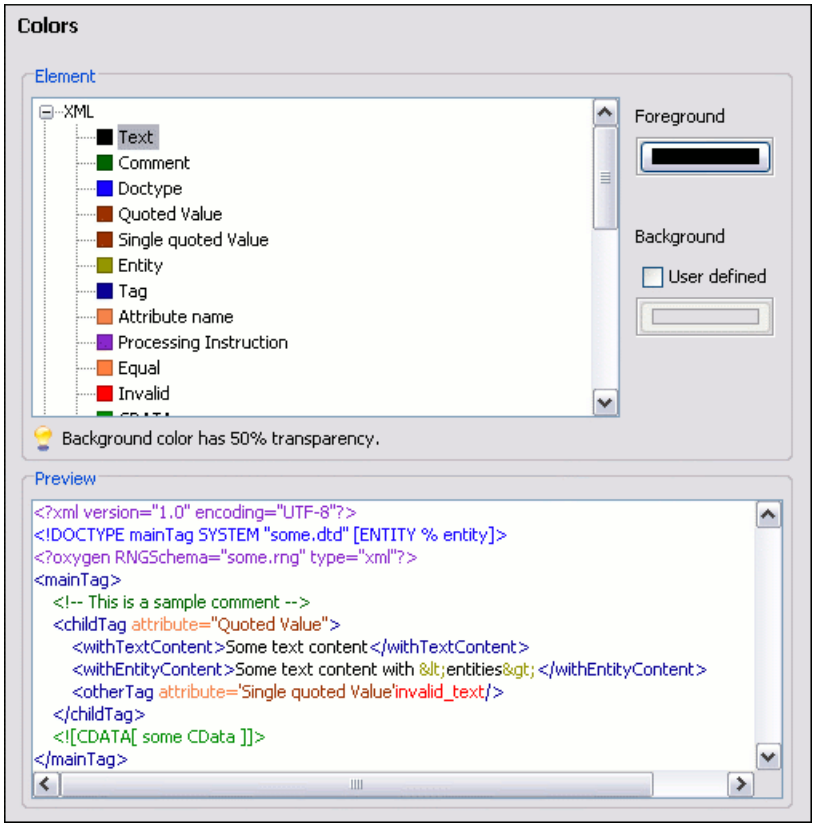
Show signatures of XSLT/XPath functions	If checked, the editor will indicate in a tooltip helper the signature of the XPath function located at the caret position. See the XPath Tooltip Helper section for more information.
Function signature window background	The background color of the tooltip window.
Function signature window foreground	The foreground color of the tooltip window.

Colors

<oXygen/> supports Syntax Highlight for XML, DTD, Relax NG (XML and Compact Syntax), Java, JavaScript, XQuery, C++, C, PHP,CSS, Perl, Properties, SQL, Shell and Batch documents. While <oXygen/> provides a default color configuration for highlighting the tokens, you may choose to customize, as required, using the Colors dialog.

The Colors preferences panel is opened from menu Options → Preferences+Editor+Colors

Figure 20.15. The Colors preferences panel



Open the Colors dialog by selecting Options->Preferences->Colors and choose one of the supported Document Types. Each document type contains a set of Tokens. When a Document Type node is expanded, the associated tokens are listed. Selecting a token displays the current color properties and enables you to modify them. You can also select a token by clicking directly in the preview area on that type of token.

Use Swatches, HSB or RGB models from the Color dialog to define the color properties.

Modifications are saved when the OK button is clicked. Cancel discards changes. Reset button changes the color to the default value.

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.

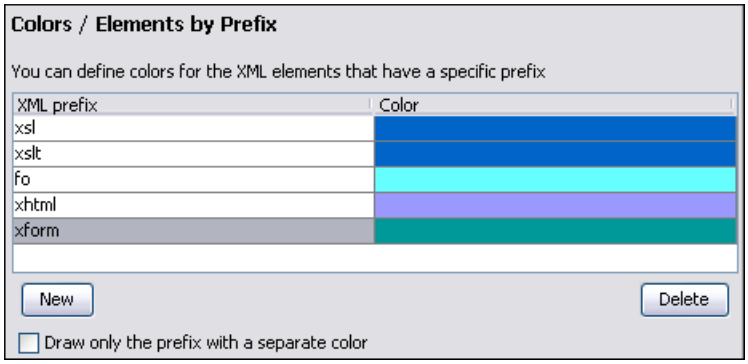
RGB — Red, Green and Blue (RGB) enables you to specify a color using triplets of red, green and blue numbers.

Preview — Displays the color properties of the current token and results of customization.

Syntax Highlight / Elements by Prefix

The Colors preferences panel is opened from menu Options → Preferences+Editor+Colors+Elements by Prefix

Figure 20.16. The Elements by Prefix preferences panel



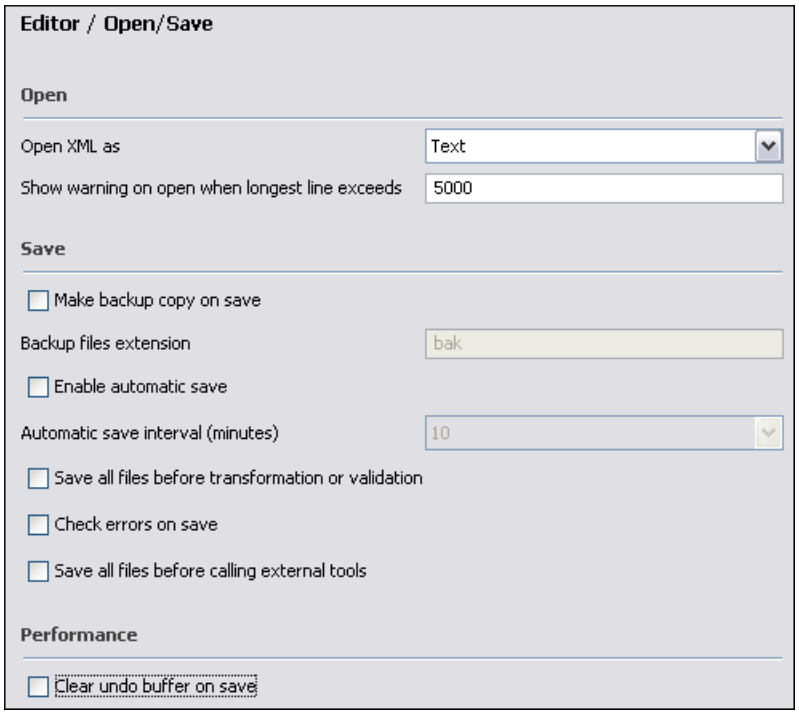
One row of the table contains the association between a namespace prefix and the color used to mark start tags and end tags in that prefix. Note that the marking mechanism does not look at the namespace bound to that prefix. If the prefix is bound to different namespaces in different XML elements of the same file all the tags with the prefix will be marked with the same color.

One can choose that only the prefix to be displayed in the chosen color by checking 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

Figure 20.17. The Open/Save preferences panel



Open XML as — Specify the default page to be displayed when opening an XML-related editor.

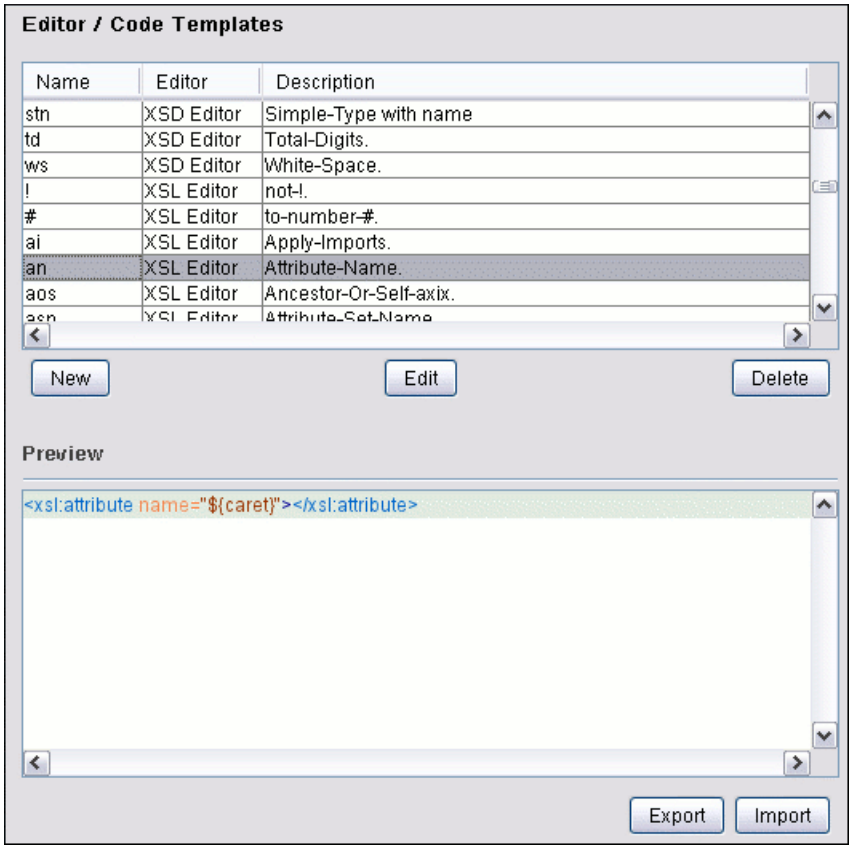
Show warning on open when long lines exceeds	A warning dialog will be displayed if the longest line from the document exceeds the limit.
Make backup copy on save	If checked, a backup copy is made when saving the edited document. The default extension is *bak, but you can change extension as you prefer.
Enable automatic save	Automatic save is a useful feature that ensures your work is being saved in the background. You can specify the time intervals between automatic saves. If checked it enables Automatic Save. When unchecked, Automatic Save is disabled.
Automatic save interval (minutes)	Selects the period in minutes for Auto Save intervals.
Save all files before transformation or validation	Save all opened files before validating or transforming an XML document. In this way the dependencies are resolved, for example when modifying both the XML document and its XML Schema.
Check errors on save	If checked, a checking for errors is done when saving the edited document.
Save all files before calling external tools	If checked, all files will be saved before executing an external tool.
Clear undo buffer on save	If checked, the undo action has no effect after you've saved your document. You can only undo the modifications made after you've saved it.

Code Templates

Code templates are small document fragments that can be reused in other editing sessions. <oXygen/> comes with a large set of ready-to use templates for XSL and XML Schema. You can even share your code templates with your colleagues using the Export and Import functions. To obtain the template list you have use the Content Completion on request shortcut key (usually CTRL-SPACE).

The Code Templates preferences panel is opened from menu Options → Preferences+Editor+Templates+Code Templates

Figure 20.18. The Code Templates preferences panel



New — Define a new code template.

Edit — Edit the selected code template.

Delete — Delete the selected code template.

Import — Import a file with code templates.

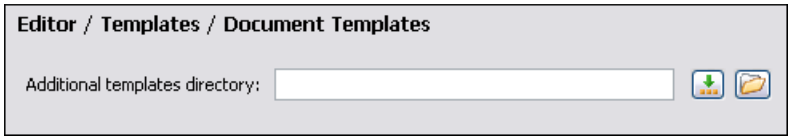
Export — Export a file with code templates.

Document Templates

The user can add template files in the `templates` folder of the <oXygen/> install directory. Also in the Document Templates option page it can be specified a custom templates folder to be scanned.

The Document Templates preferences panel is opened from menu Options → Preferences+Editor+Templates+Document Templates

Figure 20.19. Document Templates preferences panel

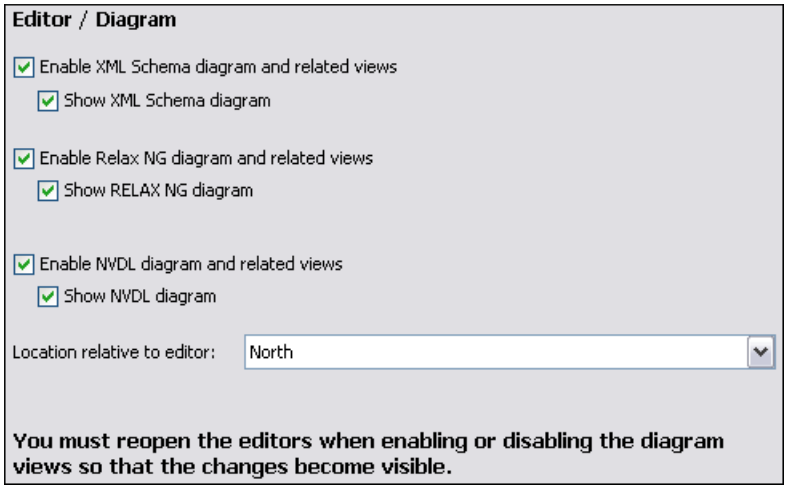


Diagram

If operation is slow for very large schemas disabling the schema diagram view will improve the speed of navigation through the edited schema.

The Diagram preferences panel is opened from menu Options → Preferences+Editor+Diagram

Figure 20.20. Schema diagram preferences panel



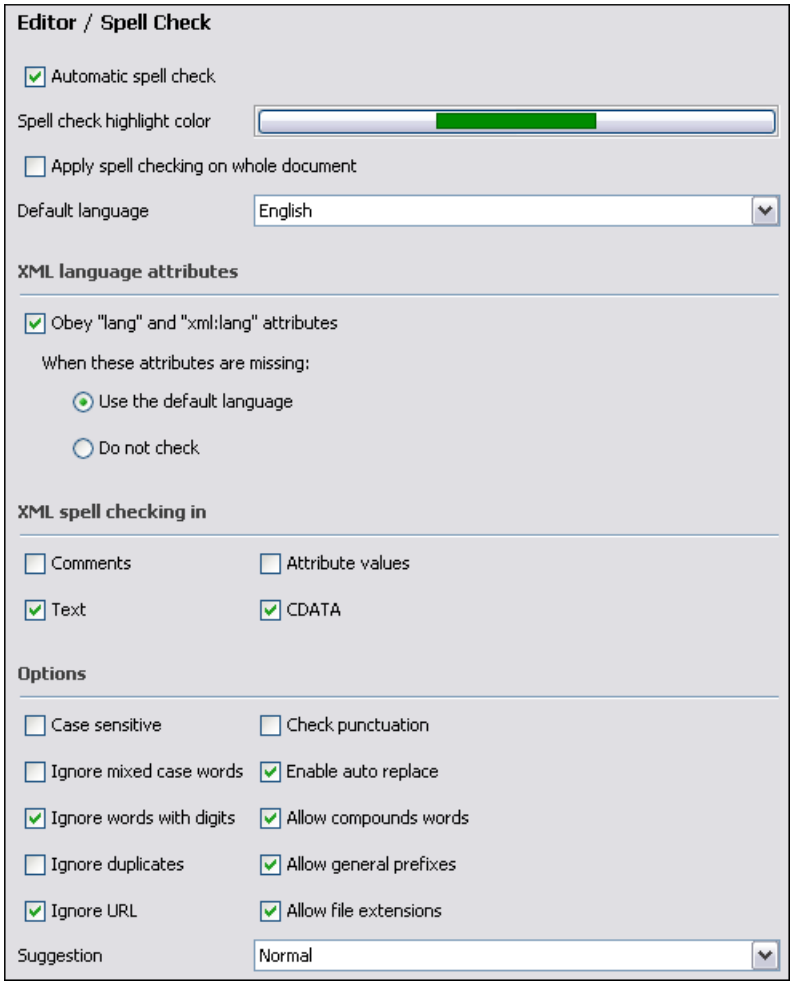
Enable XML Schema diagram and related views	If this option is disabled the schema diagram for XML Schemas will not be generated and displayed, also the related views that present the schema components are not populated with data. In case you need the related views to be active, you can let this option checked and unckeck the following one.
Show XML Schema diagram	If this option is disabled the schema diagram for XML Schemas will not be generated and displayed.
Enable Relax NG diagram and related views	If this option is disabled the schema diagram for Relax NG will not be generated and displayed, also the related views that present the schema components are not populated with data. In case you need the related views to be active, you can let this option checked and unckeck the following one.
Show Relax NG diagram	If this option is disabled the schema diagram for Relax NG schemas will not be generated and displayed.
Enable NVDL diagram and related views	If this option is disabled the schema diagram for NVDL will not be generated and displayed, also the related views that present the schema components are not populated with data. In case you need the related views to be active, you can let this option checked and unckeck the following one.
Show NVDL diagram	If this option is disabled the schema diagram for NVDL schemas will not be generated and displayed.
Location relative to editor	The location of the diagram panel in the editing area can be: North, East, South, West. For example North means that the diagram panel

takes the North part of the editing area and the text editor panel takes the rest of the editing area.

Spell Check

The Spell Check preferences panel is opened from menu Options → Preferences+Editor+Spell Check

Figure 20.21. Spell check preferences panel



Automatic Spell Check — When checked, the spell checker is activated. Spell errors will be highlighted as you type.

Spell check highlight color — Use this option to set the color of the spell check errors.

Apply spell checking on whole document — When checked, a spell check action will be performed on entire document, highlighting all encountered errors.

Note

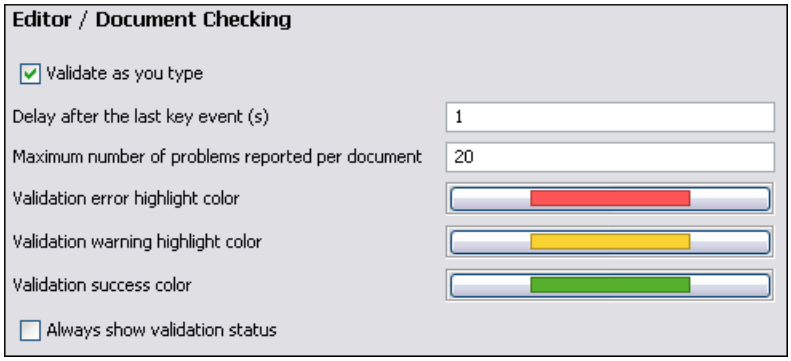
On large documents, spell checking the entire content may take a lot of time.

Default language	The default language combo allows you to choose the language used by default.
XML language attributes	Options in this subsection control the way the attributes *lang* and *xml:lang* change the language used for check spelling. • **Obey "lang" and "xml:lang" attributes** - when checked the value of these attributes is used as check spelling language inside the content of the element where they are present. • **When these attributes are missing** the language used is controlled by the two radio buttons. The two options are to *Use the default language* or *Do not check* the spelling.
XML spell checking in	These options allow the user to specify if the spell checker will be enabled inside Comments, Attribute values, Text and CDATA sections.
Case sensitive	When checked, operations ignore capitalization errors.
Ignore mixed case words	When checked, operations do not check words containing case mixing (e.g. "SpellChecker").
Ignore words with digits	When checked, the Spell Checker does not check words containing digits (e.g. "b2b").
Ignore Duplicates	When checked, the Spell Checker does not signal two successive identical words as an error.
Ignore URL	When checked, ignores words looking like URL or file names (e.g. "www.oxygenxml.com" or "c:\boot.ini") .
Check punctuation	When checked, punctuation checking is enabled: misplaced white space and wrong sequences, like a dot following a comma, are detected.
Enable auto replace	Enables the "Replace Always" feature.
Allow compounds words	When checked, all words formed by concatenating two legal words with an hyphen are accepted. If the language allows it, two words concatenated without hyphen are also accepted.
Allow general prefixes	When checked, a word formed by concatenating a registered prefix and a legal word is accepted. For example if "mini-" is a registered prefix, accepts "mini-computer".
Allow file extensions	When checked, accepts any word ending with registered file extensions (e.g. "myfile.txt", "index.html" etc.).
Suggestion	This option indicates the type of spell checker accuracy, which may be: "Favour speed over quality", "Normal" and "Favour quality over speed".

Document Checking

The Document Checking preferences panel is opened from menu Options → Preferences+Editor+Document Checking

Figure 20.22. Document Checking preferences panel

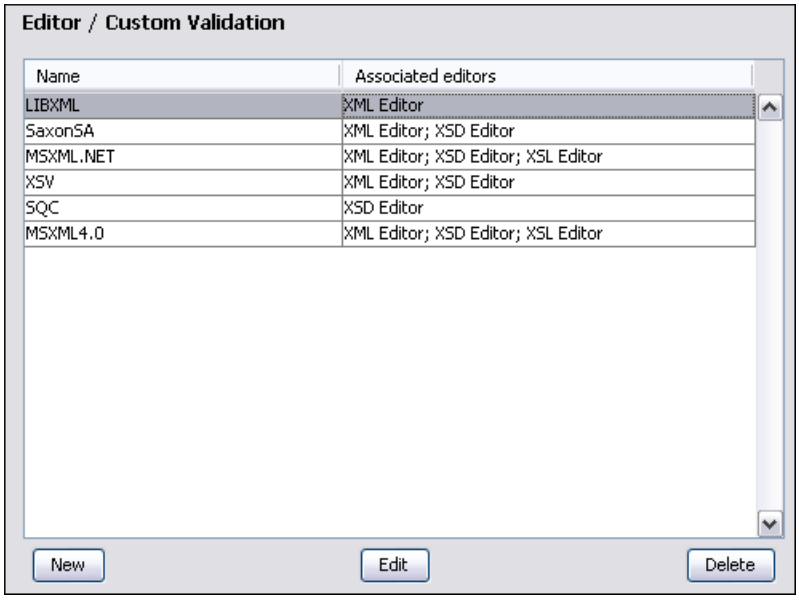


Validate as you type	Validation of edited document is executed as the document is modified by editing in <oXygen/>.
Delay after the last key event (s)	The period of keyboard inactivity which starts a new validation (in seconds).
Maximum number of errors reported per document	If there are many validation errors the process of marking them in the document is long. You should limit the maximum number of reported errors with this setting to keep the time for error marking short
Validation error highlight color	The color used to mark validation errors in the document.
Validation warning highlight color	The color used to mark validation warnings in the document.
Validation success color	The color used to mark the success of the validation in the vertical ruler bar.
Always show validation status	If this option is checked the line at the bottom of the editor panel which presents the message of the current validation error is always visible. This is useful to avoid scrolling problems when *Validate as you type* is enabled and the vertical scroll bar may change position when the document is edited and the line with the validation error message is made visible.

Custom Validation

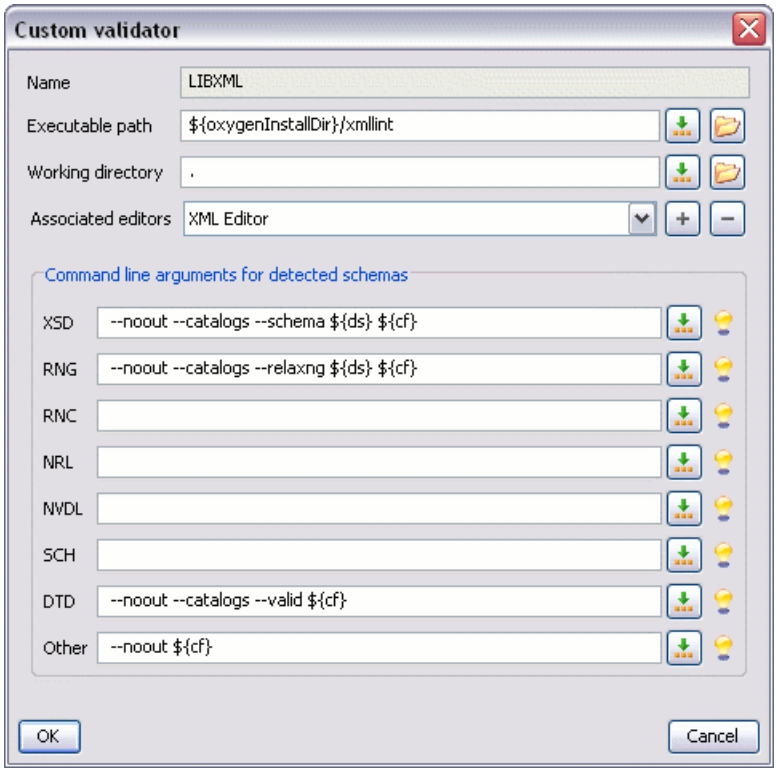
The Custom Validation preferences panel is opened from menu Options → Preferences+Editor+Custom Validation

Figure 20.23. Custom Validation preferences panel



If you want to add a new custom validation tool or edit the properties of an exiting one you can use the Custom Validator dialog displayed by pressing New or Edit buttons.

Figure 20.24. Custom validator dialog



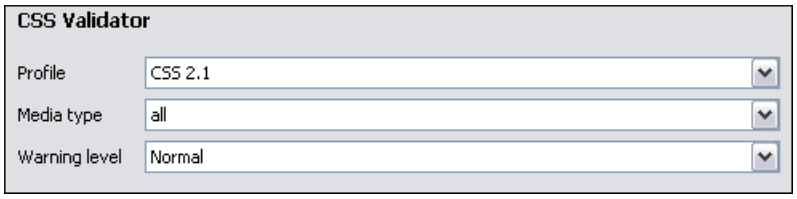
Name — The name of the custom validation tool displayed in the External Validation toolbar

Executable path	The path to the executable file of the external validation tool. You can insert here editor variables like ${home}, ${pd}, etc.
Working directory	The working directory of the external validation tool. The following editor variables can be used: ${home} The path to user home directory ${pd} Project directory ${oxygenInstallDir} Oxygen installation directory
Associated editors	The editors which can perform validation with the external tool.
Command line arguments for detected schemas	Command line arguments used to validate the current edited file against different types of schema (W3C XML Schema, Relax NG full syntax, Relax NG compact syntax, Namespace Routing Language, Schematron, DTD, other schema type). The arguments can include any custom switch (like -rng) and the editor variables: ${cf} The path of the currently edited file ${cfu} Path of current file (URL) ${ds} The path of detected schema file ${dsu} The path of detected schema file (URL)

CSS Validator

The CSS Validator preferences panel is opened from menu Options → Preferences+CSS Validator

Figure 20.25. CSS Validator preferences panel



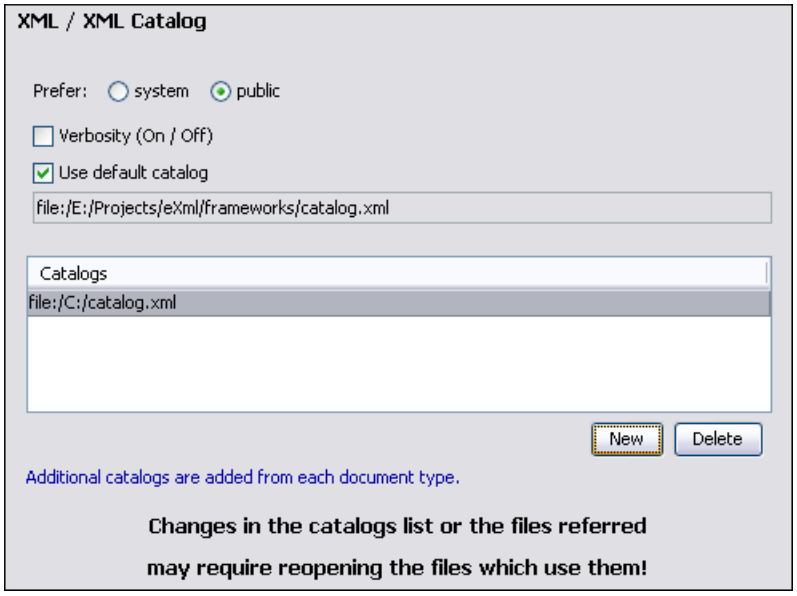
Profile	Choose one of the available validation profiles: CSS 1, CSS 2, CSS 2.1, CSS 3, SVG, SVG Basic, SVG Tiny, Mobile, TV Profile, ATSC TV Profile
Media Type	Choose one of the available mediums: all, aural, braille, embossed, handheld, print, projection, screen
Warning Level	Set the minimum severity level for reported validation warnings. It is one of: all, normal, most important, no warnings.

XML

XML Catalog

The XML Catalog preferences panel is opened from menu Options → Preferences+XML+XML Catalog

Figure 20.26. The XML Catalog preferences panel



The Prefer option is used to specify if <oXygen/> will try to resolve first the PUBLIC or SYSTEM reference using the specified XML catalogs. If a PUBLIC reference is not mapped in any of the 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 is used to control the output of such messages. By default it is not selected.

If the Use default catalog option is checked the first XML catalog which <oXygen/> will use to resolve system IDs at document validation and URI references at document transformation will be a default built-in catalog which maps such references to the built-in local copies of the local DocBook and TEI frameworks and the schemas for XHTML, SVG and JSP documents.

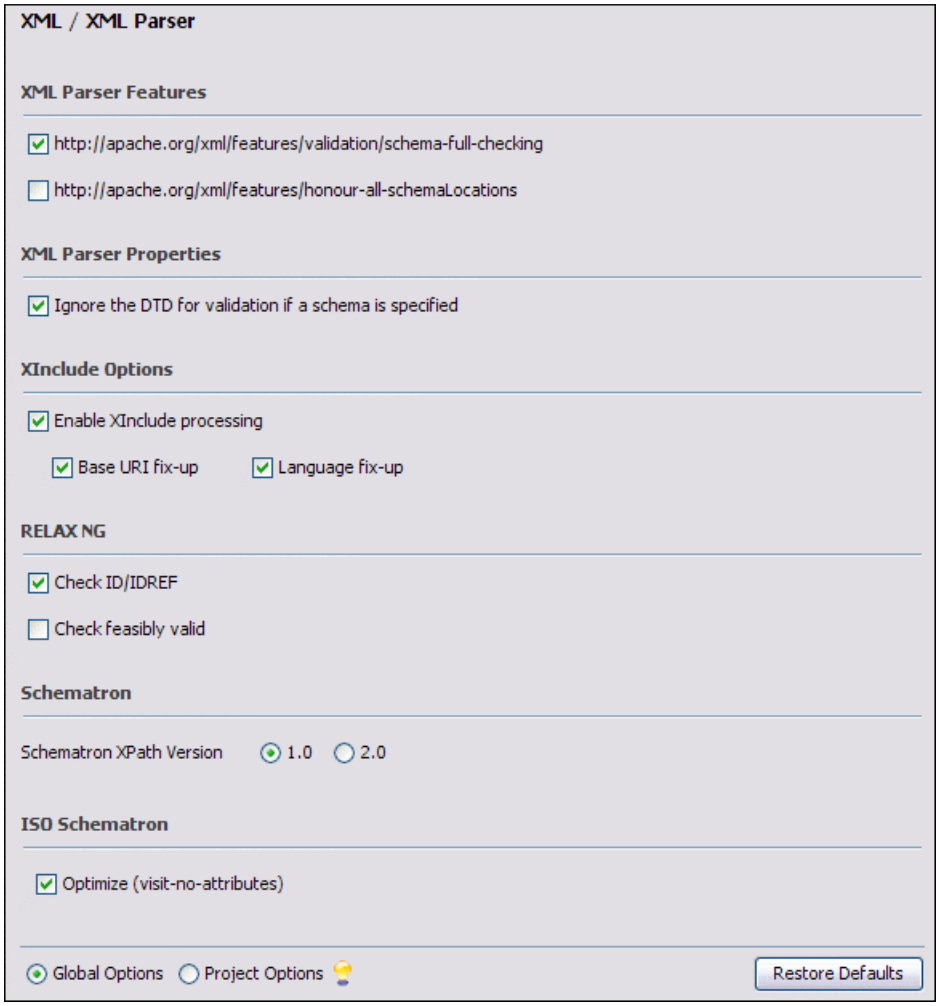
You can also add or configure catalogs for each of the defined document types from Document Type Association preferences page.

When you add/delete or edit an XML catalog to/from the list you must sometimes reopen the current edited files which use the modified catalog so that the changes take full effect.

XML Parser

The XML Parser preferences panel is opened from menu Options → Preferences+XML+XML Parser

Figure 20.27. The XML Parser preferences panel



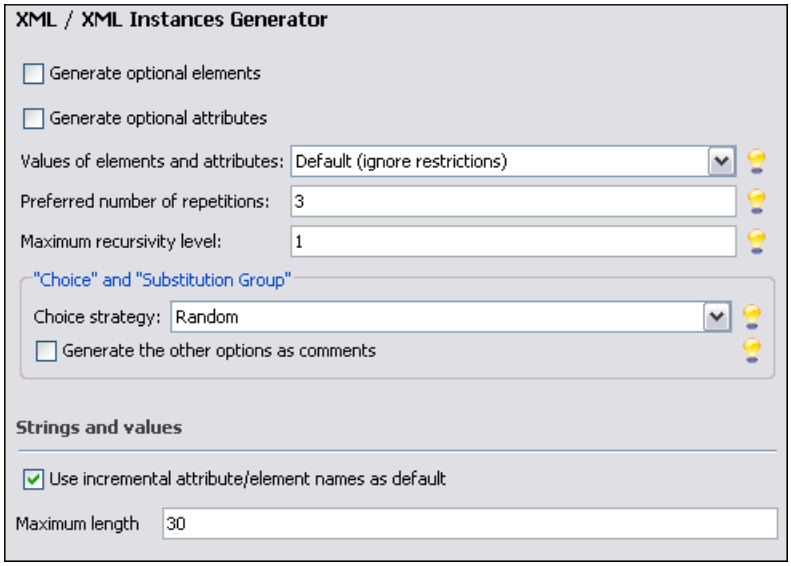
http://apache.org/xml/features/validation/schema	This option sets the 'schema' feature to true.
http://apache.org/xml/features/validation/schema-full-checking	This option sets the 'schema-full-checking' feature to true.
http://apache.org/xml/features/validation/honour-all-schema-location	This option sets the 'honour-all-schema-location' feature to true. This means all the schemas that are imported for a specific namespace are used to compose the validation model. If this is false, only the first schema import is taken into account.
Ignore the DTD for validation if a schema is specified	This option forces validation against a referred schema (XML Schema, Relax NG schema, Schematron schema) even if the document includes also a DTD declaration. It is useful when the DTD declaration is used to declare entities and the schema reference is used for validation.
Enable XInclude processing	Enable XInclude processing - if checked the XInclude support in <oXygen/> is turned on.

Base URI fix-up	[Xerces XML Parser documentation:] 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	[Xerces XML Parser documentation:]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.
Check ID/IDREF	Checks the ID/IDREF matches when the Relax NG document is validated.
Check feasibly valid	Checks the Relax NG to be feasibly valid when this document is validated.
Schematron XPath Version	1.0 - Allows XSLT 1.0 expressions for Schematron 1.5 assertion tests. 2.0 - Allows XSLT 2.0 expressions for Schematron 1.5 assertion tests.
Optimize (visit-no-attributes)	If your ISO Schematron assertion tests do not contain the attributes axis you should check this option for faster ISO Schematron validation.

XML Instances Generator

The XML Instances Generator preferences panel is opened from menu Options → Preferences+XML+XML Instances Generator

Figure 20.28. The XML Instances Generator preferences panel

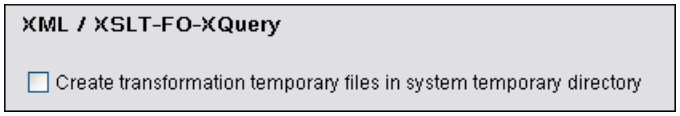


Generate optional elements	If checked the elements declared optional in the schema will be generated in the XML instance
Generate optional attributes	If checked the attributes declared optional in the schema will be generated in the XML instance
Values of elements and attributes	Specifies what values are generated in elements and attributes of the XML instance. It can have one of the values: None (no values for elements and attributes), Default (the value is like 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.
Choice strategy	For choice element models specifies what choice will be generated in the XML instance. It can be First (the first choice is generated) or Random (a random choice is generated).
Generate the other options as comments	If checked the other options of the choice element model which are not selected will be generated inside a comment in the XML instance.
Use incremental attribute/element names as default	If checked the value of an element/attribute is like the name of that element/attribute. For example the values of a elements 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.

XSLT/FO/XQuery

The XSLT/FO/XQuery preferences panel is opened from menu Options → Preferences+XML+XSLT/FO/XQuery

Figure 20.29. The XSLT/FO/XQuery preferences panel

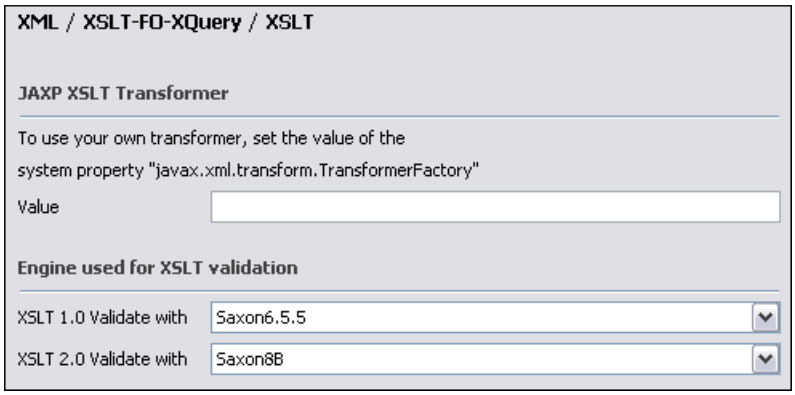


Check the option *Create transformation temporary files in system temporary directory* when creating transformation temporary files in the same folder as the source of the transformation breaks the transformation, for example the transformation processes all the files located in the same folder as the source of the transformation, which will include the temporary files, which you probably do not want.

XSLT

The XSLT preferences panel is opened from menu Options → Preferences+XML+XSLT/FO/XQuery+XSLT

Figure 20.30. The XSLT preferences panel



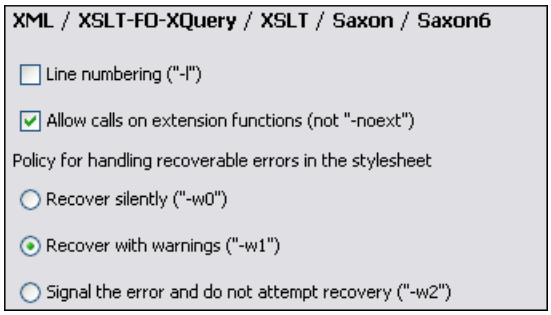
If you want to use an XSLT transformer different than the ones that ship with <oXygen/> namely Apache Xalan and Saxon all you have to do is to specify the name of the transformer's factory class which <oXygen/> will set as the value of the Java property "javax.xml.transform.TransformerFactory". To perform an XSLT transformation with Saxon 7 for instance you have to place the Saxon 7 jar file in the <oXygen/> libraries directory (the *lib* subdirectory of the installation directory), set "net.sf.saxon.TransformerFactoryImpl" as the property value and select JAXP as the XSLT processor in the transformation scenario associated to the transformed XML document.

Value	Allows the user to enter the name of the transformer factory Java class.
XSLT 1.0 Validate with	Allows the user to set the XSLT Engine used for validation of XSL 1.0 documents.
XSLT 2.0 Validate with	Allows the user to set the XSLT Engine used for validation of XSL 2.0 documents.

Saxon6

The Saxon 6 preferences panel is opened from menu Options → Preferences+XML+XSLT/FO/XQuery+XSLT+Saxon+Saxon 6

Figure 20.31. The Saxon 6 XSLT preferences panel



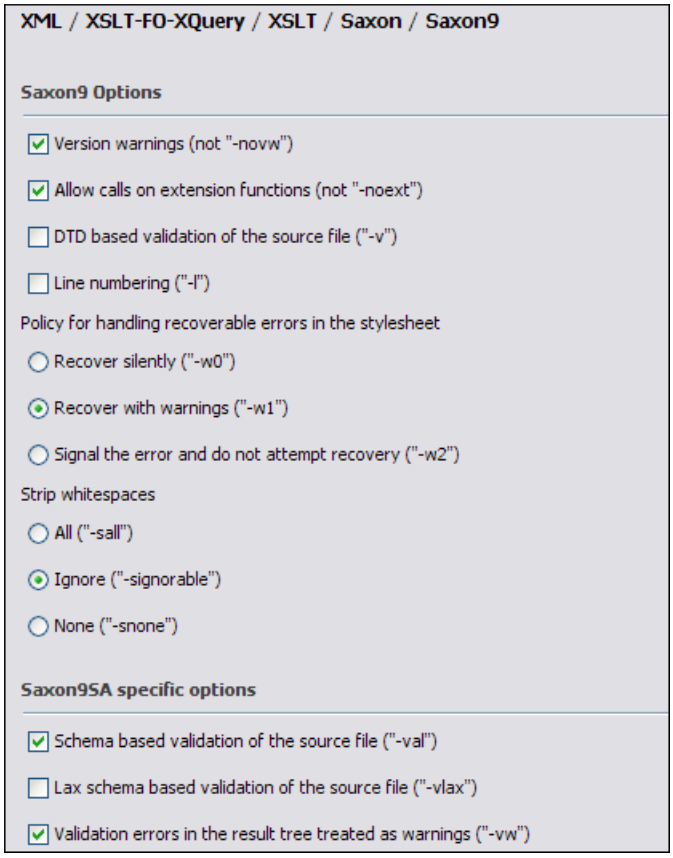
- Line numbering: If checked line numbers are maintained for the source document.
- Allow calls on extension functions: If checked external functions called is allowed. Not checking this is recommended in an environment where untrusted stylesheets may be executed. Also disables user-defined extension elements, together with the writing of multiple output files, all of which carry similar security risks.
- Policy for handling recoverable errors in the stylesheet: Allows the user to choose how dynamic errors will be handled. Either one of the following options can be selected: recover silently, recover with warnings or signal the error and do not attempt recovery.

Saxon9

The Saxon 9 preferences panel is opened from menu Options → Preferences+XML+XSLT/FO/XQuery+XSLT+Saxon+Saxon 9

The XSLT options which can be configured for the Saxon 9 transformer (both the Basic and the Schema Aware versions) are:

Figure 20.32. The Saxon 9 XSLT preferences panel



- Version warnings: If checked a warning will be output when running an XSLT 2.0 processor against an XSLT 1.0 stylesheet. The XSLT specification requires this to be done by default.
- Allow calls on extension functions: If checked external functions called is allowed. Not 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.
- DTD based validation of the source file: If checked XML source documents are validated against their DTD.
- Line numbering: If checked line numbers are maintained for the source document.
- Policy for handling recoverable errors in the stylesheet: Allows the user to choose how dynamic errors will be handled. Either one of the following options can be selected: recover silently, recover with warnings or signal the error and do not attempt recovery.
- Strip whitespaces feature can be one of the three options: All, Ignorable, None.

  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 — 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 — strips no whitespace before further processing. (However, whitespace will still be stripped if this is specified in the stylesheet using xsl:strip-space).

Saxon9SA specific options

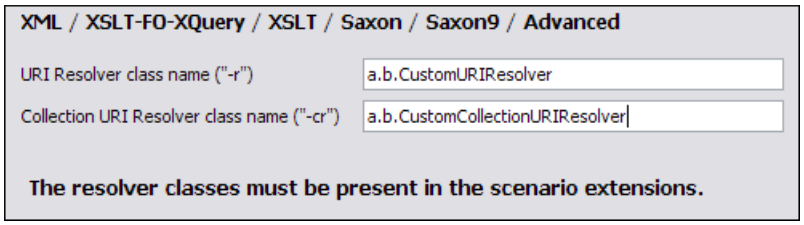
- Schema based validation of the source file: This determines whether source documents should be parsed with schema-validation enabled.
- Lax schema based validation of the source file: This determines whether source documents should be parsed with schema-validation enabled.
- Validation errors in the result tree treated as warnings: If checked, all validation errors are treated as warnings, otherwise they are treated as fatal.

Saxon9 Advanced options

The Saxon 9 Advanced preferences panel is opened from menu Options → Preferences+XML+XSLT/FO/XQuery+XSLT+Saxon+Saxon 9+Advanced

The advanced XSLT options which can be configured for the Saxon 9 transformer (both the Basic and the Schema Aware versions) are:

Figure 20.33. The Saxon 9 XSLT Advanced preferences panel

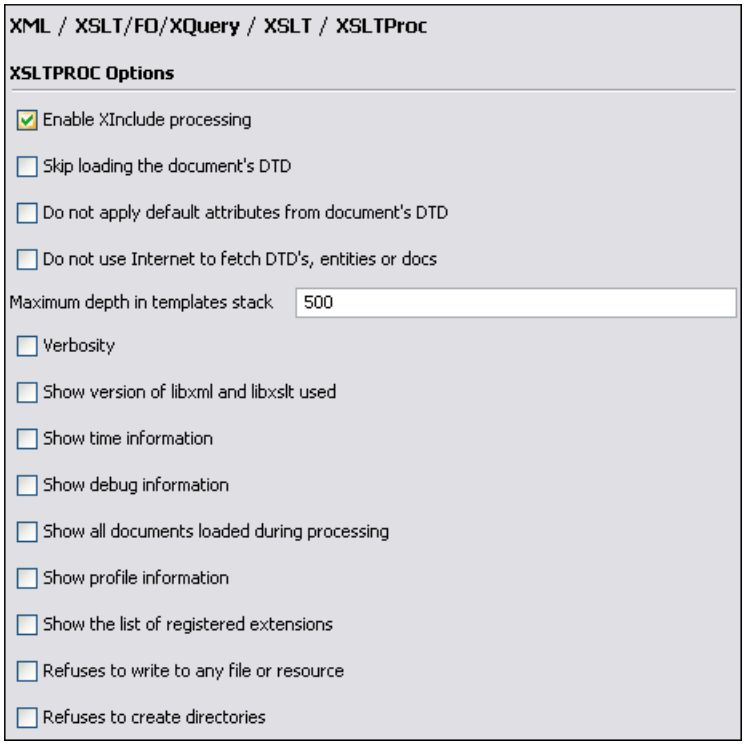


- URI Resolver class name: Allows the user to specify a custom implementation for the URI resolver used by the XSLT Saxon 9 transformer ("-r" option when run from the command line). The class name must be fully specified and the corresponding jar or class extension must be configured from the dialog for configuring the XSLT extension for the particular scenario
- Collection URI Resolver class name: Allows the user to specify a custom implementation for the Collection URI resolver used by the XSLT Saxon 9 transformer ("-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 scenario

XSLTProc

The XSLTProc preferences panel is opened from menu Options → Preferences+XML+XSLT/FO/XQuery+XSLT+XSLTProc

Figure 20.34. The XSLTProc preferences panel



The options of the XSLTProc processor are the same as the ones available in the command line for the XSLTProc processor:

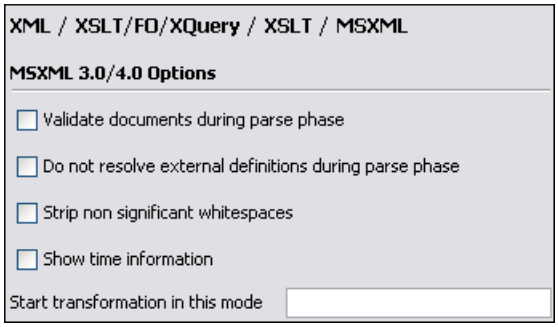
Enable XInclude processing	If checked XInclude references will be resolved when XSLTProc is used as transformer in the transformation scenario.
Skip loading the document's DTD	If checked the DTD specified in the DOCTYPE declaration will not be loaded.
Do not apply default attributes from document's DTD	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 the limit of maximum templates 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/> 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/> will display in the Warnings view the URL of all the files loaded during transformation.
Show profile information	If checked <oXygen/> will display in the Warnings view a table with all the matched templates, and for each template: the match XPath expression, template name, number of template modes, number of calls, execution time.
Show the list of registered extensions	If checked <oXygen/> 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

Figure 20.35. The MSXML preferences panel



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: [http://msdn.microsoft.com/library/default.asp?url=/library/en-us/dnxml/html/msxsl.asp]

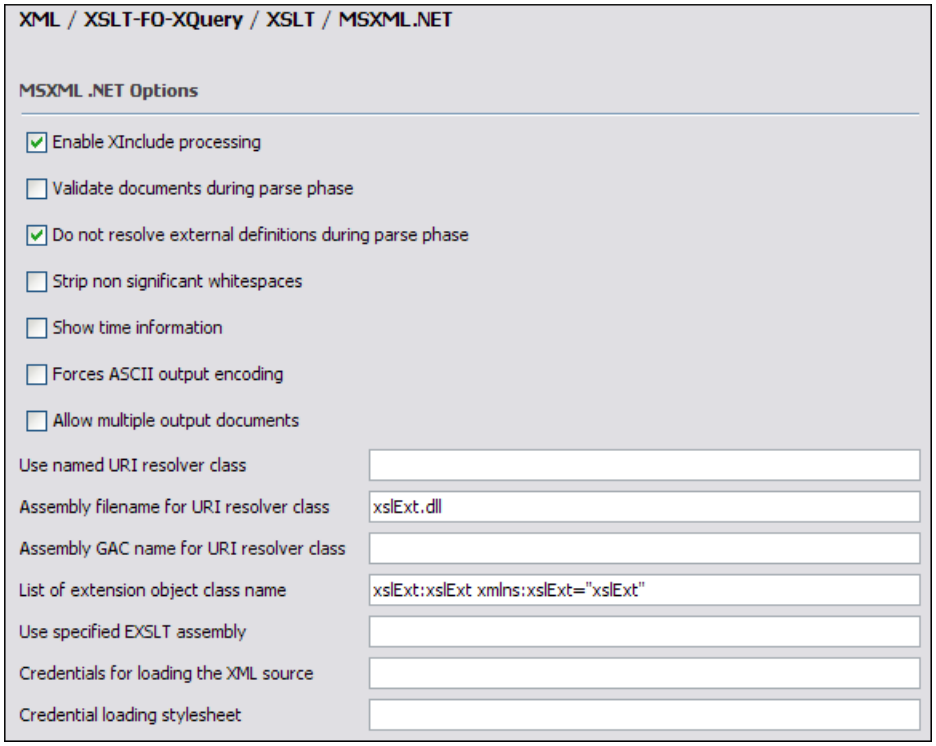
Validate documents during parse phase	If checked and either the source or style sheet document has a DTD or schema against which its content should be checked, validation is performed.
Do not resolve external definitions during parse phase	By default, MSXSL instructs the parser to resolve external definitions 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 strip 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: time to load, parse, and build the input document; time to load, parse, and build the style sheet document; time to compile the style sheet in preparation for the transformation; time to execute the style sheet.
Start transformation in this mode	Although style sheet 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

Figure 20.36. The MSXML.NET preferences panel



The options of the MSXML.NET processor are the same as the ones available in the command line for the MSXML.NET processor: [http://www.xmllab.net/Products/nxslt/tabid/62/Default.aspx]

Enable XInclude processing	If checked XInclude references will be resolved when XSLTProc is used as transformer in the transformation scenario.
Validate documents during parse phase	If checked and either the source or style sheet document has a DTD or schema against which its content should 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.)
Strip non-significant whitespaces	If checked strip 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: time to load, parse, and build the input document; time to load, parse, and build the style sheet document; time to compile the style sheet in preparation for the transformation; time to execute the style sheet.
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. [http://www.exslt.org/exsl/elements/document/index.html]
Use named URI resolver class	This option allows to specify a custom URI resolver class to resolve URI references in xsl:import/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. [http://msdn.microsoft.com/library/default.asp?url=/library/en-us/cpguide/html/cpconspecifyingfullyqualifiedtypenames.asp] 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 [http://msdn.microsoft.com/library/default.asp?url=/library/en-us/cpguide/html/cpconglobalassemblycache.asp] (GAC), where the specified resolver class can be found. See MSDN for more info about partial assembly names. [http://msdn.microsoft.com/library/default.asp?url=/library/en-us/cpguide/html/cpcontheassemblyreference.asp] 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 as when providing XSLT parameters. [http://www.xmllab.net/Products/nxslt/tabid/62/Default.aspx#parameters]

Use specified EXSLT assembly

MSXML.NET supports rich library of the EXSLT [http://www.exslt.org/] and EXSLT.NET [http://www.xmllab.net/exslt] extension functions via embedded or plugged in EXSLT.NET [http://workspaces.gotdotnet.com/exslt] 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).

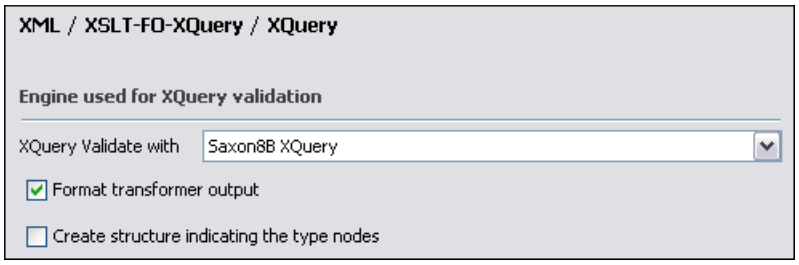
Credential loading stylesheet

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

Figure 20.37. The XQuery preferences panel



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 execution scenario, <oXygen/> uses the processor specified in the scenario. If the processor does not support validation, then the file will not be validated and a warning will be displayed in the results panel. If no scenario is associated then the value from this combo box will be used as validation processor.

Format transformer output

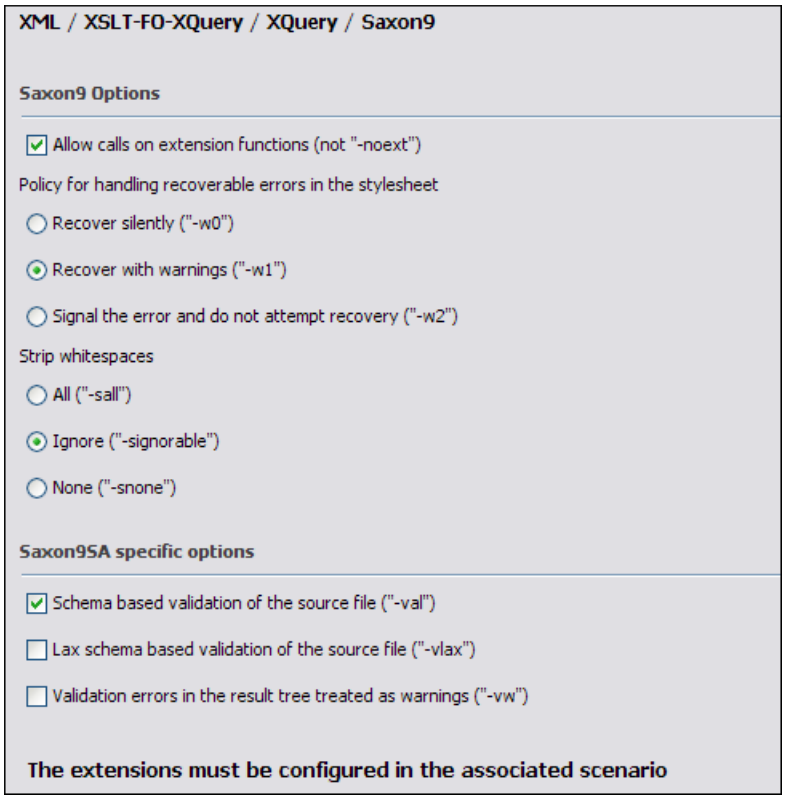
When checked the transformer's output is formatted and indented (pretty printed).

Create structure indicating the type nodes	If checked, <oXygen/> takes the results of a query and creates an XML document containing copies of all items in the sequence, suitably wrapped.

Saxon 9

The XQuery/Saxon 9 preferences panel is opened from menu Options → Preferences+XML+XSLT/FO/XQuery+XQuery+Saxon 9

Figure 20.38. The Saxon XQuery preferences panel



Saxon9 options:

Allow calls on extension functions	If checked external functions called is allowed. Not 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.
Policy for handling recoverable errors in the stylesheet	Allows the user to choose how dynamic errors will be handled. Either one of the following options can be selected: recover silently, recover with warnings or signal the error and do not attempt recovery.
Strip whitespaces	Can have one of the three values: All, Ignore, None. *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

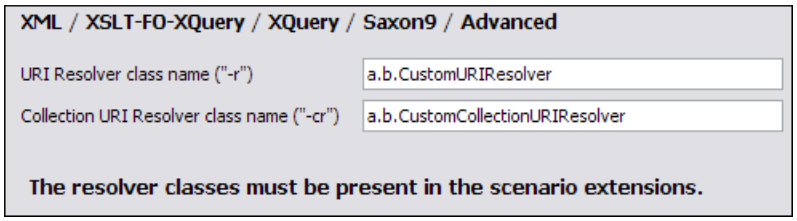
	xml:space attributes in the source document. Whitespace text nodes are ignorable if they appear in elements defined in the DTD or schema as having element-only content. *None* - strips no whitespace before further processing.
Saxon9SA specific options:	
Schema based validation of the source	This determines whether source documents should be parsed with schema-validation enabled.
Lax schema based validation of the source	This determines whether source documents should be parsed with schema-validation enabled.
Validation errors in the result tree treated as warnings	If checked, all validation errors are treated as warnings, otherwise they are treated as fatal.

Saxon9 Advanced options

The XQuery/Saxon 9 Advanced preferences panel is opened from menu Options → Preferences+XML+XSLT/FO/XQuery+XQuery+Saxon 9+Advanced

The advanced XQuery options which can be configured for the Saxon 9 transformer (both the Basic and the Schema Aware versions) are:

Figure 20.39. The Saxon 9 XQuery Advanced preferences panel

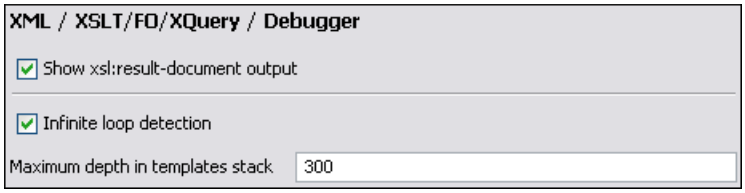


- URI Resolver class name: Allows the user to specify a custom implementation for the URI resolver used by the XQuery Saxon 9 transformer ("-r" option when run from the command line). The class name must be fully specified and the corresponding jar or class extension must be configured from the dialog for configuring the XQuery extension for the particular 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 transformer ("-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 scenario

Debugger

This section explains the settings available for Debugger mode. To display settings select: Options → Preferences → XSLT/FO/XQuery+Debugger

Figure 20.40. The Debugger preferences panel



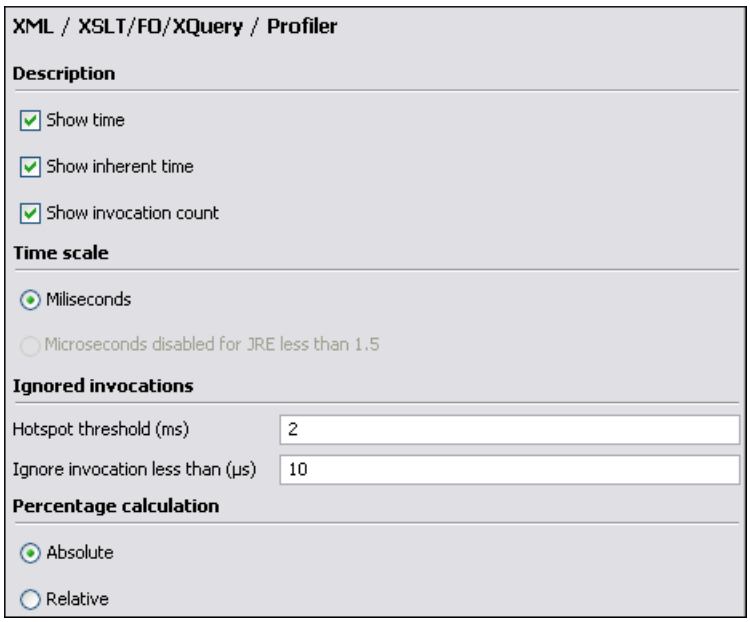
The following settings are available:

Show xsl:result-document output	If checked, the debugger presents the output of xsl: result-document instruction 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	How many templates (`<xsl:templates>`) instructions can appear on the current stack. This setting is used by the infinite loop detection.

Profiler

This section explains the settings available for XSLT Profiler mode. To display settings select Options → Preferences → XML → XSLT/FO/XQuery+Profiler (see the section called “Debugger”).

Figure 20.41. The Profiler preferences panel



The following settings are available:

Show time	Show the total time that was spent in the node.
Show inherent time	Show the inherent time that was spent in the node.

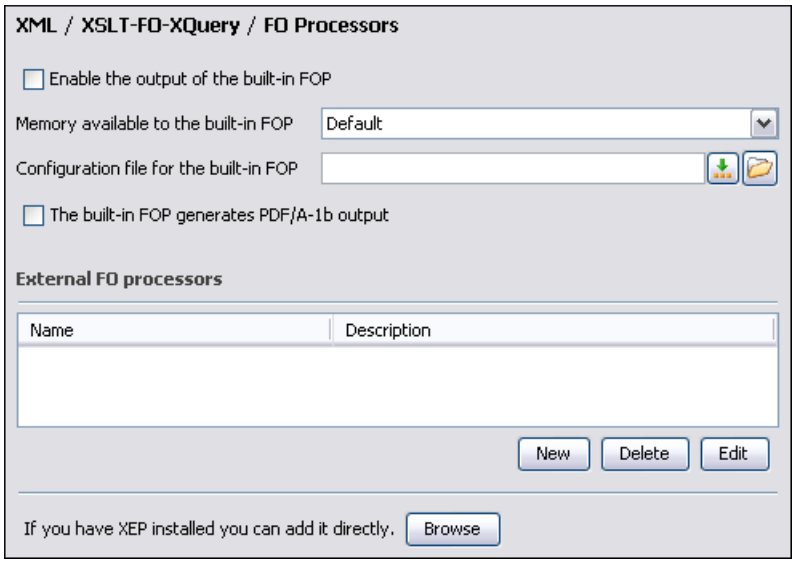
Show invocation count	Show how many times the node was called in this particular call sequence.
Time scale	The time scale options determine the unit of time measurement, which may be milliseconds (ms) or microseconds (µs).
Hotspot threshold	The threshold below which hot spots are ignored is entered in milliseconds (ms).
Ignore invocation less than	The threshold below which invocations are ignored is entered in microseconds (µs).
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 the built-in formatting objects processor (Apache FOP) the user can use other external processors. <oXygen/> has implemented an easy way to add RenderX XEP as external FO processor if the user has the XEP installed.

The FO Processors preferences panel is opened from menu Options → Preferences+XML+XSLT/FO/XQuery+FO Processors

Figure 20.42. The FO Processors preferences panel

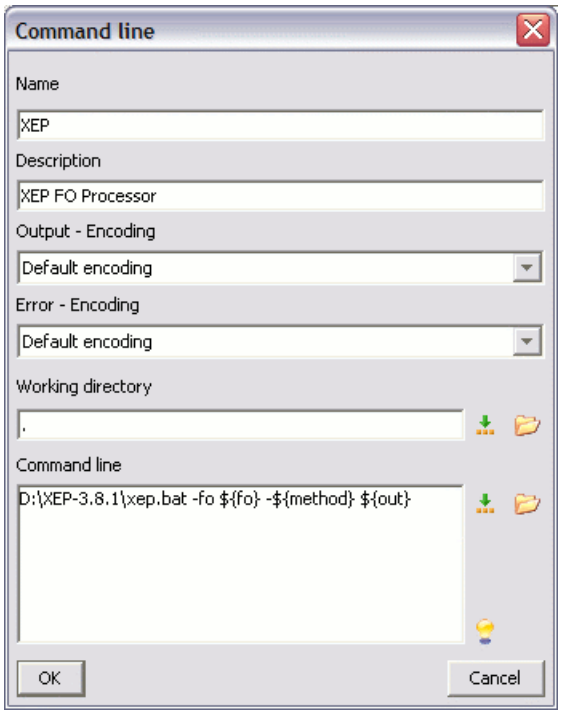


Enable the output of the built-in FOP	When checked all FOP output will be displayed in a results pane at the bottom of the editor window including warning messages about FO instructions not supported by FOP.

Memory available to the built-in FOP	If your FOP transformations fail with an "Out of Memory" error 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 a FOP configuration file, necessary for example to render to PDF using a special true type font a document containing Unicode content.
The built-in FOP 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 *How to Add a Font to the <oXygen/> Built-in FO processor* article available on the oXygen documentation page [http://www.oxygenxml.com/documentation.html]. **Note** You cannot use the *<filterList>* key in the configuration file. FOP will generate the following error: *The Filter key is prohibited when PDF/A-1 is active*.

The users can configure the external processors for use with <oXygen/> in the following dialog.

Figure 20.43. The external FO processor configuration dialog

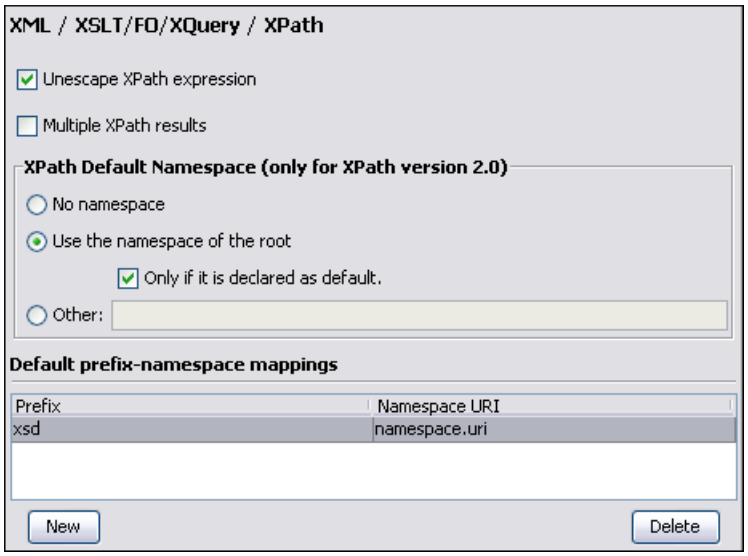


Name	The name that will be displayed in the list of available FOP processors on the FOP tab of the Transforming Configuration dialog.
Description	The description of the FO processor displayed in the Preferences->FO Processors option.
Output Encoding	The encoding used for the output stream of the FO processor which will be displayed in a results panel at the bottom of the <oXygen/> window.
Error Encoding	The encoding used for the error stream of the FO processor which will be displayed in a results panel at the bottom of the <oXygen/> window.
Working directory	The directory in which the intermediate and final results of the processing will be stored. Here you can use one of the following editor variables: ${home} The path to user home directory. ${cfd} The path of current file directory. ${pd} The project directory.
Command line	The command line that will start the FO processor, specific to each processor. Here you can use one of the following editor variables: ${method} The FOP transformation method (pdf, ps, txt). ${fo} The input FO file. ${out} The output file.

XPath

The XPath preferences panel is opened from menu Options → Preferences+XML+XSLT/FO/XQuery+XPath

Figure 20.44. The XPath preferences panel



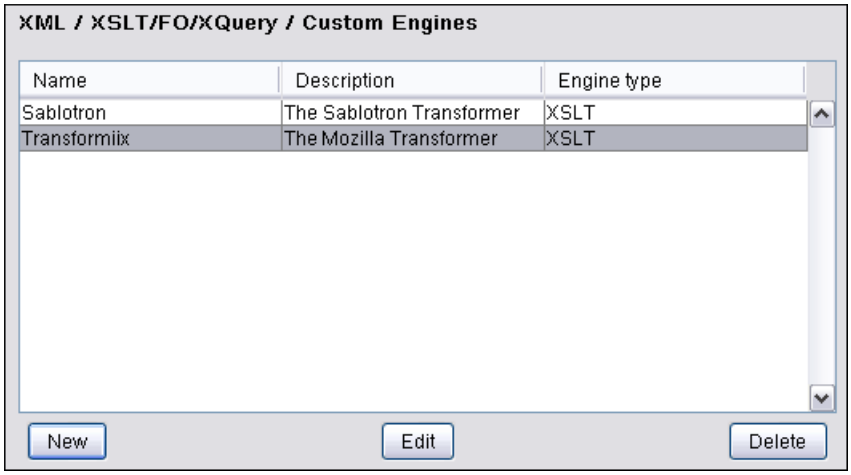
Unescape XPath expression	When checked, unescapes the entities found in the XPath expression. For example the expression `//varlistentry[starts-with(@os,'s')]` is equivalent with `//varlistentry[starts-with(@os,'s')]` .
Multiple XPath results	When checked, results of different XPath expressions executed on the same file are written in separate result set tabs.
No namespace	If checked <oXygen/> will consider unprefixed element names in XPath expressions evaluated in the XPath console as belonging to no namespace.
Use the namespace of the root	If checked <oXygen/> will consider unprefixed element names in XPath expressions evaluated in the XPath console as belonging to the same namespace as the root element of the document.
Only if it is declared as default	If checked the namespace of the root element will be applied to the unprefixed elements in the XPath console only if it is set as default namespace on the root element.
Other	The user has the possibility to enter here the namespace of the unprefixed elements used in the XPath console
Default prefix-namespace mappings	Associates prefixes to namespaces. These mappings are useful when applying an XPath in XPath console and you don't have to define these mappings for each document separately. The New button creates an editable prefix-namespace mapping. The Delete button deletes the selected mapping.

Custom Engines

One can configure other transformation engines than the ones which come with the <oXygen/> distribution. Such an external engine can be used for XSLT / XQuery transformations within <oXygen/>, in the Editor perspective, and is available in the list of engines in the dialog for editing transformation scenarios. However it cannot be used in the Debugger perspective.

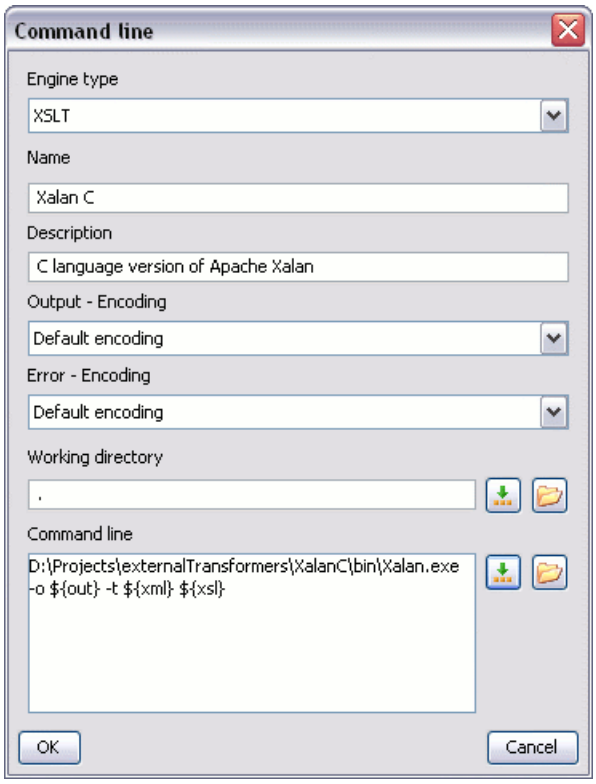
The Custom Engines preferences panel is opened from menu Options → Preferences+XML+XSLT/FO/XQuery+Custom Engines

Figure 20.45. Configuration of custom transformation engines



The following parameters can be configured for a custom engine:

Figure 20.46. Parameters of a custom transformation 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	Text description of the transformer

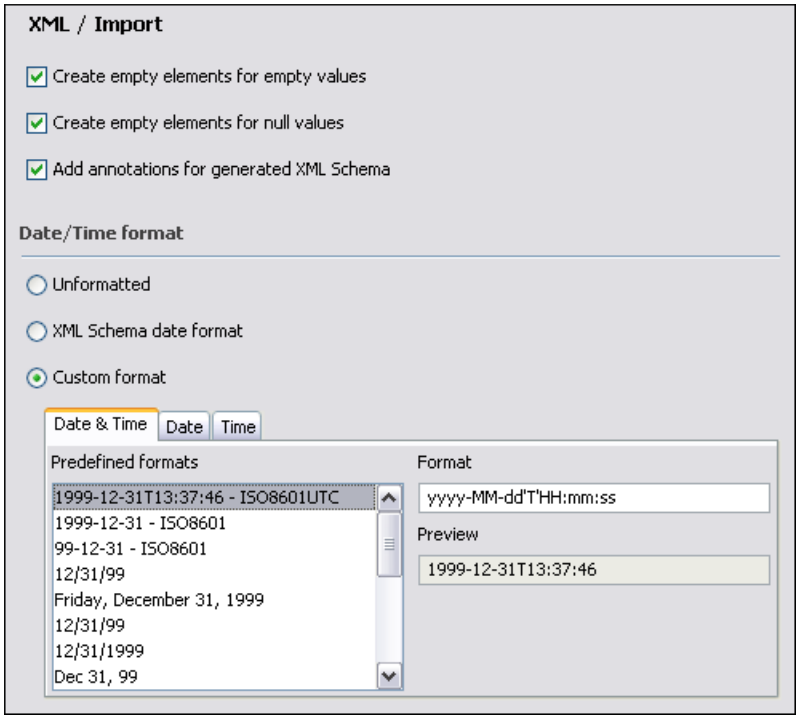
Output Encoding	The encoding of the characters sent to the output stream of the transformer
Error Encoding	The encoding of the characters sent to the error stream of the transformer
Working directory	The start directory of the transformer executable program. The following editor variables are available for making the path to the working directory independent of the input XML file: • ${home} - 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/> install directory
Command line	The command line that must be executed by <oXygen/> to perform a transformation with the engine. The following editor variables are available for making the items of the command line (the transformer executable, the input files) independent of the input XML file: • ${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

Import

The Import preferences panel is opened from menu Options → Preferences+XML+Import

Here it is configured how empty values and null values are handled when they are encountered in an import operation.

Figure 20.47. The XML Import preferences panel



Create empty elements for empty values	If this option is enabled an empty value from a database column or from a text file will be imported as an empty element.
Create empty elements for null values	If this option is enabled a null value from a database column will be imported as an empty element.
Add annotations for generated XML Schema	If checked, the generated XML Schema will contain an annotation for each of the imported table's columns. The documentation inside the annotation tag will contain the remarks of the database columns (if available) and also information about the conversion between the column type and the generated XML Schema type.

Date/Time format

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.

Unformatted	If this option is selected the date and time formats specific to the database will be used for import. When importing data from Excel a string representation of date or time values will be used. The type used in the generated XML Schema will be xs:string.
XML Schema date format	If this option is checked, the XML Schema specific format ISO8601 will be 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 will be xs:datetime, xs:date and xs:time.

Custom format	If this is selected, the user can define a custom format for date/time values or choose from 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 20.1. 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 + -

Hours: Digit - Digit Digit

Minutes: Digit Digit

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: Digit Digit

  TwoDigitHours must be between 00 and 23.

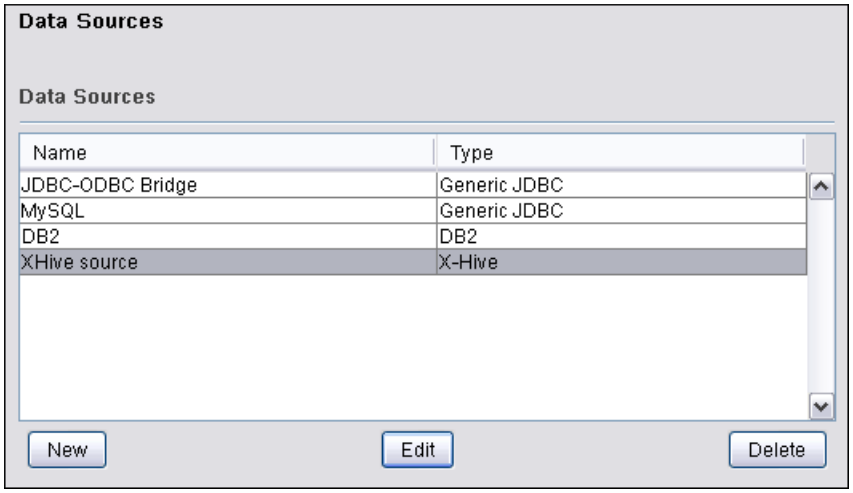
Data Sources

The Data Sources preferences panel is opened from menu Options → Preferences+Data Sources

Configuration of Data Sources

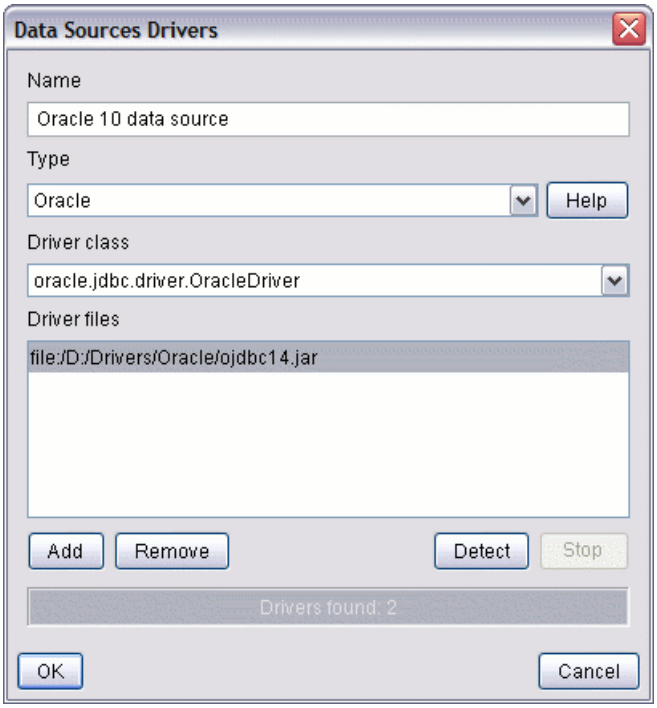
Here you can configure data sources and connections to relational databases as well as native XML databases. You can check the list of drivers (http://www.oxygenxml.com/database_drivers.html) available for the major database servers.

Figure 20.48. The Data Sources preferences panel



New Opens the Data Sources Drivers dialog, allowing you to configure a new driver.

Figure 20.49. The Data Sources Drivers dialog

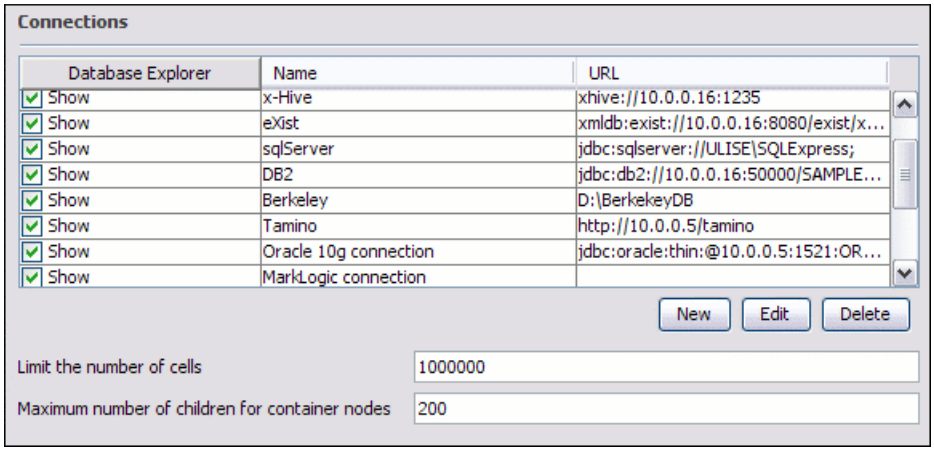


Name	Allows you to name the new data source driver.
Type	Select data source type from the supported driver types.
Help	Open the User Manual at the list of the sections where the configuration of supported data sources is explained and the URLs for downloading the database drivers are specified.
Driver Class	Provide the Driver Class for the data source driver
Add	Adds the driver class library.
Remove	Removes driver class library from the list.
Detect	Detects driver candidates.
Stop	Stops the detection of the driver candidates.

Edit — Opens the Data Sources Drivers dialog, allowing you to edit 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 Data Source Driver (in order to delete a data source , there must be no connections using that data source driver).

Figure 20.50. The Connections preferences panel



Note

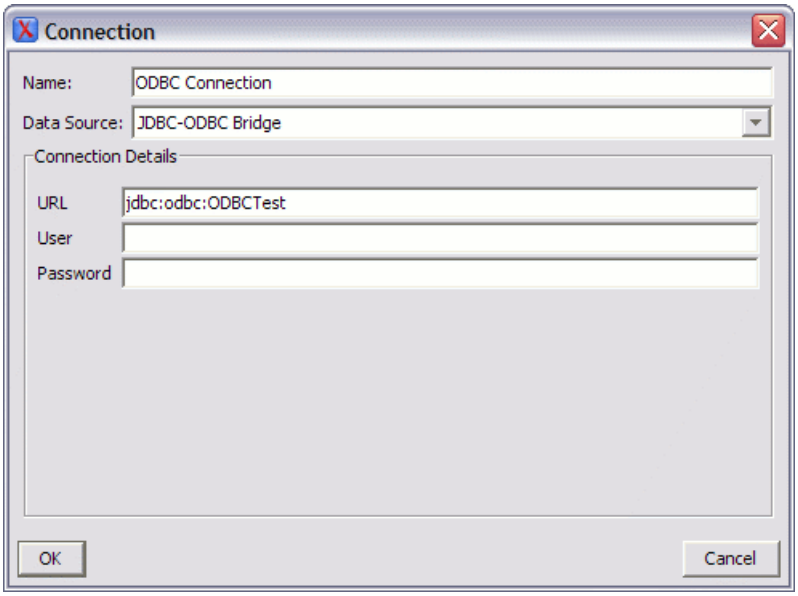
Checked connections will be visible in the *Database Explorer View*.

For performance issues, you can set the maximum number of cells that will be displayed in the Table Explorer view. 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 and Tamino databases a container can hold millions of resources. If the node corresponding to such a container in the Database 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 of the Database Explorer view. This limited number is set in the option *Maximum number of children for container nodes*. The default value is 200 nodes.

New Opens the Connection dialog.

Figure 20.51. The Connection dialog



Name — Allows you to name the new connection.

Data Source — Select 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 used to connect.

User: — Provide the database user .

Password: — Provide the database password.

Host: — Provide the host address.

Port: — Provide a port to connect.

XML DB URI: — Provide the database URI to connect.

Database: — Provide the initial database.

Collection: — Select one of the available collections for the specified data source.

Environment home directory: — Specify the home directory for a Berkeley database.

Verbosity: — Set the verbosity level for a Berkeley database.

Edit — Opens the Connection dialog, allowing you to edit the selected connection. See above the specifications for the Connection dialog.

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/>

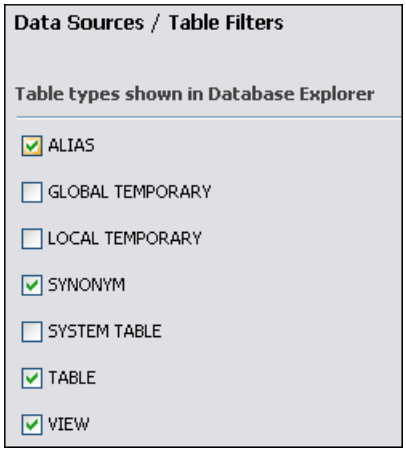
Berkeley DB XML database	Copy the jar files from the Berkeley database install directory to the <oXygen/> install directory as described in the procedure for configuring a Berkeley DB data source.
IBM DB2 Pure XML database	Go to the IBM website: http://www-306.ibm.com/software/data/db2/express/download.html [http://www-306.ibm.com/software/data/db2/express/download.html], 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/> for configuring a DB2 data source.
eXist database	Copy the jar files from the eXist database install directory to the <oXygen/> install directory as described in the procedure for configuring an eXist data source.
MarkLogic database	Download Java and .NET XCC distributions (XCC Connectivity Packages) from http://xqzone.marklogic.com/download/binaries/3.1/MarkXCC.Java-3.1-5.zip [http://xqzone.marklogic.com/download/binaries/3.1/MarkXCC.Java-3.1-5.zip] available on the page http://xqzone.marklogic.com/download/. Details about configuring a MarkLogic data source are here.
Microsoft SQLServer 2005 database	Download the SQL Server 2005 JDBC driver called sqljdbc.jar from the Microsoft website: http://msdn.microsoft.com/data/ref/jdbc/ and use it for configuring an SQL Server data source.
Oracle 10g R2 database	Download the Oracle 10 JDBC driver called ojdbc14.jar from the Oracle website: http://otn.oracle.com/software/tech/java/sqlj_jdbc/index.html [http://otn.oracle.com/software/tech/java/sqlj_jdbc/index.html] and use it for configuring an Oracle data source.
RainingData TigerLogic XDMS database	Copy the jar files from the TigerLogic JDK lib directory from the server side to the <oXygen/> install directory as described in the procedure for configuring a TigerLogic data source.
SoftwareAG Tamino database	Copy the jar files from the SDK\TaminoAPI4J\lib subdirectory of the Tamino database install directory to the <oXygen/> install directory as described in the procedure for configuring a Tamino data source.
X-Hive XML database	Copy the jar files from the X-Hive database install directory to the <oXygen/> install directory as described in the procedure for configuring an XHive 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 table types will be displayed in the *Database Explorer* view.

Figure 20.52. Table Filters Preferences Page



Note

Table types filtering depends on the driver implementation.

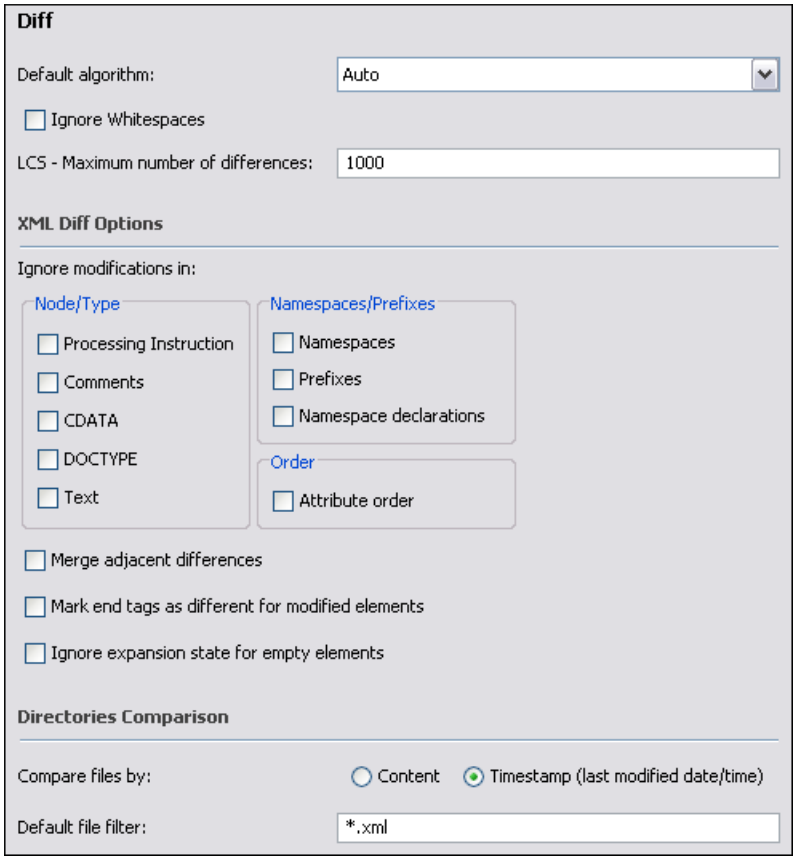
Diff

<oXygen/> offers both directory and file comparison, six different diff algorithms to choose from for file comparison and multiple levels of comparison.

The complete diff solution includes two XML diff algorithms (*XML Fast* and *XML Accurate*), one *Syntax Aware* algorithm that gives very good results on all file types known by <oXygen/> and three all-purpose algorithms: line based, word based and character based. Any algorithm can be used to perform differences on request, but <oXygen/> offers also an automatic selection of the algorithm, selecting the most appropriate one based on the files' content and size.

The Diff preferences panel is opened from menu Options → Preferences+Diff

Figure 20.53. The Diff preferences panel



Perform diff with <oXygen/>

If enabled <oXygen/>'s Diff tool will be used for all diff operations performed on XML documents. Disabling this option will disable <oXygen/>'s Diff tool

Default algorithm

Select from the list the algorithm that will be used as default when you open the Compare files dialog

- *Auto* makes an automatic selection of the diff algorithm, based on the files' content and 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/>, this algorithm computes the differences taking into consideration the syntax of the documents.
- *XML Fast* is designed for XML documents. It works better than XML Accurate on large files, but it is less precise.
- *XML Accurate* is designed for XML documents. It works best on smaller XML files and it is most precise.

Note

XML Fast and XML Accurate work for XML documents. If you'll try to use them for other types of files, you'll be prompted with the message "content not allowed in prolog"

Ignore whitespaces
: This option, if checked, allows the diff algorithm to ignore the whitespaces. 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.

LCS - Maximum number of differences
: This option allows you to specify the maximum number of differences between your documents that you might be interested to see. If the number of differences is larger than the one specified here, you'll be notified by the message "Too many differences".

XML Diff Options
: This set of options allows you to specify the types of differences that will be ignored in the XML Fast and XML Accurate algorithms:

- in node / type:
  - Processing instructions
  - Comments
  - CDATA
  - DOCTYPE
  - Text
- in namespaces / prefixes
  - Namespaces
  - Prefixes
  - Namespace declarations
- in the attributes order

Merge adjacent differences
: If checked, it considers adjacent differences as one and they are presented in this way 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.

Ignore expansion state for empty elements
: If checked, empty elements in both expansion states are considered matched.

For the directories comparison you can specify the criterion for the component files comparison and a default file filter.

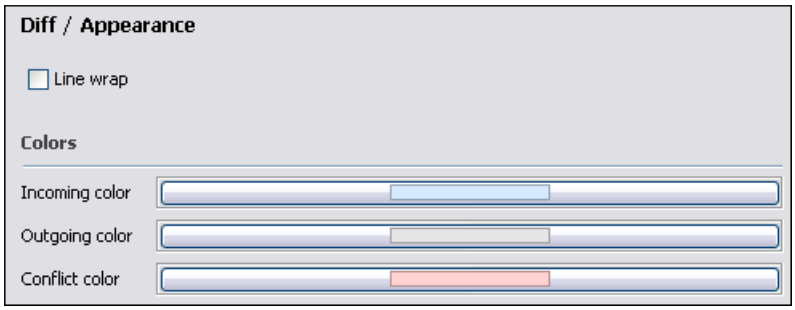
Compare files by:
- Content
- Timestamp (last modified date/time)

Default file filter	specifies the file filter that is set by default in the *File filter* combo box of the Compare Directories window each time this window is opened from the *Tools* menu.

Diff Appearance

The Diff Appearance preferences panel is opened from menu Options → Preferences+Diff+Appearance

Figure 20.54. The Diff 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.

Plugins

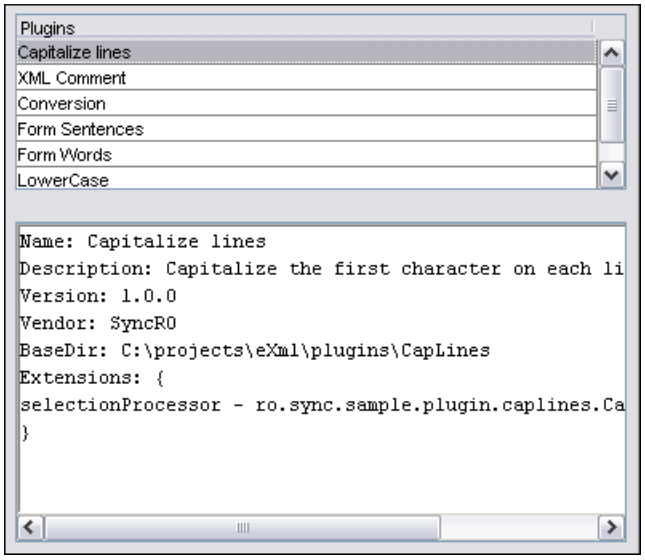
<oXygen/> provides the ability to add plugins that extend the functionality of the application. The plugins are shipped as separate packages; check for new plugins on <oXygen/> site: http://www.oxygenxml.com.

One plugin consists of a separate sub-folder in the Plugins folder in the <oXygen/> installation folder. This sub-folder must contain a valid plugin.xml in accordance with the plugin.dtd file from the Plugins folder.

<oXygen/> automatically detects and loads plugins correctly installed in the Plugins folder and displays them in the Plugin option from the Preferences dialog.

The Plugins preferences panel is opened from menu Options → Preferences+Plugins

Figure 20.55. The Plugins preferences panel



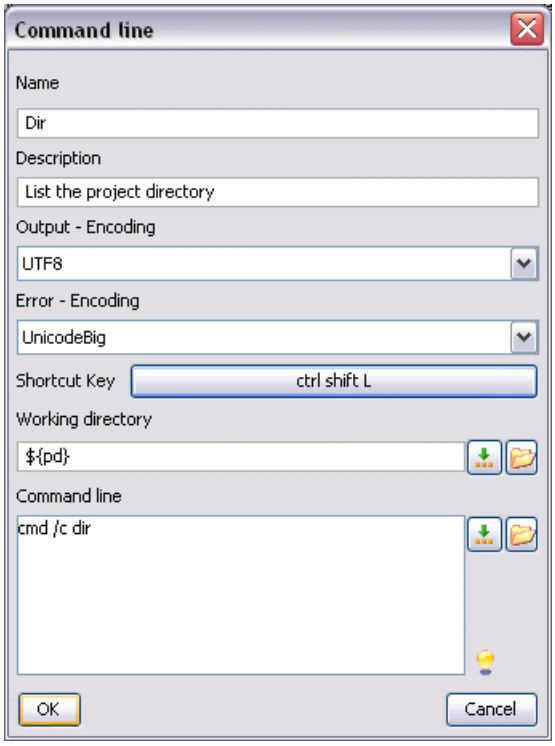
A short description of the plugin can be obtained with a click on the plugin name.

External Tools

The External Tools preferences panel is opened from menu Options → Preferences+External Tools

The user can run within <oXygen/> other tools as if from the command line of the operating system shell. The configuration of such a tool is done in the following dialog.

Figure 20.56. The external tools configuration dialog



Name	The name of the menu entry corresponding to this tool that will be displayed in the External Tools menu and in the external tools combo box on the toolbar.
Description	The description of the tool displayed in the Preferences->External Tools option.
Output Encoding	The encoding that <oXygen/> uses to read the output stream data of the external tool.
Error Encoding	The encoding that <oXygen/> uses to read the error stream data of the external tool.
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: ${home} The path to user home directory. ${cfd} The path of current file directory. ${pd} The project directory.
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.

${dbgXSL}	The path to the current Debugger stylesheet selection.
${home}	The path to user home directory.
${cfn}	The current file name without extension.
${cfne}	The current file name with extension.
${cf}	The path of the currently edited file.
${cfd}	The path of current file directory.
${tsf}	Transformation result file.
${pd}	The project directory.
${oxygenInstallDir}	The installation directory of the application.

Note

The quote character (") is used to delimit parameters and files that have spaces in their names.

```
cmd /c dir "c:\samples\dir with spaces"
```

Note

There are cases in which you need to specify in the command line a parameter that contains a quote. You will need to escape the quote by using the character:^.

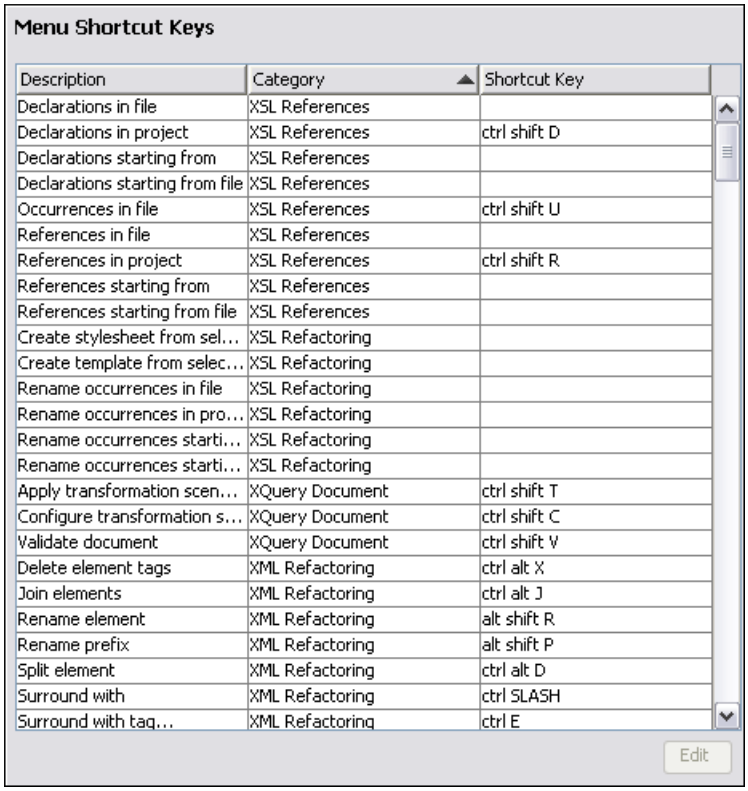
```
cmd /c dir "c:\samples\dir with ^"quotes^" and spa
```

Menu Shortcut Keys

The user can configure in one place all the keyboard shortcuts of the menu items available in <oXygen/>. The current shortcuts assigned to menu items are displayed in the following table.

The Menu Shortcut Keys preferences panel is opened from menu Options → Preferences+Menu Shortcut Keys

Figure 20.57. The Menu Shortcut Keys preferences panel



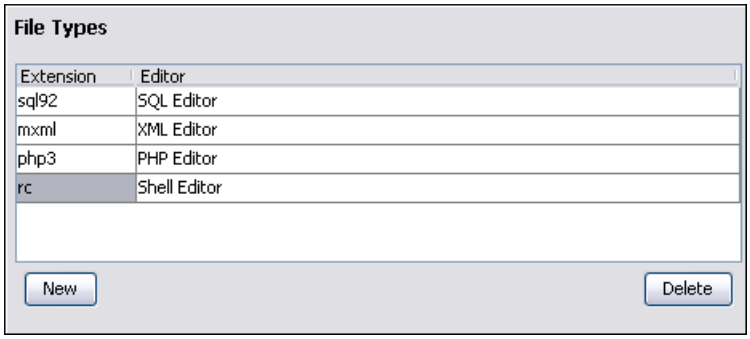
Description	A short description of the menu item operation.
Category	The shortcuts are classified in categories for easier management. For example the "Cut" operation for the source view is distinguished from the tree view one by assigning it to a separate category.
Shortcut key	The keyboard shortcut that launches the operation. Double-clicking on a table row or pressing the "Edit" button allows the user to register a new shortcut for the operation displayed on that row.
'Home' and 'End' keys are applied at line level	Option available only on the Mac OS X and controls the way the HOME and END keys are interpreted. If checked the default behaviour of the Mac OS X HOME and END keys will be overridden and the caret will move only on the current line. The default on the Mac is to move the caret to the beginning or end of the document.

File Types

<oXygen/> offers support for a wide variety of file types, but users are free to add new file types specified by extension 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 → Newdialog.

The File Types preferences panel is opened from menu Options → Preferences+File Types

Figure 20.58. The File Types preferences panel



Extension — The new file types.

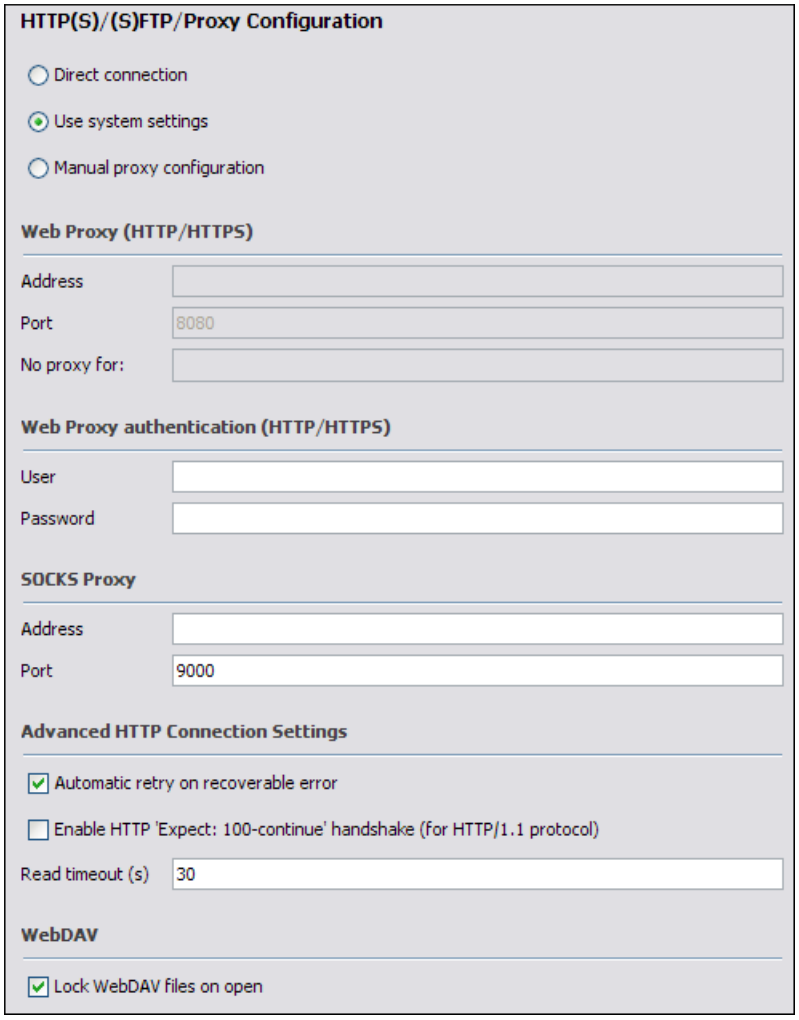
Editor — The type of editor which the extensions will be associated with. Some editors provide easy access to frequent operations via toolbars (e.g. XML editor, XSL editor, DTD editor) while other provide just a syntax highlight scheme (e.g. Java editor, SQL editor, Shell editor, etc.)

HTTP(S) / (S)FTP / Proxy Configuration

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. The Proxy Configuration dialog enables this configuration. If you are not sure whether your computer is required to use a Proxy server to connect to the Internet or the values required by the Proxy Configuration dialog, please consult your Network Administrator.

Open the HTTP(S) / (S)FTP / Proxy Configuration panel by selecting Options → Preferences+HTTP / HTTPS / FTP / SFTP / Proxy Configuration.

Figure 20.59. The HTTP(S) / (S)FTP / Proxy Configuration preferences panel



Complete the dialog as follows:

Direct connection
: When checked the HTTP and HTTPS connections go directly to the target host without going through a proxy server.

Use system settings
: When checked the HTTP and HTTPS connections go through the proxy server set in the operating system. For example on Windows the proxy settings are the ones available in Internet Explorer.

Warning

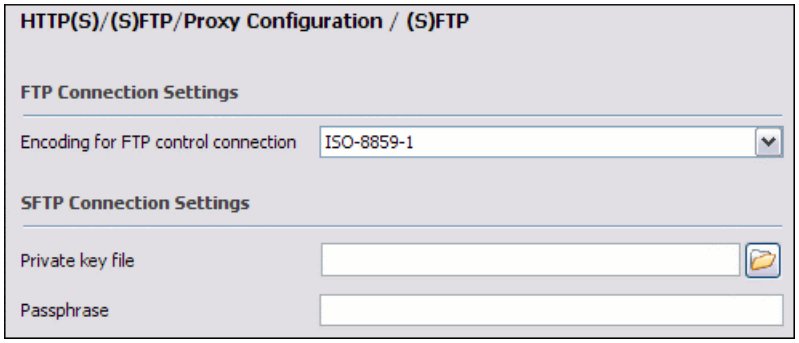
The system settings for the proxy cannot be read correctly from the operating system on some Linux systems. The system settings option should work properly on Gnome based Linux systems but it does not work yet on KDE based ones as the Java virtual machine does not offer the necessary support yet [http://bugs.sun.com/bugdatabase/view_bug.do?bug_id=6385839].

Manual proxy configuration	When checked the HTTP and HTTPS connections go through the proxy server specified in the fields *Address* and *Port* of the section *Web Proxy (HTTP / HTTPS)*. Also this section specifies the hosts to which the connections must not go through a proxy server.
Web Proxy authentication (HTTP / HTTPS)	In this section one must set the user and password necessary for authentication with the proxy server. The user and password set here will be used both in case of manual proxy configuration and in case of system settings selected above.
SOCKS Proxy	In this section one must set host and port of a SOCKS proxy through which all the connections must pass. If the *Address* field is empty the connections will use no SOCKS proxy.
Automatic retry on recoverable error	If enabled, if a HTTP error occurs when <oXygen/> 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/> tries to send again the request to the 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. 'Expect: 100-continue' handshake should be used with caution, as it may cause problems with HTTP servers and proxies that do not support HTTP/1.1 protocol.
Read Timeout (s)	The period in seconds after which the application will consider a HTTP server is unreachable if it does not receive any response to a request sent to that server.
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.

(S)FTP

Open the (S)FTP preferences panel by selecting Options → Preferences → HTTP(S) / (S)FTP / Proxy Configuration+(S)FTP.

Figure 20.60. The (S)FTP Configuration preferences panel



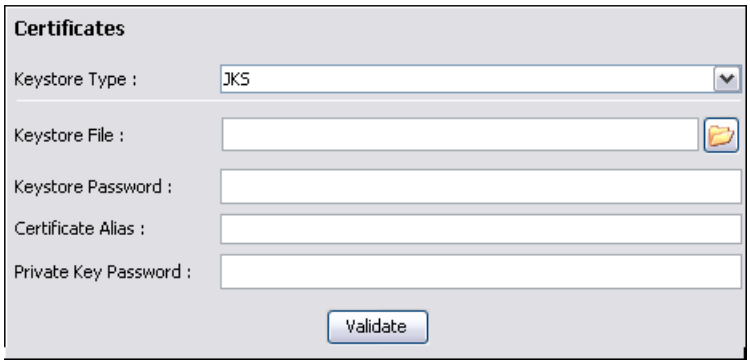
Encoding for FTP control connection	The encoding used to communicate with FTP servers. It is one of ISO-8859-1 and UTF-8. If the server supports the UTF-8 encoding <oXygen/> will use it for communication. Otherwise it will use ISO-8859-1.
Private key file	The path to the file containing the private key 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.

Certificates

In <oXygen/> there are provided two types of Keystores: Java KeyStore (JKS) and Public-Key Cryptography Standards version 12 (PKCS-12). A keystore file is protected by a password.

The Certificates preferences panel is opened from menu Options → Preferences+Certificates

Figure 20.61. The Certificates preferences panel



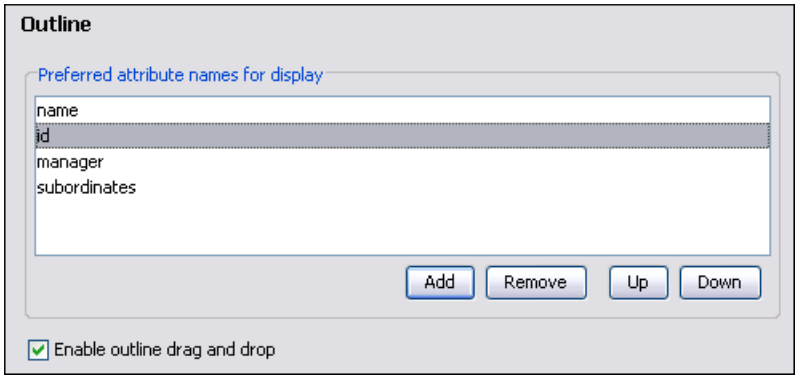
Keystore type	Represents the type of keystore to be used.
Keystore file	Represents the location of the file to be imported.
Keystore password	The password which is used to protect the privacy of the stored keys.

Certificate alias	The alias to be used to store the key entry (the certificate and /or the private key) inside the keystore.
Private key password	It is only necessary in case of JKS keystore. It represents the certificate's private key password.
Validate	Verifies the entries from the fields; assures that the certificate is valid.

Outline

The Outline preferences panel is opened from menu Options → Preferences+Outline

Figure 20.62. The Outline preferences panel

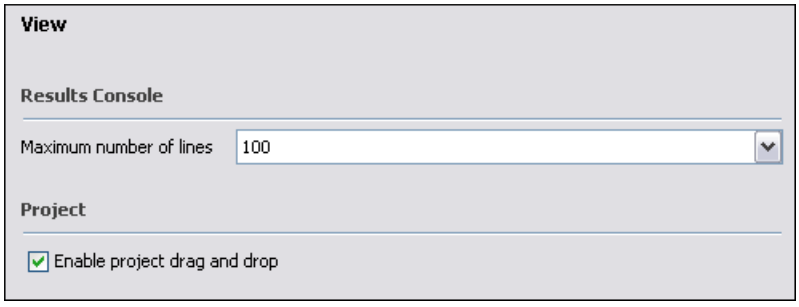


Preferred attribute names for display	The attribute names which should be preferred when displaying element's attributes in the outline view. If there is no preferred attribute name specified the first attribute of an element is displayed in the outline view.
Enable outline drag and drop	When drag and drop is disabled for the tree displayed by the outline view there is no possibility to accidentally change the structure of the document.

View

The View preferences panel is opened from menu Options → Preferences+View

Figure 20.63. The View preferences panel

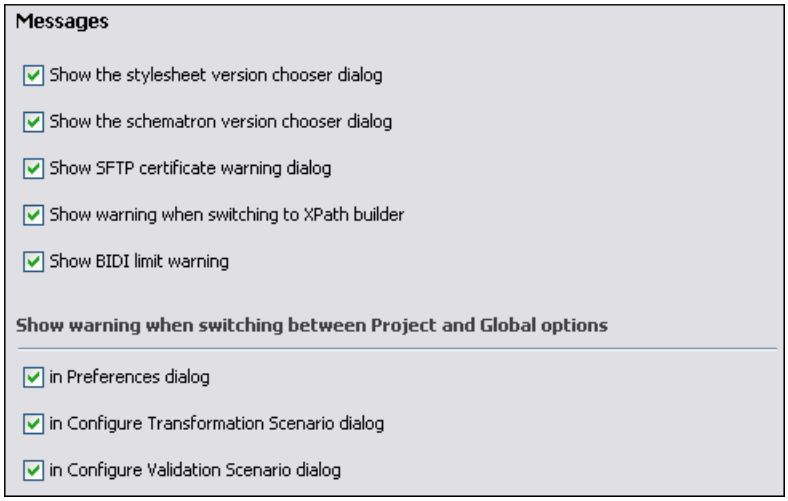


Maximum number of lines	This option sets the maximum number of lines of the output console where the external tools place their output.
Enable project drag and drop	This option enables the drag and drop support in Project view. When it is disabled there is no possibility to accidentally change the structure of the project.

Messages

The Messages preferences panel is opened from menu Options → Preferences+Messages

Figure 20.64. The Messages preferences panel



This page allows disabling warning messages which may appear in the application.

Show the stylesheet version chooser dialog	If checked the version chooser dialog will be shown when creating a new stylesheet file.
Show the schematron version chooser dialog	If checked the 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 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 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 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 page.

Show warning when switching between Project and Global options in Configure Transformation Scenario dialog	If checked a warning dialog will be shown about uncommitted changes when switching between Project and Global options in the transformation scenarios edit dialog.
Show warning when switching between Project and Global options in Configure Validation Scenario dialog	If checked a warning dialog will be shown about uncommitted changes when switching between Project and Global options in the validation scenarios edit dialog.
Show warning dialog when edit conflicts	If checked a dialog will be shown when the *Edit Conflicts* action is executed that warns you that the *Edit Conflicts* action first overwrites the conflict version of a file created by an update operation 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 conflict file. If the button Cancel is pressed in this warning dialog the *Edit Conflicts* action is aborted.

Tree Editor

The Tree Editor preferences panel is opened from menu Options → Preferences+Tree Editor

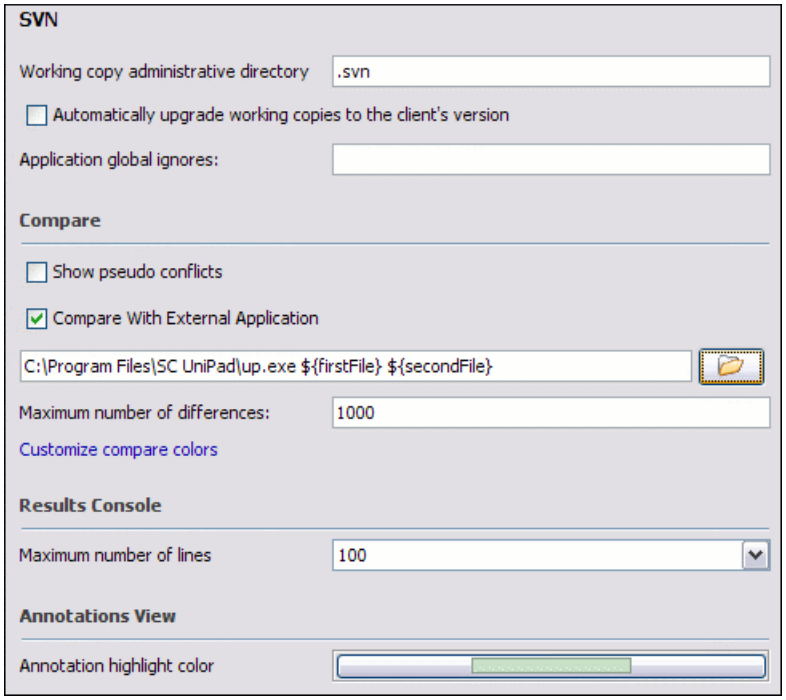
Figure 20.65. The Tree Editor preferences panel

Format and indent on save	Check if the document should be formatted and indented (pretty-print) on save.

SVN

The SVN preferences panel is opened from menu Options → Preferences+SVN

Figure 20.66. The SVN preferences panel



- Working copy administrative directory - allows you to customize the directory name where the svn entries are kept for each directory in the working copy.
- Automatically upgrade working copies to the client's version - if this option is checked and a working copy stored locally on disk using an old SVN format (for example the SVN 1.3 one) is loaded in the Working Copy view then the working copy is automatically converted by Syncro SVN Client to the most recent SVN format. If the option is not checked a confirmation dialog will be displayed when such a working copy is loaded in the Working Copy view.
- Application global ignores - allows setting file patterns that may include the wildcard * and ? for unversioned files and folders that must be ignored when displaying the working copy resources in the Working Copy view.
- Compare - allows you to specify if you want to see *pseudo-conflicts* in the Compare view. You can also change the maximum number of differences allowed in the view and to specify an external application to be launched for compare operations when two history revisions are compared or when the working copy file is compared with a history revision. There is also available a link to quickly customize the used compare colors.
- Results Console - here you can specify the maximum number of lines displayed in the *Console View*.
- 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.

Sharing Preferences

Figure 20.67. Controlling the Storage of the Preferences

By default all the settings are global and are stored in the user home directory.

The values from each preference page can also be stored in the current project file. This allows you to create and share with your team an <oXygen/> project already configured. For instance you may decide that the default schema associations and catalogs must be shared. In this case you simply click the radio button "Project options", edit the values and then save your project. If you want to drop a option page from being stored into the project, you select the radio button "Global options".

Note

The project settings have precedence over the global ones.

For instance, if you have changed a global option value, let say the line width used for pretty-print, and then you load a project that also defines a different line width for the pretty-print, <oXygen/> will use the value from the project.

Note

If you change the global options and decide to move the current page to the project level, you need to press Apply to save your current changes. Otherwise, the current changes will be lost from the global options.

Note

If you select "Global options" on a page that was at the project level, then the option values are removed from the project file when the project is saved.

Automatically importing the preferences from the other distribution

If you want to use the settings from “standalone” in the Eclipse plugin just delete the file with the Eclipse plugin settings `[user-home-dir]/Application Data/com.oxygenxml/oxyOptionsEc9.1.xml` on Windows / `[user-home-dir]/.com.oxygenxml/oxyOptionsEc9.1.xml` on Linux, start Eclipse and the “standalone” settings will be automatically imported in Eclipse. The same for importing the Eclipse plugin settings in “standalone”: delete the file `[user-home-dir]/com.oxygenxml/oxyOptionsSa9.1.xml`, start the <oXygen/> “standalone” distribution and the Eclipse settings will be automatically imported.

Reset Global Options

To reset all custom user settings of the application that are stored in a local file (not in the project), to the installation defaults go to: Options → Reset Global Options The list of transformation scenarios will be reset to the default scenarios.

Scenarios Management

You can import, export and reset the scenarios stored in the global options.

- The action Options → Import Global Transformation Scenarios loads a properties file with scenarios.
- The action Options → Export Global Transformation Scenarios stores all the scenarios in a separate properties file.

  The option to Export Transformation Scenarios is used to store all the scenarios in a separate file , a properties file. In this file will also be saved the associations between document URLs and scenarios. The saved URLs are absolute. You can load the saved scenarios using Import Transformation Scenarios option. All the imported scenarios will have added to the name the word 'import'.

  Note

  The scenarios are exported/imported from/in the global options, not from the project options. So be aware that the list of scenarios kept at the project level are not affected.

Note

Starting with version 8, there is support for project level options. In this way sharing the options and scenarios with your team becomes simpler, as you can choose to store the settings directly into the project file, with no need for export/import operations. We recommend to use the project level options. See the Preferences Sharing and Sharing the Transformation Scenarios sections for more details.

Editor variables

An editor variable is a shorthand notation for a file path or directory path. It is used in the definition of a command (the input URL of a transformation, the output file path of a transformation, the command line of an external tool, etc.) to make the command generic. When the same command is applied the notation is expanded so that the same command has different effects depending on the actual value of the notation.

The following editor variables can be used in <oXygen/> commands:

${oxygenInstallDir}	Oxygen installation directory
${frameworks}	the path of the `frameworks` subdirectory of the <oXygen/> install directory
${home}	the path of the user home directory
${pdu}	Project directory as URL
${pd}	project directory - the path of the current project directory
${cfdu}	current file directory url - the path of the current edited document up to the name of the parent directory as URL
${cfd}	current file directory - the path of the current edited document up to the name of the parent directory

${cfn}	current file name - the name of the current edited document without extension and parent directory
${currentFileURL}	current file name as URL - the name of the current edited document as a URL

Chapter 21. Common problems

21.1. <oXygen/> opens a XML document after a long time. Why does it happen?

All the content of your document is on a single line or the document is very large. If the content is on a single line please enable the *Format and indent the document on open* preference from Options

→ Preferences+Editor / Format / XML before opening the document. If the document is very large (above 10 MB) you should increase the memory available to <oXygen/>.

21.2. I am trying to open a file larger than 70 MB for editing in <oXygen/> but it keeps telling me it runs out of memory. What can I do?

Files larger than 70 MB should not be opened in <oXygen/>for editing as this requires a very large amount of memory which exceeds the maximum amount of memory allowed for a Java process. Such files should be opened only for viewing (read-only access) using the *Large File Viewer* tool available both in the <oXygen/> application on the Tools menu and as a standalone tool on the shortcuts menu together with the <oXygen/> shortcut.

21.3. My file was created with other application and it contains special characters like é, ©, ®, etc. Why does <oXygen/> display a square for these characters?

You must set a font able to render the special characters from Font preferences. If it is a text file you must set also the encoding used for non XML files. If a TrueType font installed on the computer is not accessible in the Font preferences the Java virtual machine is not able to load the system fonts. It is a problem of the Java virtual machine and a possible solution is to copy the files of the font in the `[JVM-home-folder]/lib/fonts` folder.

21.4. When I run a transformation in the XSLT Debugger perspective it is very slow. Can I increase the speed?

Disable rendering of output to the XHTML Output view during the transformation process if the transformation produces HTML or XHTML output. In order to view the output result run the transformation in the Editor perspective with the option "Open in browser" or run it in the Debugger perspective, save the Text output area to a file and use an external browser for viewing.

21.5. When I start <oXygen/> on Windows XP I get the following error. What can I do?

```
Cannot start <oXygen/>.
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 cause by a a bug in the Java runtime from Sun Microsystems [http://bugs.sun.com/bugdatabase/view_bug.do;jsessionid=1068feedb408f5f279405ff0c75:YfiG?bug_id=6342514]. You can avoid it by setting the Java system property *com.oxygenxml.no.xp.theme* to the value *true* in the startup script. If you start <oXygen/> 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/> from the Start menu shortcut add the same parameter on a new line in the file `[oXygen-install-folder]\oxygen.vmoptions`.

21.6. <oXygen/> crashed the JVM, what happened?

Java applications can't do this. The problem is a bug in the JVM. Depending of your platform, there is information logged about what caused the crash. For Unix type systems you will get an error in

the console (and for Mac OS X you may also get a report in ~/Library/Logs/CrashReporter/JavaApplicationStub.crash.log). Some problems with Java 1.4.x and Windows were the result of a bug in the JVM and certain graphics card drivers.

21.7. When I do a keyword search in the User Manual the search highlights the wrong word in the text, often several words after the keyword. Is this a bug?

You get wrong highlights only when <oXygen/> runs with a Java 1.4 virtual machine. The search highlights are correct when <oXygen/> runs with a Java 1.5 virtual machine. It is a problem of the JavaHelp indexer supplied by Sun Microsystems. In order to see correct highlights you have to use Java 1.5.

21.8. My Java Input Method does not work in <oXygen/> on my Linux computer. I installed it in the [JRE-home-folder]/lib/ext folder but the activation shortcut does not work in <oXygen/>. What can I do?

You have to remove the `xml-apis.jar` file from the [oXygen-install-folder]/lib folder and run <oXygen/> with a Java 1.5 virtual machine or with a Java 1.6 one. With a Java 1.4.2 virtual machine Java Input Methods do not work in <oXygen/> on Linux computers due to a conflict between some classes included in the core Java classes and other classes with the same class name and package name included in oXygen and on which oXygen depends. oXygen does not work correctly if it is forced to use the core Java version of these classes. Starting with Java 1.5.0 the classes were moved to other package.

21.9. 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 mahcine that runs the application will receive other key codes than the usual ones for a standard keyboard.

21.10. I cannot associate the <oXygen/> 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 `oxygen.exe`. When I select the file `oxygen.exe` in the Windows file browser dialog and I click the *Open* button of the dialog the <oXygen/> application is not added to the list of applications in the *Open With* dialog of Windows. What can I do?

The problem is due to some garbage Windows registry entries remained from old versions of <oXygen/> Please uninstall all your installed versions of <oXygen/> and run a registry cleaner application for cleaning these entries. Reinstalling a recent version of <oXygen/> will not generate this problem anymore.

21.11. When I close the <oXygen/> 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 this restart of <oXygen/>.

This happens randomly when several files are opened automatically on startup. It is a problem of the JIDE docking views library used in <oXygen/> for docking and floatable views. The workaround is to run the action Perspectives → Reset Layout. If you have a specific layout of the <oXygen/> views which you want to preserve when running this action you should set your layout in Options → Preferences+Perspectives Layout+Use fixed layout.

21.12. I try to run <oXygen/> on Linux with the Compiz / Beryl window manager but I get only a grey window which does not respond to user actions / after opening and closing an <oXygen/> dialog or after resizing the <oXygen/> window or a view of the <oXygen/> 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 [http://bugs.sun.com/bugdatabase/view_bug.do?bug_id=6429775]. We are expecting better support for Compiz / Beryl 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/> application or switch to other window manager.

21.13. <oXygen/> hangs about a minute at 2% of the startup progress bar and also when I open the file open/file save dialog from the File toolbar or from the File menu. Why do I get this slow actions?

This happens with the Sun's Java 1.6.0_02 virtual machine and the 1.6.0_03 one due to a bug [http://bugs.sun.com/bugdatabase/view_bug.do?bug_id=6578753] introduced by JVM 1.6.0_02. Please run the <oXygen/> application with a different JVM version. See the installation instructions for setting a specific JVM version for running the <oXygen/> application.

21.14. How do I set the version X of the Java virtual machine for <oXygen/> on Mac OS X?

<oXygen/> uses the first JVM from the list of preferred JVM versions set on your Mac computer that has the version number not less than 1.4.0. 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 from Applications -> Utilities -> Java -> Java Preferences.

21.15. Leopard (version 10.5 of Mac OS X) does not switch to the space containing the <oXygen/> window when I switch to the <oXygen/> application with Command + Tab.

It is an incompatibility problem between Leopard and Apple's Java virtual machine running on Leopard so it happens for any Java application running on the Leopard version of Mac OS X. The Apple Java team is expected to fix the problem in a future version of their Java virtual machine.

21.16. On my Mac OS X machine when I double-click on the <oXygen/> icon the application doesn't start / gives a *Segmentation fault* error.

Install the latest Java update from the Apple website. If that doesn't solve the problem copy the file `JavaApplicationStub` from the `/System/Frameworks` folder to the `oxygen.app/Contents/MacOS` folder. For browsing the folder `oxygen.app` Meta + click on the <oXygen/> icon and select Show Package Contents

21.17. After upgrading my OS X version to 10.4.x / my <oXygen/> version to 6.x <oXygen/> is not associated to the file types XML, XSL, XSD, etc. This worked in the previous version of <oXygen/>.

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.

Procedure 21.1. Rebuild file associations of the LaunchService Database

1. Find all the <oXygen/> installations on your hard drive.
2. Delete them by dragging them to the Trash.
3. Clear the Trash.

4. Unpack the installation kit on your desktop.
5. Copy the contents of the archive into the folder /Applications/Oxygen.
6. Run the command

   /System/Library/Frameworks/ApplicationServices.framework/Frameworks/ LaunchServices.framework/Support/lsregister -kill -r -domain local -domain system -domain user -dump

   from the Terminal.
7. Restart Finder with

   killall Finder

   from the Terminal.
8. Create a XML or XSD file on your desktop. It should take the <oXygen/> icon.
9. Double click it. After accepting the confirmation dialog <oXygen/> will be start up.

21.18. After upgrading my Mac OS X to version 10.4.1 Tiger I am not able to set all XML files to open with <oXygen/> when I click Change All in the Get Info dialog. This worked in OS X 10.3.x.

On Mac OS X Tiger you must add an entry to the `Info.plist` file. Tiger was released after <oXygen/> version 6.0 so we could not include the change in the release. Please close <oXygen/>, press Meta + click on the <oXygen/> icon, select Show package contents, go to Contents, edit the `Info.plist` file, add the entry

```
<key>CFBundleIdentifier</key>
<string>ro.sync.exml.Oxygen</string>
```

and restart <oXygen/>. Select Change All in the Get Info dialog to make the association.

Appendix A. Appendix

Table of Contents

Accelerator Shortcut Keys

The Main Editor

File → New (**Ctrl+N**) : Displays the New dialog from which to select the document file type.

File → Open (**Ctrl+O**) : Displays the Open dialog used to discover, select and open one or more files.

File → Save (**Ctrl+S**) : Saves the current document. If the document does not have a file, displays the Save As dialog.

File → Save Results : Displays the Save Results dialog, used to save the result-list of the, currently in focus, message tab.

File → Open Project (**Ctrl+F2**) : Displays the Open Project dialog used to discover, select and open a project file.

File → Save Project (**Ctrl+F3 (Cmd+G on Mac)**) : Saves the current project. If the project does not have a file, displays the Save Project As dialog.

File → Print (**Ctrl+P**) : Displays the Page Setup dialog used to define the page size and orientation properties for printing.

File → Close (**Ctrl+W**) : Closes only the selected tab. All other tab instances remain.

File → Exit (**Ctrl+Q**) : Terminates the <oXygen/> XML Editor. Session information such as the current Project, open Documents and Option settings is made persistent. When the <oXygen/> editor is re-opened, the persistence information returns to the last saved state.

Edit → Undo (**Ctrl+Z**) : Reverses, a maximum of 100, editing actions to return to the preceding state.

Edit → Redo (**Ctrl+Y for Windows, Ctrl+Shift+Z for Mac OSX and Linux**) : Recreates, a maximum of 100, editing actions that where undone by the Undo function.

Edit → Cut (**Ctrl+X**) : Removes the current selected node from the document and places it in the clipboard.

Edit → Copy (**Ctrl+C**) : Places a duplicate copy of the current selection in the clipboard.

Edit → Paste (**Ctrl+V**) : 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.

Edit → Check Spelling (**F4**) : Checks the spelling in your document.

Find → Find/Replace... (**Ctrl+F**) : Displays the Find/Replace dialog, used to define "search for" or "search for and replace" operations on the current document. The replace operation can bind Perl 5-like regexp group variables ($1, $2, etc.) from the find match.

Find → Go to Line (**Ctrl+L (Cmd+L on Mac)**) : Displays the Go to Line dialog used to move the cursor directly to the position specified.

Find → Search again (**F3**) : Performs another search using the last search configuration.

Tree Editor → Show... (**Ctrl+T**) : Opens the window for editing a document displayed as a structured tree.

Help → Help (**F1**) : Opens the <oXygen/> XML Editor Online Help System.

Document → Validate document (**Ctrl+Shift+V**) : Executes the Validation operation on the current document using a validating parser. Returns an error result-list in the Message panel. Mark-up of current document is checked to conform with the specified DTD rules.

Document → Check document form (**Ctrl+Shift+W**) : Executes the XML Form check operation on the current document using a non-validating parser. Returns an error result-list in the Message panel.

Document → Apply transformation scenario (**Ctrl+Shift+T**) : Executes the transformation process using the configuration properties defined in the Configure Transformation dialog.

Document+ XML Document → Configure transformation scenario (**Ctrl+Shift+C**) : Displays the Configure Transformation dialog, used to define properties for conversion of documents to multiple output targets. Also enables saving of "Scenarios". Each scenario, can store a unique configuration ready to be used in the future.

Document → Format and Indent (**Ctrl+Shift+P**) : Also referred to as "Pretty Print", Format and Indent performs layout functions to make mark-up easier to read on screen and in print output.

Document → Learn Structure (**Ctrl+Shift+L**) : Reads the mark-up structure of the current document so that it can be saved as a template using the Save Structure option.

Document → Save Structure (**Ctrl+Shift+S**) : Displays the Save Structure dialog, used to name and create DTD documents learnt by the Learn Structure function.

Document → Find All (**Ctrl+Shift+F**) : Finds all occurrences of selected word in current file.

The Tree View Editor

File → New (**Ctrl+N**) : Creates a new empty document and displays it in the Tree View Editor.

File → Open (**Ctrl+O**) : Displays the Open dialog used to discover, select and open a file to be edited.

File → Save (**Ctrl+S**) : Saves the current document. If the document does not have a file, displays the Save As dialog.

File → Close (**Ctrl+W**) : Closes the Tree View Editor.

Edit → Copy (**Ctrl+C**) : Places a duplicate copy of the current node in the clipboard.

Edit → Cut (**Ctrl+X**) : Removes the current selected node from the document and places it in the clipboard.

Edit → Paste (**Ctrl+V**) : Places the node from clipboard as a child of the selected node.

Edit → Delete (**Delete**) : Delete the selected node from the document.

Edit → Start Editing (**F5**) : Starts editing the selected node from the document.

Edit → End Editing (**F6**) : Ends editing the selected node.

Edit → Undo (**Ctrl+Z**) : Reverses, a maximum of 100, editing actions to return to the preceding state.

Edit → Redo (**Ctrl+Y for Windows, Ctrl+Shift+Z for Mac OS X and Linux**) : Recreates, a maximum of 100, editing actions that where undone by the Undo function.

Insert → Insert (**F7**) : Insert a new node of the same type like the selected one as its sibling.

Move → Move Up (**Ctrl+Up**) : Move up the selected node with one position.

Move → Move Down (**Ctrl+Down**) : Move down the selected node with one position.

Unicode Character Encoding

The table below provides a matrix from which to match Unicode names with the names shown by the Java Encoder when it cannot identify encoding.

Table A.1. Unicode to Java Name Matrix

Common Name	Name in XML files	Name Type	Java Encoder Name
8 bit Unicode	UTF-8	IANA	UTF8
16 bit Unicode	UTF-16	IANA	Unicode
16 bit Unicode little endian	UTF-16LE	IANA	UnicodeLittle
16 bit Unicode big endian	UTF-16BE	IANA	UnicodeBig
ISO Latin 1	ISO-8859-1	MIME	ISO-8859-1
ISO Latin 2	ISO-8859-2	MIME	ISO-8859-2
ISO Latin 3	ISO-8859-3	MIME	ISO-8859-3
ISO Latin 4	ISO-8859-4	MIME	ISO-8859-4
ISO Latin Cyrillic	ISO-8859-5	MIME	ISO-8859-5
ISO Latin Arabic	ISO-8859-6	MIME	ISO-8859-6
ISO Latin Greek	ISO-8859-7	MIME	ISO-8859-7
ISO Latin Hebrew	ISO-8859-8	MIME	ISO-8859-8
ISO Latin 5	ISO-8859-9	MIME	ISO-8859-9
EBCDIC: US	ebcdic-cp-us	IANA	cp037
EBCDIC: Canada	ebcdic-cp-ca	IANA	cp037
EBCDIC: Netherlands	ebcdic-cp-nl	IANA	cp037
EBCDIC: Denmark	ebcdic-cp-dk	IANA	cp277
EBCDIC: Norway	ebcdic-cp-no	IANA	cp277
EBCDIC: Finland	ebcdic-cp-fi	IANA	cp278
EBCDIC: Sweden	ebcdic-cp-se	IANA	cp278
EBCDIC: Italy	ebcdic-cp-it	IANA	cp280
EBCDIC: Spain, Latin America	ebcdic-cp-es	IANA	cp284
EBCDIC: Great Britain	ebcdic-cp-gb	IANA	cp285
EBCDIC: France	ebcdic-cp-fr	IANA	cp297
EBCDIC: Arabic	ebcdic-cp-ar1	IANA	cp420
EBCDIC: Hebrew	ebcdic-cp-he	IANA	cp424
EBCDIC: Switzerland	ebcdic-cp-ch	IANA	cp500
EBCDIC: Roece	ebcdic-cp-roece	IANA	cp870
EBCDIC: Yugoslavia	ebcdic-cp-yu	IANA	cp870
EBCDIC: Iceland	ebcdic-cp-is	IANA	cp871
EBCDIC: Urdu	ebcdic-cp-ar2	IANA	cp918
Chinese for PRC, mixed 1/2 byte	gb2312	MIME	GB2312
Extended Unix Code, packed for Japanese	euc-jp	MIME	eucjis
Japanese: iso-2022-jp	iso-2020-jp	MIME	JIS
Japanese: Shift JIS	Shift_JIS	MIME	SJIS
Chinese: Big5	Big5	MIME	Big5
Extended Unix Code, packed for Korean	euc-kr	MIME	iso2022kr

Common Name	Name in XML files	Name Type	Java Encoder Name
Cyrillic	koi8-r	MIME	koi8-r

References

Organization for the Advancement of Structured Information Standards (OASIS) [http://www.oasis.org/]

OASIS is a not-for-profit, global consortium that drives the development, convergence and adoption of e-business standards. Members themselves set the OASIS technical agenda, using a lightweight, open process expressly designed to promote industry consensus and unite disparate efforts. OASIS produces worldwide standards for security, Web services, XML conformance, business transactions, electronic publishing, topic maps and interoperability within and between marketplaces.

World Wide Web Consortium (W3C) XML Specifications [http://www.w3.org/]

The World Wide Web Consortium (W3C) develops inter operable technologies (specifications, guidelines, software, and tools) to lead the Web to its full potential. W3C is a forum for information, commerce, communication, and collective understanding.

DocBook [http://www.docbook.org/]

DocBook is an XML/SGML vocabulary particularly well suited to books and papers about computer hardware and software (though it is by no means limited to these applications). DocBook is officially available as a Document Type Definition (DTD) for both XML and SGML and enjoys the support of a broad user base throughout 100's of organizations around the world.

IBM Developer Works XML Zone [http://www-106.ibm.com/developerworks/xml/]

A gateway to all things XML and home of the Darwin Information Typing Architecture (DITA) [http://www-106.ibm.com/developerworks/xml/library/x-dita1/] is an XML-based, end-to-end architecture for authoring, producing, and delivering technical information. This architecture consists of a set of design principles for creating "information-typed" modules at a topic level and for using that content in delivery modes such as online help and product support portals on the Web.

The Unicode Consortium [http://www.unicode.org]

The Unicode Consortium is responsible for defining the behavior and relationships between Unicode characters, and providing technical information to implementers. The Consortium cooperates with ISO in refining the specification and expanding the character set. It has liaison status "C" with ISO/IEC/JTC 1/SC2/WG2, which is responsible for ISO/IEC 10646.