DITA Open Toolkit, version 1.8

Contents

Chapter 1

Getting Started with the DITA Open Toolkit

Topics:

The *Getting Started Guide* is designed to provide a guided exploration of the DITA Open Toolkit. It is geared for an audience that has little or no knowledge of build scripts or DITA-OT parameters. It walks the novice user through installing the full-easy-install version of the toolkit and running a prompted build.

Installing the full-easy-install package

For the simplest installation experience, install the full-easy-install package. This package can be installed on Linux, Mac OSX, and Windows. It contains everything that you need to run the DITA-OT except for Java.

Before you begin

- Ensure that you have Java JRE or JDK, version 6 or later installed.
- Ensure that you have HTML Help Workshop installed, if you want to generate HTML Help.

Procedure

1. Download the full-easy package from *SourceForge*.

Operating system	File name
Linux or Mac OSX	`DITA-OT1.8_full_easy_install_bin.tar.gz`
Windows	`DITA-OT1.8_full_easy_install_bin.zip`

2. Extract the contents of the package to the directory where you want to install the DITA-OT.
3. Run the `startcmd` file that is applicable for your operating system.
   This defines the necessary environment variables and opens a DOS prompt or terminal window in which you can invoke the toolkit. You can use the window to run as many builds as you want; if you close the window, you will need to run the applicable `startcmd` file again.

Running the demo build

After you install the full-easy-install package, run the demo build to see the type of output that is produced by the DITA Open Toolkit.

Procedure

1. Run the `startcmd` file that is applicable for your operating system.
   The `startcmd.bat` and `startcmd.sh` files are in the directory where you installed the DITA-OT.
2. From the DITA-OT shell, enter the following command:

```
ant -f build_demo.xml
```

   You receive the following prompt:

```
[echo] Please enter the filename for the DITA map that you
[echo] want to build including the directory path (if any).
[echo] The filename must have the .ditamap extension.
[echo] Note that relative paths that climb (..) are not supported yet.
[echo] To build the sample, press return without entering anything.
[input] The DITA map filename: [C:\DITA-OT1.6.M5\samples
\hierarchy.ditamap]
```

3. Press **Enter**.
   You receive the following prompt:

```
[echo]
[echo] Please enter the name of the output directory or press return
[echo] to accept the default.
[input] The output directory (out): [out]
```

4. Press **Enter**.

You receive the following prompt:

```
[echo] Please enter the type of output to generate.
[echo] Options include: eclipse, tocjs, htmlhelp, javahelp, pdf, or web
[echo] Use lowercase letters.
[echo]
[input] The output type: (eclipse, tocjs, htmlhelp, javahelp, pdf, [web],
 docbook)
```

5. Press **Enter** to accept the default transformation type: web.

   This will build XHTML files from the DITA source.

   You receive the following prompt:

```
[echo] Ready to build C:\DITA-OT1.6.M5\samples\hierarchy.ditamap
[echo] for web in out
[echo]
[input] Continue? (Y, [y], N, n)
```

6. Press **Y** or **y** to start the DITA-OT transformation.
   The DITA-OT logs information to the command-prompt or terminal window. At the end, you see the following information:

```
prompt.output:
[echo]
[echo] output in the out directory
[echo]
[echo] Before rebuilding, please delete the output or the directory.
BUILD SUCCESSFUL Total time: X minutes X seconds
```

7. Go to the `out/` directory and open the `toc.html` file in a Web browser.

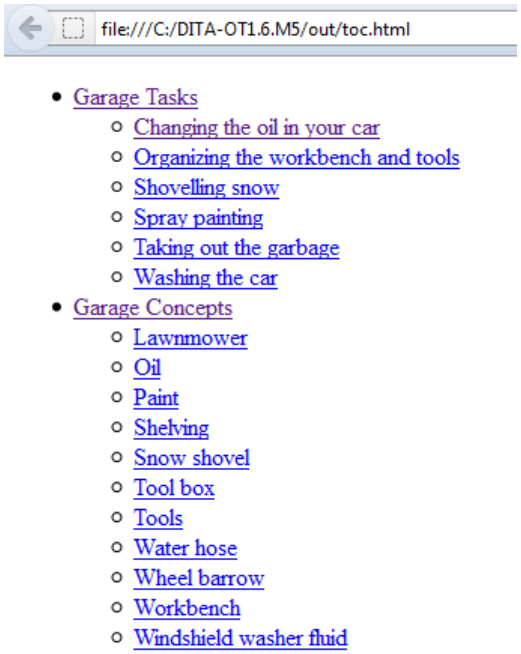


Figure 1: XHTML output for the sample files

Results

The DITA-OT transformed the `hierarchy.ditamap` file (located in the samples directory) to XHTML; it wrote the output to the `out/` directory.

Building your own content using the demo build

You can use the demo build to generate output for your own DITA content.

Procedure

1. If necessary, run the `startcmd` file that is applicable for your operating system.

   You do not need to run the `startcmd` file if you already have a command-prompt or terminal window that was invoked by the `startcmd` file open.
2. From the DITA-OT shell, enter the following command:

   ```
   ant -f build_demo.xml
   ```
3. When prompted, type the name of a map.

   You must specify the path for the DITA map. You either can specify a fully qualified file name, for example, `C:\DITA-OT1.6.M5\doc\userguide.ditamap`, or you can specify a relative path, for example, `doc\userguide.ditamap`
4. When prompted, type the name of the output directory.
5. When prompted, type the value for the transformation type.

Ouput format	Value
Docbook	docbook
Eclipse help	eclipse
HTML help	htmlhelp
PDF	pdf
XHTML	web
XHTML with a JavaScript frame set	tocjs
6. When prompted, press **Enter** to start the transformation.

Results

The DITA-OT generates output for the specified DITA content. It runs the transformation that you specified, and writes the output to the directory that you specified.

What to do next

Explore invoking the DITA-OT from either Ant or the command-line tool. This enables you to specify a wider array of parameters than those supported by the demo build.

Using Ant or the command-line tool, you can perform the following tasks (and more):

- Add a custom CSS file to the transformation
- Generate labels for the sections of task topics
- Specify that draft comments are included in the output
- Turn on "Related link" sections in a PDF file

Chapter 2

DITA Open Toolkit User Guide

Topics:

The *DITA Open Toolkit User Guide* is designed to provide basic information about the DITA-OT. It is geared for an audience that needs information about installing, running, and troubleshooting the toolkit. It contains documentation of the DITA-OT parameters; it also contains release notes and information about what components have been tested.

Overview of the DITA Open Toolkit

The DITA Open Toolkit (DITA-OT) is an open-source implementation of the OASIS DITA specification, which is developed by the OASIS DITA Technical Committee. The DITA-OT is a set of Java-based, open-source tools and Ant scripts that transform DITA content (maps and topics) into deliverable formats, including Eclipse Help, HTML Help, JavaHelp, PDF, and XHTML.

While the DITA standard is owned and developed by OASIS, the DITA-OT project is governed separately; the DITA-OT is an independent, open-source implementation of the DITA standard. The DITA-OT is available without charge and is licensed under the CPL 1.0 and Apache 2.0 open-source licenses.

DITA Open Toolkit Release 1.8

General Enhancements and Changes

Preprocessing

Additional validation has been added to check e.g. element ID uniqueness, and `xml:lang` and URI syntax.

PDF

Bundled FOP has been updated from 1.0 to 1.1.

Migration from previous releases

Stylesheets for the following transtypes have moved to plug-in specific folders:

- eclipsehelp
- htmlhelp
- javahelp
- odt
- xhtml

Preprocessing

The following deprecated Ant properties have been removed:

- `dita.script.dir`, use `${dita.plugin.`*`id`*`.dir}` instead
- `dita.resource.dir`, use `${dita.plugin.org.dita.base.dir}/resource` instead
- `dita.empty`
- `args.message.file`

XHTML

XSLT Java extension `ImgUtils` has been removed from stylesheets and been replaced with preprocessing module `ImageMetadataModule`. The old `ImgUtils` Java classes are still included in the build.

PDF

The following deprecated XSLT stylesheets have been removed:

- `artwork-preprocessor.xsl`
- `otdita2fo_frontend.xsl`

The following deprecated XSLT templates have been removed:

- `insertVariable.old`

The following deprecated XSLT modes have been removed:

- `layout-masters-processing`
- `toc-prefix-text`, use `tocPrefix` mode instead
- `toc-topic-text`, use `tocText` mode instead

Link generation has been simplified by removing deprecated arguments in favour of `args.rellinks`. The following deprecated Ant properties have been removed:

- `args.fo.include.rellinks`

The following XSLT parameters have been removed:

- `antArgsIncludeRelatedLinks`
- `disableRelatedLinks`

A call to a named template `pullPrologIndexTerms.end-range` has been added to `processTopic*` templates to handle topic wide index ranges.

Legacy PDF

The following deprecated XSLT stylesheets have been removed:

- `dita2fo-shell_template.xsl`
- `topic2fo-shell.xsl`

ODT

Link generation has been simplified by removing deprecated arguments in favour of `args.rellinks`. The following deprecated Ant properties have been removed:

- `args.odt.include.rellinks`

The following XSLT parameters have been added:

- `include.rellinks`

The following XSLT parameters have been removed:

- `disableRelatedLinks`

Issues

The following items are included in DITA Open Toolkit Release 1.8. Issue numbers correspond to the tracking number in the *GitHub issues tracker*.

Feature requests

- #1406 Bundle FOP 1.1 (milestone 1)
- #1447 Move stylesheets and resource files to plug-in folder (milestone 1)
- #1449 Add support for Slovenian (milestone 1)
- #1453 Add image metadata filter (milestone 1)
- #1435 Add validation filter to debug-filter step
- #1455 Remove deprecated features
- #1460 "Get String" template should use parameter instead of variable
- #1461 Move file list generation to Ant
- #1465 New doc topic listing non-standard tweaks to preprocessed files
- #1480 Correcting values for the @relcolwidth attribute
- #1492 Line range extension to coderef processing
- #1494 Move integrator configuration to lib/configuration.properties
- #1495 Remove ancient doc directories

Bugs

- #1425 XHTML flagging included before imports (milestone 1)
- #1428 Topic level calculated incorrectly for appendices (milestone 1)
- #1427 Fix text overflow issue in lot/lof entries with long titles (milestone 1)
- #1430 PDF transformation: Problems with index in OT 1.7 (milestone 1)
- #1432 startcmd.sh broken in 1.7 (milestone 1)
- #1433 Profiling filter included multiple times (milestone 1)
- #1437 Fatal UTF-8 error in .job.xml (milestone 1)
- #1456 XHTML Build failed when referencing subject scheme in different file path (milestone 1)
- #1080 Index page range issues (milestone 2)
- #1423 Formatting glitch in PDF index (milestone 2)
- #1468 Reference to remote image does not appear in PDF (milestone 2)
- #1469 @outputclass and @class values not passed from <chhead> to <tr> in XHTML output (milestone 2)
- #1472 PDF output: whitespace not preserved in msgblock element (milestone 2)
- #1475 Error received in console does not point correctly to location of published DITA Map (milestone 2)
- #1477 Tables: using percentage in colwidth values [PDF2 plugin] (milestone 2)
- #1464 Flagging a simpletable row throws off @keycol counting bug (milestone 2)
- #1459 Link not created in the XHTML output for a xref/@keyref element
- #1473 Troff output not working in latest build bug troff
- #1498 White space will break tocjs
- #1519 Latest code in develop branch fails to build PDF

DITA 1.2 Specification Support

DITA Open Toolkit 1.8 supports the DITA 1.2 specification. Initial support for this specification was added in version 1.5 of the toolkit; versions 1.5.1 and 1.5.2 contain minor modifications to keep up with the latest drafts. The specification itself was approved at approximately the same time as DITA-OT 1.5.2, which contained the final versions of the DTD and Schemas. DITA-OT 1.6 updated the DITA 1.2 XSDs to address minor errata in the standard; the DTDs remain up to date.

Earlier versions of the DITA Open Toolkit contained a subset of the specification material, including descriptions of each DITA element. This material was shipped in source, CHM and PDF format. This was possible in part because versions 1.0 and 1.1 of the DITA Specification contained two separate specification documents: one for the architectural specification, and one for the language specification.

In DITA 1.2, each of these has been considerably expanded, and the two have been combined into a single document. The overall document is much larger, and including the same set of material would double the size of the DITA-OT package. Rather than include that material in the package, we've provided the links below to the latest specification material.

Highlights of DITA 1.2 support in the toolkit include:

- Processing support for all new elements and attributes
- Link redirection and text replacement using keyref
- New processing-role attribute in maps to allow references to topics that will not produce output artifacts
- New conref extensions, including the ability to reference a range of elements, to push content into another topic, and to use keys for resolving a conref attribute.
- The ability to filter content with controlled values and taxonomies, using the new Subject Scheme Map
- Processing support for both default versions of task (original, limited task, and the general task with fewer constraints on element order)
- Acronym and abbreviation support with the new <abbreviated-form> element
- New link grouping abilities available with headers in relationship tables
- OASIS Subcommittee specializations from the learning and machine industry domains (note that the core toolkit contains only basic processing support for these, but can be extended to produce related artifacts such as SCORM modules)

To find detailed information about any of these features, see the specification documents at OASIS. The DITA Adoption Technical Committee has also produced several papers to describe individual new features. In general, the white papers are geared more towards DITA users and authors, while the specification is geared more towards tool implementors, though both may be useful for either audience. The DITA Adoption papers can be found from that TC's main web page.

Tested platforms and tools

The DITA Open Toolkit (DITA-OT) has been tested against certain versions of Ant, ICU for Java, JDK, operating systems, XML parsers, and XSLT processors.

Application	Tested version
Ant	Ant 1.7.1 Ant 1.8.2, 1.8.3, 1.8.4
ICU for Java	ICU4J 3.4.4 ICU4J 49.1
JDK	IBM 1.6 OpenJDK 1.7 Oracle 1.6
Operating system	Mac OS X 10.6 Mac OS X 10.7 SLES 10 Windows XP Windows 7
XML parser	Xerces 2.9.0 Xerces 2.11.0
XSLT processor	Saxon 6.5 Saxon 9 Saxon-B 9.1 Saxon-PE/EE 9.3 Xalan-J 2.6 Xalan-J 2.7 Xalan-J 2.7.1  **Note:** The DITA-OT does not officially require XSLT 2.0, since some users are reliant on Xalan.

Installing the DITA Open Toolkit

You can install the DITA Open Toolkit (DITA-OT) on Linux, Mac OSX, and Windows. The process for installing and setting up the DITA-OT depends on the type of distribution package that you select.

Distribution packages

The DITA Open Toolkit is distributed in three packages: minimal, standard, and full-easy-install. The source code is available both as a Git repository and a ZIP file.

Minimal package

This package is designed for vendors that embed the toolkit within a product. It contains all of the core processing code: CSS and XSLT files, Ant build scripts, Java code (`dost.jar`), resource files, and the OASIS DITA DTDs and Schemas. Users need to have their own versions of Ant and other libraries; they also need to set up environment variables for each library. The only external files that are included are the DTDs and Schemas, along with the following open-source libraries:

- Apache Catalog Resolver, version 1.1
- Apache Commons Codec, version 1.4
- Apache Xerces, version 2.11.0

The minimal package has the following file names:

- `DITA-OT1.8_minimal_bin.zip`
- `DITA-OT1.8_minimal_bin.tar.gz`

Standard package

This package is designed for people who want the core toolkit functionality, but who already have locally-installed copies of Ant and other required tools. It contains everything in the minimal package, plus documentation, demo code (for example, legacy support for the old bookmap), sample Ant scripts, and sample DITA files. The standard package includes the following open-source libraries:

- Apache Catalog Resolver, version 1.1
- Apache Commons Codec, version 1.4
- Apache Xerces, version 2.11.0

The standard package has the following file names:

- `DITA-OT1.8_standard_bin.zip`
- `DITA-OT1.8_standard_bin.tar.gz`

Full-easy-install package

his package is designed for users who want the simplest installation experience. In addition to the core DITA-OT code and the external libraries that are in the minimal and standard packages, it contains Apache Ant and FOP. The full-easy-install package also contains batch files designed to set up a build environment using those tools, as well as a scripts for a guided demo of the DITA-OT. The full-easy-install package includes the following external libraries:

- Apache Ant, version 1.8.4
- Apache Catalog Resolver, version 1.1
- Apache Commons Codec, version 1.4
- Apache FOP, version 1.0
- ICU for Java, version 49.1
- Apache Xerces, version 2.11.0
- Saxon, version 9.1

The full-easy-install package has the following file names:

- `DITA-OT1.8_full_easy_install_bin.zip`
- `DITA-OT1.8_full_easy_install_bin.tar.gz`

Prerequisite software

The prerequisite software that the DITA-OT requires depends on the type of distribution package that you intend to install and the types of transformations that you want to use.

Software required for core DITA-OT processing

The DITA-OT requires the following software applications:

JRE or JDK, version 6 or later	Provides the basic environment for the DITA-OT. You can download the Oracle JRE or JDK from *http://www.oracle.com/technetwork/java/javase/downloads/index.html*. If you opt to use the full-easy-install package, this is the *only* prerequisite software that you need to install.
Ant, version 1.7.1 or later	Provides the standard setup and sequencing of processing steps. You can download Ant from *http://ant.apache.org/*.
XSLT processor	Provides the main transformation services. It must be compliant with XSLT 1.0. The DITA-OT is tested with both Saxon and Xalan-J. You can download Saxon, version 9.1 from *http://saxon.sourceforge.net/* and Xalan-J, version 2.7.1 or later from *http://xml.apache.org/xalan-j/downloads.html*.

Software required for specific transformations

Depending on the type of output that you want to generate, you might need the following applications:

ICU for Java	ICU for Java is a cross-platform, Unicode-based, globalization library. It includes support for comparing locale-sensitive strings; formatting dates, times, numbers, currencies, and messages; detecting text boundaries; and converting character sets. You can download ICU for Java from *http://www.icu-project.org/download/*.
Microsoft Help Workshop	Required for generating HTML help. You can download the Help Workshop from *http://msdn.microsoft.com/en-us/library/windows/desktop/ms669985%28v=vs.85%29.aspx*.
XSL-FO processor	Required for generating PDF output. You can download FOP from *http://xmlgraphics.apache.org/fop/download.html*; you also can use Antenna House Formatter or RenderX.

See *Tested platforms and tools* for detailed information about versions of the prerequisite applications that have been tested with the current DITA-OT release.

Installing the full-easy-install package

For the simplest installation experience, install the full-easy-install package. This package can be installed on Linux, Mac OSX, and Windows. It contains everything that you need to run the DITA-OT except for Java.

Before you begin

- Ensure that you have Java JRE or JDK, version 6 or later installed.
- Ensure that you have HTML Help Workshop installed, if you want to generate HTML Help.

Procedure

1. Download the full-easy package from *SourceForge*.

Operating system	File name
Linux or Mac OSX	`DITA-OT1.8_full_easy_install_bin.tar.gz`
Windows	`DITA-OT1.8_full_easy_install_bin.zip`

2. Extract the contents of the package to the directory where you want to install the DITA-OT.
3. Run the `startcmd` file that is applicable for your operating system.
   This defines the necessary environment variables and opens a DOS prompt or terminal window in which you can invoke the toolkit. You can use the window to run as many builds as you want; if you close the window, you will need to run the applicable `startcmd` file again.

Installing the minimal or standard package on Linux or Mac OSX

If you already have locally-installed copies of Ant and the other required tools, install either the minimal or standard package.

Before you begin

Ensure that you have the following prerequisite software installed:

- Ant, version 1.7.1 or later
- Java runtime environment or development kit, version 6 or later
- XSLT processor. You can use either Saxon, version 9.1 or later, or Xalan-J, version 2.7.1 or later.

In addition, determine the specific DITA-OT transformations that you intend to support and ensure that you have the prerequisite software installed for them.

For more information, see *Prerequisite software* on page 14 and *Tested platforms and tools*.

Procedure

1. Download the minimal or standard package from *SourceForge*.

Package	File name
Minimal	`DITA-OT1.8_minimal_bin.tar.gz`
Standard	`DITA-OT1.8_standard_bin.tar.gz`

   For production use, we recommend that you use the latest stable release.
2. Extract the contents of the package into an installation directory.

   Note: You can extract the files either to your private home directory for your exclusive use or to the `/usr/local/share/` directory, if you want to share the DITA-OT with other users.
3. Verify that the *JAVA_HOME* environment variable is set.

   ```
   export JAVA_HOME=<JRE_dir>
   ```
4. Verify that the *ANT_HOME* environment variable is been set.

   ```
   export ANT_HOME=<Ant_dir>
   ```
5. Verify that the *PATH* environment variable includes the Java and Ant executable files.

   ```
   export PATH=$JAVA_HOME/bin:$ANT_HOME/bin:$PATH
   ```
6. Set the *DITA_HOME* environment variable to point to the DITA-OT installation directory.

   ```
   export DITA_HOME=<DITA-OT_dir>
   ```
7. Set up the *CLASSPATH* environment variable.

   ```
   export CLASSPATH=$DITA_HOME/lib/dost.jar:$CLASSPATH
   export CLASSPATH=$DITA_HOME/lib:$CLASSPATH
   export CLASSPATH=$DITA_HOME/lib/resolver.jar:$CLASSPATH
   export CLASSPATH=$DITA_HOME/lib/commons-codec-1.4.jar:$CLASSPATH
   ```

8. Optional: If you use Ant, version 1.8 or later, set up the *CLASSPATH* environment variable to include Apache Xerces.

```
export CLASSPATH=<xerces_dir>/xercesImpl.jar:<xerces_dir>/xml-apis.jar:
$CLASSPATH
```

9. Set up the XSLT processor:

Processor	Action

Saxon	Set up the *CLASSPATH* environment variable to include the Saxon JAR files, for example:
	`export CLASSPATH=<saxon_dir>/saxon9.jar:<saxon_dir>/saxon9-dom.jar:$CLASSPATH`
	Set up the `ANT_OPTS` environment variable, for example:
	`export ANT_OPTS=$ANT_OPTS -Djavax.xml.transform.TransformerFactory=net.sf.saxon.TransformerFacto`

Xalan	Set up the *CLASSPATH* environment variable to include the Xalan JAR files, for example: `export CLASSPATH=<xalan_dir>/xalan.jar:$CLASSPATH`

10. Optional: For index processing, set up ICU for Java.

```
export CLASSPATH=<icu4j_dir>/icu4j.jar:$CLASSPATH
```

11. Optional: For JavaHelp, set the *JHHOME* environment variable.

```
export JHHOME=<javahelp_dir>
```

12. Optional: For PDF output, set up the XSL-FO processor:

Processor	Action
FOP	Add the FOP installation directory to the `local.properties` file as the fop.home property, for example: `fop.home=/usr/share/java/fop`
RenderX	Add the RenderX installation directory to the `local.properties` file as the xep.dir property, for example: `xep.dir=/usr/share/java/xep`
Antenna House	Add the AH Formatter installation directory to the `local.properties` file as the axf.path property, for example: `axf.path=/usr/share/java/AHFormatterV6`

13. Test the DITA-OT installation by transforming the sample files.

    The `samples\ant_sample directory` contains Ant scripts designed to build various output formats.

```
/usr/local/share/DITA-OT1.8$ ant -f samples/ant_sample/sample_all.xml
```

The generated output is written to the *DITA-dir*\out\samples directory. The following output formats are generated:

- Docbook
- Eclipse help
- HTML Help
- ODT
- JavaHelp
- PDF
- TocJS
- TROFF
- XHTML

Installing the minimal or standard package on Windows

If you already have locally-installed copies of Ant and the other required tools, install either the minimal or standard package.

Before you begin

Ensure that you have the following prerequisite software installed:

- Ant, version 1.7.1 or later
- Java runtime environment or development kit, version 6 or later
- XSLT processor. You can use either Saxon, version 9.1 or later, or Xalan-J, version 2.7.1 or later.

In addition, determine the specific DITA-OT transformations that you intend to support and ensure that you have the prerequisite software installed for them.

For more information, see *Prerequisite software* on page 14 and *Tested platforms and tools*.

Procedure

1. Download the minimal or standard package from *SourceForge*.

Package	File name
Minimal	DITA-OT1.8_minimal_bin.zip
Standard	DITA-OT1.8_standard_bin.zip

   For production use, we recommend that you use the latest stable release.
2. Extract the contents of the package into an installation directory.
   For example, C:\pkg\DITA-OT1.8.
3. Verify that the *JAVA_HOME* environment variable is set.

   ```
   set JAVA_HOME=<JRE_dir>
   ```
4. Verify that the *ANT_HOME* environment variable is set.

   ```
   set ANT_HOME=<Ant_dir>
   ```
5. Verify that the *PATH* environment variable includes the Java and Ant executable files.

   ```
   set PATH=%JAVA_HOME%\bin;%ANT_HOME%\bin;%PATH%
   ```
6. Set the *DITA_HOME* environment variable to point to the DITA-OT installation directory.

   ```
   set DITA_HOME=<DITA-OT_dir>
   ```

7. Set up the *CLASSPATH* environment variable.

```
set CLASSPATH=%DITA_HOME%\lib\dost.jar;%CLASSPATH%
set CLASSPATH=%DITA_HOME%\lib;%CLASSPATH%
set CLASSPATH=%DITA_HOME%\lib\resolver.jar;%CLASSPATH%
set CLASSPATH=%DITA_HOME%\lib\commons-codec-1.4.jar;%CLASSPATH%
```

8. Optional: If you use Ant, version 1.8 or later, set up the *CLASSPATH* environment variable to include Apache Xerces.

```
set CLASSPATH=<xerces_dir>\xercesImpl.jar;<xerces_dir>\xml-apis.jar;
%CLASSPATH%
```

9. Set up the XSLT processor:

Processor	Action

Saxon	Set up the *CLASSPATH* environment variable to include the Saxon JAR files, for example:
	`set CLASSPATH=<saxon_dir>\saxon9.jar;<saxon_dir>\saxon9-dom.jar;%CLASSPATH%`
	Set up the `ANT_OPTS` environment variable, for example:
	`set ANT_OPTS=%ANT_OPTS% -Djavax.xml.transform.TransformerFactory=net.sf.saxon.TransformerFacto`

Xalan	Set up the *CLASSPATH* environment variable to include the Xalan JAR files, for example: `set CLASSPATH=<xalan_dir>\xalan.jar;%CLASSPATH%`

10. Optional: For index processing, set up ICU for Java.

```
set CLASSPATH=<icu4j_dir>\icu4j.jar;%CLASSPATH%
```

11. Optional: For JavaHelp, set the *JHHOME* environment variable.

```
set JHHOME=<javahelp_dir>
```

12. Optional: For HTML Help, add the installation directory for the HTML Help Workshop to the `local.properties` file as the hhc.dir property.

```
hhc.dir=C:\\Program Files (x86)\\HTML Help Workshop
```

13. Optional: For PDF output, set up the XSL-FO processor:

Processor	Action
FOP	Add the FOP installation directory to the `local.properties` file as the fop.home property, for example: `fop.home=C:\\Program Files\\fop`
RenderX	Add the RenderX installation directory to the `local.properties` file as the xep.dir property, for example: `xep.dir=C:\\Program Files\\xep`

Processor	Action
Antenna House	Add the AH Formatter installation directory to the `local.properties` file as the axf.path property, for example: `axf.path=C:\\Program Files\\AHFormatterV6`

14. Test the DITA-OT installation by transforming the sample files.

    The `samples\ant_sample directory` contains Ant scripts designed to build various output formats.

    ```
    C:\DITA-OT1.8>ant -f samples\ant_sample\sample_all.xml
    ```

    The generated output is written to the *DITA-dir*`\out\samples directory`. The following output formats are generated:

    - Docbook
    - Eclipse help
    - HTML Help
    - ODT
    - JavaHelp
    - PDF
    - TocJS
    - TROFF
    - XHTML

Publishing DITA content

You can use either Ant or the command-line tool to transform DITA content to the various output formats that are supported by the DITA Open Toolkit (DITA-OT).

DITA-OT transformations

The DITA Open Toolkit (DITA-OT) ships with several core transformations. Each core transformation represents an implementation of all processing that is defined by OASIS in the DITA specification.

DITA to Docbook

The docbook transformation converts DITA maps and topics into a Docbook output file. Complex DITA markup might not be supported, but the transformation supports most common DITA structures.

DITA to Eclipse Content

The eclipsecontent transformation generates normalized DITA files and Eclipse control files. It originally was designed for an Eclipse plug-in that dynamically rendered DITA content, but the output from the transformation can be used by other applications that work with DITA.

Normalized DITA files have been through the DITA Open Toolkit pre-processing operation. In comparison to the source DITA files, the normalized DITA file are modified in the following ways:

- Map-based links, such as those generated by map hierarchy and relationship tables, are added to the topics.
- Link text is resolved.
- Any DTD or Schema reference is removed.
- Class attributes that are defaulted in the DTD or Schema are made explicit in the topics.
- Map attributes that cascade are made explicit on child elements.

The normalized DITA files have an extension of `.xml`.

DITA to Eclipse help

The eclipsehelp transformation generates XHTML output, CSS files, and the control files that are needed for Eclipse help.

In addition to the XHTML output and CSS files, this transformation returns the following files, where *mapname* is the name of the master DITA map.

File name	Description
`plugin.xml`	Control file for the Eclipse plug-in
mapname`.xml`	Table of contents
`index.xml`	Index file
`plugin.properties`	
`META-INF/MANIFEST.MF`	

DITA to HTML Help (CHM)

The htmlhelp transformation generates HTML output, CSS files, and the control files that are needed to produce a Microsoft HTML Help file.

In addition to the HTML output and CSS files, this transformation returns the following files, where *mapname* is the name of the master DITA map.

File name	Description
mapname`.hhc`	Table of contents
mapname`.hhk`	Sorted index
mapname`.hhp`	HTML Help project file
mapname`.chm`	Compiled HTML Help  **Note:** This file is generated only if the HTML Help Workshop is installed on the build system.

DITA to legacy PDF transformation

The legacypdf transformation produces a PDF using the demo PDF build. This transformation is deprecated.

The first versions of the toolkit came with the demo PDF build, which was replaced by the more robust PDF plug-in (also known as PDF2) in release 1.4.3. The demo PDF build is no longer maintained by the DITA-OT developers, although the toolkit includes it in order to support older customizations and build scripts that extended the code.

DITA to Open Document Type

The odt transformation produces output files that use the Open Document format, which is used by tools such as Open Office.

This transform returns an ODT document, which is a zip file that contains the ODF XML file (`content.xml`), referenced images, and default styling (in the file `styles.xml`).

DITA to PDF (PDF2)

The pdf (or pdf2) transformation generates PDF output.

This transformation was originally created as a plug-in and maintained outside of the main toolkit code. It was created as a more robust alternative to the demo PDF transformation in the original toolkit, and thus was known as PDF2. The plug-in was bundled into the default toolkit distribution with release 1.4.3.

DITA to Rich Text Format

The wordrtf transformation produces an RTF file for use by Microsoft Word.

The structure of the generated RTF file is the same as the navigation structure in the DITA map. To avoid losing files in the final output, make sure the DITA map contains all topics that are referenced from any individual topics.

The wordrtf transformation has the following limitations:

- Flagging, filtering, and revision bars are not supported.
- Style attributes for tables are not supported.
- Tables within list items are not supported.
- Output styles supported by other DITA-OT transformations, for example, X and Y, are not supported.

DITA to TocJS

The tocjs transformation generates XHTML output, a frameset, and a JavaScript-based table of contents with expandable and collapsible entries. The transformation was originally created by Shawn McKenzie as a plug-in and was added to the default distribution in DITA OT, release 1.5.4.

The tocjs transformation was updated so that it produces XHTML output and uses a default frameset. This transformation also was added to the `build_demo.xml` script as a transformation-type option.

DITA to Troff

The troff transformation produces output for use with the Troff viewer on Unix-style platforms, particularly for programs such as the Man page viewer.

Each DITA topic generally produces one troff output file. The troff transformation supports most common DITA structures, but it does not support <table> or <simpletable> elements. Most testing of troff output was performed using the Cygwin Linux emulator.

DITA to XHTML

The xhtml transformation generates XHTML output and a table of contents (TOC) file. This was the first transformation created for the DITA Open Toolkit, and it is the basis for all the HTML-based transformations.

The XHTML output is always associated with the default DITA-OT CSS file (`commonltr.css` or `commonrtl.css` for right-to-left languages). You can use toolkit parameters to add a custom style sheets to override the default styles.

To run the XHTML transformation, set the transtype parameter to xhtml. If you are running the demo build, specify web rather than xhtml.

Publishing DITA content from Ant

You can use Ant to invoke the DITA Open Toolkit (DITA-OT) and generate output. This is the most robust method of transforming DITA content; you can use the complete set of parameters that are supported by the toolkit.

Ant

Ant is a Java-based, open-source tool that is provided by the Apache Foundation. It can be used to declare a sequence of build actions. It is well suited for both development and document builds. The full-easy-install version of the toolkit ships with a copy of Ant.

The DITA-OT uses Ant to manage the XSLT scripts that are used to perform the various transformation; it also uses Ant to manage intermediate steps that are written in Java.

The most important Ant script is the `build.xml` file. This script defines and combines common pre-processing and output transformation routines; it also defines the DITA-OT extension points.

Building output using Ant

You can build output by running the `ant` command and specifying the DITA-OT parameters at the command prompt. You also can use an Ant build script to provide the DITA-OT parameters

Procedure

1. Run the `startcmd` file that is applicable for your operating system.

   The `startcmd.bat` and `startcmd.sh` files are in the directory where you installed the DITA-OT.

2. To provide the DITA-OT parameters from the command prompt, issue the following command:

```
ant -Dargs.input=input-file -Dtranstype=transformation-type -Dparameter-
name=value
```

   where:

   - *input-file* is the DITA map or DITA file that you want to process.
   - *transformation-type* is the transformation type.
   - *parameter-name* is the name of an optional parameter.
   - *value* is an applicable value for the optional parameter.

   If you do not specify an output directory, by default, the DITA-OT writes the output to the *installation-directory*`\out` directory.
3. If you use a build script, issue the following command:

```
ant -f build-script target
```

   where:

   - *build-script* is name of the Ant build script.
   - *target* is an optional switch that specifies the name of the Ant target that you want to run. If you do not specify a target, the value of the @default attribute for the Ant project is used.

Creating an Ant build script

Instead of typing the DITA-OT parameters at the command prompt, you might want to create an Ant build script that contains all of the parameters.

Procedure

1. Create an XML file that contains the following content:

```
<?xml version="1.0" encoding="UTF-8" ?>
<project name="@project-name@" default="@default-target@" basedir=".">

  <property name="dita.dir" location="@path-to-DITA-OT@"/>

  <target name="@target-name@">
    <ant antfile="${dita.dir}${file.separator}build.xml">
      <property name="args.input" value="@DITA-input@"/>
      <property name="transtype" value="xhtml"/>
    </ant>
  </target>

</project>
```

   You will replace the placeholder content (indicated by the @ signs) with content applicable to your environment.
2. Specify project information:
   a) Set the value of the @name attribute to X.
   b) Set the value of the @default attribute to the name of a target in the build script.

      If the build script is invoked without specifying a target, this target will be run.
3. Set the value of the dita.dir property to the location of the DITA-OT.

   This can be a fully qualified path, or you can specify it relative to the location of the Ant build script that you are writing.
4. Create the Ant target:
   a) Set the value of the @name attribute.
   b) Specify the value for the args.input property.

c) Specify the value of the transtype property.

5. Save the build script.

Example

The following Ant build script generates CHM and PDF output for the `userguide.ditamap` file.

```
<?xml version="1.0" encoding="UTF-8" ?>
<project name="Toolkit-documentation" default="all" basedir=".">

    <property name="dita.dir" location="C:\DITA-OT1.6.M5"/>

    <target name="all" description="build CHM and PDF"
 depends="chm,pdf"/>

    <target name="chm" description="build CHM">
        <ant antfile="${dita.dir}\build.xml">
            <property name="args.input" value="C:\dita-ot\src
\main\doc\userguide.ditamap"/>
            <property name="args.gen.task.lbl" value="YES"/>
            <property name="output.dir" value="C:\kje\temp\out"/
>
            <property name="transtype" value="htmlhelp"/>
        </ant>
    </target>

    <target name="pdf" description="build PDF">
        <ant antfile="${dita.dir}\build.xml">
            <property name="args.input" value="C:\dita-ot\src
\main\doc\userguide.ditamap"/>
            <property name="args.gen.task.lbl" value="YES"/>
            <property name="args.rellinks" value="nofamily"/>
            <property name="output.dir" value="C:\kje\temp\out"/
>
            <property name="transtype" value="pdf"/>
        </ant>
    </target>

</project>
```

In addition to the mandatory parameters (args.input and transtype), the chm and pdf targets each specify some optional parameters:

- The args.gen.task.lbl property is set to YES, which ensures that headings are automatically generated for the sections of task topics.
- The output.dir property specifies where the DITA OT writes the output of the transformations.

The pdf target also specifies that related links should be generated in the PDF, but only those links that are created by relationship tables and <link> elements.

Finally, the all target simply specifies that both the chm and pdf target should be run.

What to do next

Another resource for learning about Ant scripts are the files in the `samples/ant_samples` directory. This directory contains the Ant build files used by the demo build, as well as templates that you can use to create Ant scripts.

Publishing DITA content from the command-line tool

The DITA Open Toolkit (DITA-OT) includes a command-line tool designed for users who are unfamiliar with Ant. You can invoke the DITA-OT from the command-line tool and generate output. This method is less robust than Ant.

Command-line tool

The DITA Open Toolkit (DITA-OT) provides a command-line tool for users with little knowledge of Ant. The command-line tool supports a subset of the parameters that are available to the Ant builds.

The command-line tool is a wrapper around the Ant interface; it takes the simplified parameters as input, converts them to Ant parameters, and then runs an Ant build. The Ant parameters that are passed to the DITA-OT are saved to the `property.temp` file that is written to the output directory.

For individual builds, the additional Java overhead is minimal, but for repeated or server-based builds, the extra memory usage might become an issue. Applications that embed the toolkit should invoke Ant directly.

Building output using the command-line tool

If you are unfamiliar with Ant, you can invoke the DITA Open Toolkit (DITA-OT) and build output from the command-line tool.

Procedure

1. Run the `startcmd` file that is applicable for your operating system.

   The `startcmd.bat` and `startcmd.sh` files are in the directory where you installed the DITA-OT.
2. From the command prompt, issue the following command:

   ```
   java -jar lib/dost.jar /i:input-file /transtype:transformation-type
   /parameter-name:value
   ```

   where:

   - *input-file* is the DITA map or DITA file that you want to process.
   - *transformation-type* is the transformation type.
   - *parameter-name* is the name of an optional parameter.
   - *value* is an applicable value for the optional parameter.

   If you do not specify an output directory, by default, the DITA-OT writes the output to the *installation-directory*`\out` directory.

   Example

   The following command generates XHTML output for the `sequence.ditamap` file and specifies the output is written to the `test` directory

   ```
   java -jar lib/dost.jar /i:samples/sequence.ditamap /
   outdir:test /transtype:xhtml
   ```

Globalizing DITA content

The DITA standard supports content that is written in or translated to any language. In general, the DITA Open Toolkit (DITA-OT) passes content through to the output format unchanged. The DITA-OT uses the values for the @xml:lang, @translate, and @dir attributes that are set in the source content to provides globalization support.

Globalization support offered by the DITA-OT

The DITA Open Toolkit (DITA-OT) offers globalization support in the following areas: Generated text, index sorting, and bi-directional text.

Generated text	*Generated text* is text that is rendered automatically in the output that is generated by the DITA-OT; this text is not located in the DITA source files. The following are examples of generated text: • The word "Chapter in a PDF file. • The phrases "Related concepts," "Related tasks," and "Related reference" in XHTML output.
Index sorting	The DITA-OT can use only a single language to sort indexes.
Bi-directional text	The DITA-OT contains style sheets (CSS files) that support both left-to-right (LTR) and right-to-left (RTL) languages.

When the DITA-OT generates output, it takes the first value for the @xml:lang attribute that it encounters, and then it uses that value to create generated text, perform index sorting, and determine which default CSS file is used. If no value for the @xml:lang attribute is found, the toolkit defaults to US English.

Supported languages: HTML-based transformations

The DITA Open Toolkit (DITA-OT) supports over 50 languages and language variants for the HTML- and XHTML-based transformations, for example, Eclipse Help, HTML Help, and TocJS.

Table 1: Supported languages: HTML- and XHTML-based transformations

Language	Language code
Arabic	ar or ar-eg
Belarusian	be or be-by
Brazilian Portuguese	pt-br
Bulgarian	bg or bg-bg
Catalan	ca-es
Chinese (simplified)	zh-cn or zh-hans
Chinese (traditional)	zh-tw or zh-hant
Croatian	hr or hr-hr
Czech	cs or cs-cz
Danish	da or da-dk
Dutch	nl or nl-nl
Dutch (Belgian)	nl-be
English (US)	en or en-us
English (British)	en-gb
English (Canadian)	en-ca
Estonian	et or et-ee
Finnish	fi or fi-fi
French	fr or fr-fr
French (Belgian)	fr-be

Language	Language code
French (Canadian)	fr-ca
French (Swiss)	fr-ch
German	de or de-de
German (Swiss)	de-ch
Greek	el or el-gr
Hebrew	he or he-il
Hindi	hi or hi-hi
Hungarian	hu or hu-hu
Icelandic	is or is-is
Indonesian	id or id-id
Italian	it or it-it
Italian(Swiss)	it-ch
Japanese	ja or ja-jp
Kazakh	kk or kk-kz
Korean	ko or ko-kr
Latvian	lv or lv-lv
Lithuanian	lt or lt-lt
Macedonian	mk or mk-mk
Malay	ms or ms-my
Norwegian	no or no-no
Polish	pl or pl-pl
Portuguese	pt or pt-pt
Romanian	ro or ro-ro
Russian	ru or ru-ru
Serbian (Cyrillic script)	sr, sr-rs, or sr-sp
Serbian (Latin script)	sr-latn-rs
Slovak	sk or sk-sk
Slovenian	sl or sl-si
Spanish	es or es-es
Spanish (Latin American)	es-419
Swedish	sv or sv-se
Thai	th or th-th
Turkish	tr or tr-tr
Ukrainian	uk or uk-ua

Language	Language code
Urdu	ur or ur-pk

Supported languages: PDF transformations

The DITA Open Toolkit (DITA-OT) supports a smaller set of languages for the PDF (pdf2) transformation. This transformation was donated to the DITA-OT project after the project inception, and it uses a different and larger set of generated text than the HTML-based transformations.

Table 2: Supported languages: PDF transformation

Language	Language code
Chinese (simplified)	zh-cn or zh-hans
Dutch	nl or nl-nl
English (US)	en or en-us
Finnish	fi or fi-fi
French	fr or fr-fr
German	de or de-de
Hebrew	he or he-il
Italian	it or it-it
Japanese	ja or ja-jp
Romanian	ro or ro-ro
Russian	ru or ru-ru
Slovenian	sl or sl-SI
Spanish	es or es-es
Swedish	sv or sv-se

Error messages and troubleshooting

This section contains information about problems that you might encounter and how to resolve them.

DITA-OT error messages

The error messages generated by the DITA Open Toolkit contain a message ID, severity information, and message text. This topic lists each error message generated by the toolkit and provides additional information that might be helpful in understanding and resolving the error condition.

Each message ID is composed of a message prefix, a message number, and a letter that indicates the severity (I, W, E, or F). The toolkit uses the following severity scale:

Informational (I)	The toolkit encountered a condition of which you should be aware. For example, draft comments are enabled and will be rendered in the output.
Warning (W)	The toolkit encountered a problem that should be corrected. Processing will continue, but the output might not be as expected.

Error (E) The toolkit encountered a more severe problem, and the output is affected. For example, some content is missing or invalid, or the content is not rendered in the output

Fatal (F) The toolkit encountered a severe condition, processing stopped, and no output is generated.

Message ID	Severity	Message text	Additional details
DOTA001F	Fatal	"*%1*" is not a recognized transformation type. Supported transformation types are docbook, eclipsecontent, eclipsehelp, htmlhelp, javahelp, net.sourceforge.dita-ot.html, odt, pdf, pdf2, tocjs, troff, wordrtf, xhtml.	Default transformation types that ship with the toolkit include xhtml, eclipsehelp, pdf (or pdf2), tocjs, htmlhelp, javahelp, odt, eclipsecontent, troff, docbook, and wordrtf. Additional transformation types may be available if toolkit plug-ins are installed.
DOTA002F	Fatal	Input file is not specified, or is specified using the wrong parameter.	The input parameter was not specified, so there is no DITA or DITAMAP file to transform. Ensure the parameter is set properly; see *DITA-OT Ant arguments* or *DITA-OT Command line tool arguments* if you are unsure how to specify the input file.
DOTA003F	Fatal	Cannot find the user specified XSLT stylesheet '*%1*'.	An alternate stylesheet was specified to run in place of the default XSLT output process, but that stylesheet could not be loaded. Please correct the parameter to specify a valid stylesheet.
DOTA004F	Fatal	Invalid DITA topic extension '*%1*'. Supported values are '.dita' and '.xml'.	This optional parameter is used to set an extension for DITA topic documents in the temporary processing directory. Only "dita", ".dita", "xml", or ".xml" are allowed.
DOTA006W	Warning	Absolute paths on the local file system are not supported for the CSSPATH parameter. Please use a relative path or full URI instead.	If the CSSPATH uses an absolute path, it should be one that can still be accessed after the files are moved to another system (such as `http://www.example.org/`). Absolute paths on the local file system will be broken if the content is moved to a new system.
DOTA007E	Error	Cannot find the running-footer file "*%1*". Please double check the value to ensure it is specified correctly.	The running footer file, which contains content to be added to the bottom of each XHTML output topic, cannot be located or read. This is usually caused by a typo in the parameter value. You should also ensure that the value is not specified with "file:" as a prefix.
DOTA008E	Error	Cannot find the running-header file "*%1*". Please double check the value to ensure it is specified correctly.	The running header file, which contains content to be added to the top of each XHTML output topic, cannot be located or read. This is usually caused by a typo in the parameter value. You

Message ID	Severity	Message text	Additional details
			should also ensure that the value is not specified with "file:" as a prefix.
DOTA009E	Error	Cannot find the specified heading file "*%1*". Please double check the value to ensure it is specified correctly.	The running heading file, which contains content to be added to the <head> section of each XHTML output topic, cannot be located or read. This is usually caused by a typo in the parameter value. You should also ensure that the value is not specified with "file:" as a prefix.
DOTA010E	Error	The Apache FOP program cannot be found in the default location. Please place FOP into the default directory demo/fo/fop/ or update the build file to support your local configuration.	By default, the DITA-OT expects to find Apache FOP in the `fop/` directory inside of the PDF plug-in. If you are using an alternate renderer, or if you have placed FOP in a different directory, you will need to update your configuration accordingly.
DOTA011W	Warning	Argument "*%1*" is deprecated. This argument is no longer supported in the toolkit.	
DOTA012W	Warning	Argument "*%1*" is deprecated. Please use the argument "*%2*" instead.	
DOTA066F	Fatal	Cannot find the user specified XSLT stylesheet '*%1*'.	An alternate stylesheet was specified to run in place of the default XSL-FO output process, but that stylesheet could not be loaded. Please correct the parameter to specify a valid stylesheet.
DOTA067W	Warning	Ignoring index-see '*%1*' inside parent index entry '*%2*' because the parent indexterm contains indexterm children. According to the DITA Specification, the index-see element should be ignored if the parent indexterm contains other indexterm children.	This condition is ignored, as instructed in the OASIS DITA Standard.
DOTA068W	Warning	Ignoring index-see-also '*%1*' inside parent index entry '*%2*' because the parent indexterm contains indexterm children. According to the DITA Specification, the index-see-also element should be ignored if the parent indexterm contains other indexterm children.	This condition is ignored, as instructed in the OASIS DITA Standard.
DOTA069F	Fatal	Input file '*%1*' cannot be located or read. Ensure that file was specified properly and that you have permission to access it.	Please ensure that the input file path and file name were entered correctly.
DOTA069W	Warning	Target "*%1*" is deprecated. Remove references to this target from your custom XSLT or plug-ins.	

Message ID	Severity	Message text	Additional details
DOTJ001F	Fatal	Invalid command line syntax for the parameter '*%1*'. Parameters to the command line tool should use the syntax /parameter:value.	See *Command-line tool parameters* on page 58 for a list of available parameters and values.
DOTJ002F	Fatal	Unsupported parameter '*%1*'. Please refer to the DITA-OT User Guide for supported parameters.	See *Command-line tool parameters* on page 58 for a list of available parameters and values.
DOTJ003F	Fatal	Parameter '*%1*' was specified without a value. Parameters to the command line tool should use the syntax /parameter:value.	See *Command-line tool parameters* on page 58 for a list of available parameters and values.
DOTJ004F	Fatal	Cannot create temporary processing directory '*%1*'. Please ensure that you have permission to create the directory '*%1*'.	The transform was unable to create a temporary processing directory; this is usually caused by account control settings that prevent creating a temporary directory in the specified location. Please verify that you have permission to write to the default location, or specify an alternate temporary directory location. See *DITA-OT Ant arguments* or *DITA-OT Command line tool arguments* for details on how to specify the temporary directory.
DOTJ005F	Fatal	Failed to create new instance for '*%1*'. Please ensure that '*%1*' exists and that you have permission to access it.	
DOTJ006F	Fatal	An Ant build file used the following illegal syntax when calling AntInvoker: extparam='*%1*'. Please correct the call to AntInvoker when directly calling DITA-OT Java code from Ant; for example, extparam="maplinks=XXXX;other=YYY".	This message occurs when an Ant build calls a DITA-OT pipeline module directly instead of using the default call to that module. Please check that all parameters are set correctly in your Ant build. The syntax for extparam is "name1=value1;name2=value2".
DOTJ007E	Error	Duplicate condition in filter file for rule '*%1*'. The first encountered condition will be used.	If a condition is defined more than once (such as setting audience="all" to include, then resetting it to exclude), only the first definition will be used.
DOTJ009E	Error	Cannot overwrite file '*%1*' with file '*%2*'. The modified result may not be consumed by the following steps in the transform pipeline. Check to see whether the file is locked by some other application during the transformation process.	The transform was unable to create files properly during the transform; results may not be as expected.
DOTJ012F	Fatal	Failed to parse the input file '*%1*'. The XML parser reported the following error:	This message may indicate an invalid input file (such as accidentally specifying a PDF file as input rather than a DITA map file), an input file that uses elements which are not

Message ID	Severity	Message text	Additional details
			allowed, are not part or a DITA file that has errors and cannot be parsed as XML. You could also be using a specialized DITA document type that needs external plug-ins in order to be parsed correctly. The message issued by the XML parser should provide additional information to help diagnose the cause.
DOTJ013E	Error	Failed to parse the referenced file '*%1*'. The XML parser reported the following error:	This message may indicate a reference to an invalid file (such as accidentally referencing a PDF or unknown XML file as if it was DITA), a referenced file that uses elements which are not allowed, or a referenced DITA file that has errors and cannot be parsed as XML. You could also be using a specialized DITA document type that needs external plug-ins in order to be parsed correctly. The message issued by the XML parser should provide additional information to help diagnose the cause.
DOTJ014W	Warning	Found an indexterm element with no content. Setting the term to ***.	An empty <indexterm> element was found, and will appear in the index as ***. This index term should be removed from the source.
DOTJ015F	Fatal	Log directory cannot be null. Please specify a valid directory for the build log.	
DOTJ016F	Fatal	Failed to create log directory '*%1*'. Please specify a valid directory for the build log.	
DOTJ017F	Fatal	No input file was specified; failed to initialize log name based on input file.	The transform failed because the input file was not specified; log file names are based on the name of the input file, so no log could be generated.
DOTJ018I	Informational	Log file '*%1*' was generated successfully in directory '*%2*'. Any messages from the transformation process are available in the log file; additional details about each message are available in the DITA-OT user guide.	
DOTJ020W	Warning	At least one plug-in in '*%1*' is required by plug-in '*%2*'. Plug-in '*%2*' cannot be loaded. Check and see whether all prerequisite plug-ins are installed in toolkit.	This will appear when one installed plug-in requires another in order to function correctly, but the required plug-in is not found. The installed plug-in will be ignored.

Message ID	Severity	Message text	Additional details
DOTJ021W	Warning	File '*%1*' will not generate output since it is invalid or all of its content has been filtered out by the ditaval file. Please check the file '*%1*' and the ditaval file to see if this is the intended result.	This may appear if filter conditions on the root element of a topic cause the entire topic to be filtered out. To remove this message, you could place any filter conditions on the reference to this file, which will prevent the build from accessing this file.
DOTJ022F	Fatal	Failed to parse the input file '*%1*' because all of its content has been filtered out. This will happen if the input file has filter conditions on the root element, and a ditaval excludes all content based on those conditions.	Either the input file or the ditaval file should change, otherwise your build is explicitly excluding all content.
DOTJ023E	Error	Failed to get the specified image file '*%1*', so it will not be included with your output.	Check whether the image exists in the source location or already exists in the output directory.
DOTJ025E	Error	The input to the "topic merge" transform process could not be found. Correct any earlier transform errors and try the build again, or see the DITA-OT User Guide for additional causes.	This message should only appear in the following cases: • Errors earlier in the transform prevented this step of the transform from running; correct any errors and try the build again. • An Ant build or plug-in is directly calling the toolkit's topic merge module, and is doing so improperly; in this case the Ant build or plug-in needs to be fixed. • In the past, problems have been encountered when calling this module with an absolute path; this should no longer be an issue, but may be fixed in older releases by updating the Ant build or plug-in.
DOTJ026E	Error	The "topic merge" did not generate any output. Correct any earlier transform errors and try the build again, or see the DITA-OT User Guide for additional causes.	This message should only appear if an Ant build or plug-in is directly calling the toolkit's topic merge module, or if earlier errors resulted in problems with some of the content. If the topic merge module is called correctly, then this indicates a program error that should be reported to the DITA-OT development team, at *DITA-OT bug and feature tracker*.
DOTJ028E	Error	No format attribute was found on a reference to file '*%1*', which does not appear to be a DITA file. If this is not a DITA file, set the format attribute to an appropriate value, otherwise set the format attribute to "dita".	When referencing a non-DITA file, the format attribute should indicate the type of file referenced (such as "html" for HTML topics or "pdf" for PDF files). Otherwise, the transform may attempt to parse the referenced document as a DITA topic.

Message ID	Severity	Message text	Additional details
DOTJ029I	Informational	No 'domains' attribute was found for element '<*%1*>'. This generally indicates that your DTD or Schema was not developed properly according to the DITA specification.	The domains attribute is used in specialized DITA documents to help determine which domain elements are legal. This message will only appear if DITA specialization was not defined properly.
DOTJ030I	Informational	No 'class' attribute for was found for element '<*%1*>'. This generally indicates that your DTD or Schema was not developed properly according to the DITA specification.	All specialized DITA elements must define a class attribute to provide ancestry information. This message will only appear a specialized DITA element did not define a class attribute.
DOTJ031I	Informational	No specified rule for '*%1*' was found in the ditaval file. This value will use the default action, or a parent prop action if specified. To remove this message, you can specify a rule for '*%1*' in the ditaval file.	This informational message is intended to help you catch filter conditions that may have been specified improperly; if the value is correct, no action is needed.
DOTJ033E	Error	No valid content is found in topicref '*%1*' during chunk processing. Please specify an existing and valid topic for the topicref.	
DOTJ034F	Fatal	Failed to parse the input file '*%1*' (the content of the file is not valid). If the input file '*%1*' does not have a DOCTYPE declaration, please make sure that all class attributes are present in the file.	DITA processing is based on class attributes defined for every element. Usually these are defaulted in the DTD or Schema; if no DTD or Schema is used, the class attributes must be explicitly included in the map or topic.
DOTJ035F	Fatal	The file "*%1*" referenced by "*%2*" is outside the scope of the input dita/map directory. If you want to lower the severity level, please use the Ant parameter 'outer.control', and set the value to "warn" or "quiet". Otherwise, move the referenced file "*%1*" into the input dita/map directory.	This will appear when a topic is outside the scope of the map; for example, if the main input map references `"../other-directory/some.dita"`. The result would cause an output file to be created outside of the output directory. Please see *DITA-OT Ant arguments (outer.control and generate.copy.outer)* or *DITA-OT Command line tool arguments (/outercontrol and /generateouter)* for more details.
DOTJ036W	Warning	The file "*%1*" referenced by "*%2*" is outside the scope of the input dita/map directory. If you do not want to see the warning message, please use the Ant parameter 'outer.control', and set the value to "quiet". Otherwise, move the referenced file "*%1*" into the input dita/map directory.	This will appear when a topic is outside the scope of the map; for example, if the main input map references `"../other-directory/some.dita"`. The result would cause an output file to be created outside of the output directory. Please see *DITA-OT Ant arguments (outer.control and generate.copy.outer)* or *DITA-OT Command line tool arguments (/*

Message ID	Severity	Message text	Additional details
			outercontrol and /generateouter) for more details.
DOTJ037W	Warning	The XML schema and DTD validation function of the parser is turned off. Please make sure the input is normalized DITA with class attributes included, otherwise it will not be processed correctly.	DITA processing is based on class attributes defined for every element. Usually these are defaulted in the DTD or Schema; if validation against the DTD or Schema is turned off, the class attributes must be explicitly included in the map or topic.
DOTJ038E	Error	The tag "*%1*" is specialized from unrecognized metadata. Please make sure that tag "*%1*" is specialized from an existing metadata tag in the core DITA vocabulary.	This appears to indicate an error in creating specialized metadata elements. Please verify that the document type you are using is complete and complies with DITA Specialization rules.
DOTJ039E	Error	There is no target specified for conref push action "pushafter". Found in file="*%1*", element="*%2*". Please add <elementname conref="pushtarget" conaction="mark"> before current element.	Please see the topic on *Conref Push* in the DITA specification for details on expected syntax for this function.
DOTJ040E	Error	An element uses the attribute conaction="replace", but a conref attribute is not found in the expected location. Found in file="*%1*", element="*%2*".	Please see the topic on *Conref Push* in the DITA specification for details on expected syntax for this function.
DOTJ041E	Error	The attribute conref="*%1*" uses invalid syntax. The value should contain '#' followed by a topic or map ID, optionally followed by '/elemID' for a sub-topic element.	The conref attribute must be a URI reference to a DITA element. Please see the topic on *URI-based addressing* in the DITA specification for details on the expected syntax.
DOTJ042E	Error	Two elements both use conref push to replace the target "*%1*". Please delete one of the duplicate "replace" actions.	The conref push function was used to replace a single element with two or more alternatives. Only one element may directly replace another using conref push. See *Conref Push* in the DITA specification for more information about the conref push "replace" function.
DOTJ043W	Warning	The conref push function is trying to replace an element that does not exist (element "*%1*" in file "*%2*").	The target for a conref push action does not exist; please make sure that the syntax is correct and that the target exists. See the topic on *URI-based addressing* in the DITA specification for details on the expected syntax. If the syntax is correct, it is possible that the target was filtered out of your build using a DITAVAL file.
DOTJ044W	Warning	There is a redundant conref action "pushbefore". Found in file="*%1*",	Please see the topic on *Conref Push* in the DITA specification for details on expected syntax for this function.

Message ID	Severity	Message text	Additional details
		element="*%2*". Please make sure that "mark" and "pushbefore" occur in pairs.	
DOTJ045I	Informational	The key "*%1*" is defined more than once in the same map file. The reference href="*%2*" is ignored.	No response is needed if the keys are defined as expected; this is informational only, to help catch incorrectly defined keys.
DOTJ046E	Error	Conkeyref="*%1*" can not be resolved because it does not contain a key or the key is not defined. The build will use the conref attribute for fallback, if one exists.	See *the conkeyref definition* for details on expected syntax and usage.
DOTJ047I	Informational	Unable to find key definition for keyref="*%1*", href may be used as fallback if it exists.	This message is intended to help you locate incorrectly specified keys; if the key was specified correctly, this message may be ignored.
DOTJ049W	Warning	The attribute value *%1*="*%3*" on element "*%2*" does not comply with the specified subject scheme. According to the subject scheme map, the following values are valid for the *%1* attribute: *%4*	A DITA Subject Scheme map was used to limit values that are available to the specified attribute. Please correct the attribute so that it uses one of the allowed values.
DOTJ050W	Warning	Found an <index-see> or <index-see-also> reference to the term '*%1*', but that term is not defined in the index.	The Eclipse index will contain a value such as "See also otherEntry", but otherEntry does not exist in this index. The index reference will be broken unless this plug-in is *always* loaded into Eclipse with another plug-in that defines otherEntry as an index term.
DOTJ051E	Error	Unable to load target for coderef "*%1*".	The target for a coderef element, which specifies an external text-based file, could not be located or loaded. Please verify that the reference is correct. Note that for security reasons, references to code samples outside of the scope of the map directory are not supported by default, as this could allow a reference to access and display any restricted or hidden file on the system. If you are certain that the path is valid and the file should be loaded, the current workaround is to set a parameter to allow these references. See *DITA-OT Ant arguments (outer.control and generate.copy.outer)* or *DITA-OT Command line tool arguments (/outercontrol and /generateouter)* for details.
DOTJ052E	Error	Code reference charset "*%1*" not supported. See the DITA-OT User	The DITA-OT supports a special syntax on coderef elements to specify

Message ID	Severity	Message text	Additional details
		guide for supported charset values on the format attribute.	the character set of the target document. See *Extended functionality* on page 102 for details on the expected syntax.
DOTJ053W	Warning	Input file '*%1*' is not valid DITA file name. Please check '*%1*' to see if it is correct. The extensions ".dita" or ".xml" are supported for DITA topics.	By default, the DITA-OT supports the extensions "dita" and "xml" for DITA topics, as mandated by the DITA Specification. Please verify that your topics use one of these extensions, or configure the toolkit to allow additional extensions.
DOTJ054E	Error	Unable to parse invalid *%1* attribute value "*%2*"	
DOTJ055E	Error	Invalid key name "*%1*".	
DOTJ056E	Error	Invalid xml:lang "*%1*".	
DOTJ057E	Error	The id attribute value "*%1*" is not unique within the topic that contains it.	
DOTX001W	Warning	No string named '*%1*' was found for language '*%2*'. Using the default language '*%3*'. Add a mapping between default language and desired language for the string '*%1*'.	This build uses generated text, such as the phrase "Related information" (which is generated above many link groups). The toolkit was unable to locate the string *%1* for your specified language, so the string will appear in the default language. This generally indicates that the toolkit's strings needs to be updated to support your language, or that your language setting is incorrect.
DOTX002W	Warning	The title element or attribute in the ditamap is required for Eclipse output.	The Eclipse help system requires a title in the project files generated from your map. Please add a title to your input map to get valid Eclipse help output.
DOTX003I	Informational	The anchorref attribute should either reference another dita map or an Eclipse XML TOC file. The value '*%1*' does not appear to reference either.	Eclipse uses anchor references to connect with other TOC files. For this to work in content generated from a DITA map, the anchorref element must reference either an existing Eclipse TOC XML file, or another DITA map (which will presumably also be converted to an Eclipse TOC).
DOTX004I	Informational	Found a navref element that does not reference anything. The navref element should either reference another dita map or an Eclipse XML file.	Eclipse builds use DITA's <navref> element to pull in other Eclipse TOC files. The build found a <navref> element that does not reference any other file; the element will be ignored.
DOTX005E	Error	Unable to find navigation title for reference to '*%1*'. The build will use	To remove this message, provide a navigation title for the referenced object in the map or topic, or ensure that you

Message ID	Severity	Message text	Additional details
		'*%1*' as the title in the Eclipse Table of Contents.	are referencing a valid local DITA target.
DOTX006E	Error	Unknown file extension in href="*%1*". References to non-DITA resources should set the format attribute to match the resource (for example, 'txt', 'pdf', or 'html').	Set the format attribute to identify the format of the file. If the reference is to a DITA document, ensure that the document uses a valid DITA extension (default supported extensions are "dita" and "xml").
DOTX007I	Informational	Only DITA topics, HTML files, and images may be included in your compiled CHM file. The reference to "*%1*" will be ignored. To remove this message, you can set the toc="no" or processing-role="resource-only" attribute on your topicref.	The HTML Help compiler will only include some types of information in the compiled CHM file; the current reference will not be included.
DOTX008E	Error	File '*%1*' does not exist or cannot be loaded.	Ensure that the file exists and can be read. Note that the name of the file in this message may have be changed to use a standard dita topic file extension ('.dita' or '.xml'), instead of the original extension used by the file; it may also include a path to the temporary directory rather than to the original.
DOTX008W	Warning	File '*%1*' cannot be loaded, and no navigation title is specified for the table of contents.	To fix the table of contents, specify a navigation title in your map or ensure that the referenced file is local and can be accessed. Note that the name of the file in this message may have be changed to use a standard dita topic file extension ('.dita' or '.xml'), instead of the original extension used by the file; it may also include a path to the temporary directory rather than to the original.
DOTX009W	Warning	Could not retrieve a title from '*%1*'. Using '*%2*' instead.	No title was found in the specified topic, so the table of contents will use the indicated fallback value for this topic.
DOTX010E	Error	Unable to find target for conref="*%1*".	The conref attribute must be a URI reference to an existing DITA element. Please see the topic on *URI-based addressing* in the DITA specification for details on the expected syntax. Note that the name of the file in this message may have be changed to use a standard dita topic file extension ('.dita' or '.xml'), instead of the original extension used by the file; it may also include a path to the temporary directory rather than to the original.

Message ID	Severity	Message text	Additional details
			If the target element exists in your source file, check to make sure it is not filtered out of the build with a DITAVAL file (which will remove the target before conref processing runs).
DOTX011W	Warning	There is more than one possible target for the reference conref="*%1*". Only the first will be used. Remove the duplicate id in the referenced file.	When pulling content with a conref attribute, you may only pull from a single element, but the target ID appears twice in the referenced topic. Note that the name of the file in this message may have be changed to use a standard dita topic file extension ('.dita' or '.xml'), instead of the original extension used by the file; it may also include a path to the temporary directory rather than to the original.
DOTX012W	Warning	When you conref another topic or an item in another topic, the domains attribute of the target topic must be equal to or a subset of the current topic's domains attribute. Put your target under an appropriate domain. You can see the messages guide for more help.	This message is deprecated and should no longer appear in any logs.
DOTX013E	Error	A element with attribute conref="*%1*" indirectly includes itself, which results in an infinite loop.	This may appear if (for example) you have a `<ph>` element that references another phrase, but that phrase itself contains a reference to the original. This will result in an infinite loop. The toolkit will stop following the conref trail when this is detected; you will need to correct the reference in your source files. Note that the name of the file in this message may have be changed to use a standard dita topic file extension ('.dita' or '.xml'), instead of the original extension used by the file; it may also include a path to the temporary directory rather than to the original.
DOTX014E	Error	The attribute conref="*%1*" uses invalid syntax. Conref references to a map element should contain '#' followed by an ID, such as mymap.ditamap#mytopicrefid.	The conref attribute must be a URI reference to a DITA element. Please see the topic on *URI-based addressing* in the DITA specification for details on the expected syntax.
DOTX015E	Error	The attribute conref="*%1*" uses invalid syntax. The value should contain '#' followed by a topic or map ID, optionally followed by '/elemID' for a sub-topic element.	The conref attribute must be a URI reference to a DITA element. Please see the topic on *URI-based addressing* in the DITA specification for details on the expected syntax. Note that the name of the file in this message may have

Message ID	Severity	Message text	Additional details
			be changed to use a standard dita topic file extension ('.dita' or '.xml'), instead of the original extension used by the file; it may also include a path to the temporary directory rather than to the original.
DOTX016W	Warning	A reference to "*%2*" appears to reference a DITA document, but the format attribute has inherited a value of "*%1*". The document will not be processed as DITA.	This warning is intended to catch instances where a non-DITA format setting unexpectedly cascades to a DITA topic, which will prevent the topic from being processed. To remove this message, set the format attribute directly on the indicated reference. Note that the name of the file in this message may have be changed to use a standard dita topic file extension ('.dita' or '.xml'), instead of the original extension used by the file; it may also include a path to the temporary directory rather than to the original.
DOTX017E	Error	Found a link or cross reference with an empty href attribute (href=""). Remove the empty href attribute or provide a value.	Found a value such as <xref href="">link text</xref>. The empty href attribute is not serving a purpose and has caused problems with some tools in the past; you should remove the attribute entirely or specify a value.
DOTX018I	Informational	The type attribute on a topicref was set to '*%1*', but the topicref references a more specific '*%2*' topic. Note that the type attribute cascades in maps, so the value '*%1*' may come from an ancestor topicref.	The type attribute in DITA is intended to describe the type of the target; for example, a reference to a concept topic may use type="concept". Generally, this attribute is optional, and the DITA-OT build will automatically determine the value during processing. In this case, the type attribute lists a more general type than what is actually found. This is not an error but may result in unexpected sorting for links to this topic.
DOTX019W	Warning	The type attribute on a topicref was set to '*%1*', but the topicref references a '*%2*' topic. This may cause your links to sort incorrectly in the output. Note that the type attribute cascades in maps, so the value '*%1*' may come from an ancestor topicref.	The type attribute in DITA is intended to describe the type of the target; for example, a reference to a concept topic may use type="concept". Generally, this attribute is optional, and the DITA-OT build will automatically determine the value during processing. In this case, the specified type value does not match the target, which may cause your links to sort inappropriately.
DOTX020E	Error	Missing navtitle attribute or element for peer topic "*%1*". References must	The DITA-OT is only able to dynamically retrieve titles when the

Message ID	Severity	Message text	Additional details
		provide a local navigation title when the target is not a local DITA resource.	target is a local (not peer or external) DITA resource.
DOTX021E	Error	Missing navtitle attribute or element for non-DITA resource "*%1*". References must provide a local navigation title when the target is not a local DITA resource.	The DITA-OT is only able to dynamically retrieve titles when the target is a local DITA resource.
DOTX022W	Warning	Unable to retrieve navtitle from target: '*%1*'. Using linktext (specified in topicmeta) as the navigation title.	The build was unable to get a title from the referenced topic; instead, a navigation title will be created based on the specified <linktext> element inside of <topicmeta>.
DOTX023W	Warning	Unable to retrieve navtitle from target: '*%1*'.	If the target is a local DITA topic, ensure the reference is correct and the topic is available. Otherwise, provide a navigation title, and ensure the scope and format attributes are set appropriately.
DOTX024E	Error	Missing linktext and navtitle for peer topic "*%1*". References must provide a local navigation title when the target is not a local DITA resource.	The DITA-OT is only able to dynamically retrieve titles and link text when the target is a local (not peer or external) DITA resource.
DOTX025E	Error	Missing linktext and navtitle for non-DITA resource "*%1*". References must provide a local navigation title when the target is not a local DITA resource.	The DITA-OT is only able to dynamically retrieve titles when the target is a local DITA resource.
DOTX026W	Warning	Unable to retrieve linktext from target: '*%1*'. Using navigation title as fallback.	The referenc to this document did not specify any link text for generated map-based links; the navigation title will be used as fallback.
DOTX027W	Warning	Unable to retrieve linktext from target: '*%1*'.	The referenced file did not specify any link text for generated map-based links, and no fallback text could be located. Any links generated from this reference will have incorrect link text.
DOTX028E	Error	Link or cross reference must contain a valid href or keyref attribute; no link target is specified.	The link or cross reference has no target specified and will not generate a link.
DOTX029I	Informational	The type attribute on a *%1* element was set to *%3*, but the reference is to a more specific *%4 %2*. This may cause your links to sort incorrectly in the output.	The type attribute in DITA is intended to describe the type of the target; for example, a reference to a concept topic may use type="concept". Generally, this attribute is optional, and the DITA-OT build will automatically determine the value during processing. In this case, the type attribute lists a more general type than what is actually found. This is not an error but may

Message ID	Severity	Message text	Additional details
			result in unexpected sorting for links to this topic.
DOTX030W	Warning	The type attribute on a *%1* element was set to *%3*, but the reference is to a *%4 %2*. This may cause your links to sort incorrectly in the output.	The type attribute in DITA is intended to describe the type of the target; for example, a reference to a concept topic may use type="concept". Generally, this attribute is optional, and the DITA-OT build will automatically determine the value during processing. In this case, the specified type value does not match the target, which may cause your links to sort inappropriately.
DOTX031E	Error	The file *%1* is not available to resolve link information.	The build attempted to access the specified file in order to retrive a title or short description, but the file could not be found. If the file exists, it is possible that a DITAVAL file was used to remove the file's contents from the build. Be aware that the path information above may not match the link in your topic.
DOTX032E	Error	Unable to retrieve link text from target: '*%1*'. If the target is not accessible at build time, or does not have a title, provide the link text inside the reference.	When a link or cross reference does not have content, the build will attempt to pull the target's title for use as link text. If the target is unavailable, be sure to set the scope attribute to an appropriate value. If the target does not have a title (such as when linking to a paragraph), be sure to provide link text inside the cross reference.
DOTX033E	Error	Unable to generate link text for a cross reference to a list item: '*%1*'	An <xref> element specifies type="li", which indicates a link to a list item, but the item number could not be determined to use as link text. Please specify link text inside the reference, or ensure that you are referencing an available list item.
DOTX034E	Error	Unable to generate link text for a cross reference to an undered list item: '*%1*'	The cross reference goes to a list item in an unordered list. The process could not automatically generate link text because the list item is not numbered. Please provide link text within the cross reference.
DOTX035E	Error	Unable to generate the correct number for a cross reference to a footnote: '*%1*'	An <xref> element specifies type="fn", which indicates a link to a footnote, but the footnote number could not be determined to use as link text. Please specify link text inside the reference, or ensure that you are referencing an available footnote.

Message ID	Severity	Message text	Additional details
DOTX036E	Error	Unable to generate link text for a cross reference to a dlentry (the dlentry or term could not be found): '*%1*'	An <xref> element specifies type="dlentry", which indicates a link to a definition list entry, but the term could not be located to use as link text. Please specify link text inside the reference, or ensure that you are referencing an available definition list entry
DOTX037W	Warning	No title found for this document; using "***" in XHTML title bar.	No title was found for the current document, so the XHTML output file will set the <title> to "***". This value generally appears in the title bar at the top of a browser.
DOTX038I	Informational	The longdescref attribute on tag '*%1*' will be ignored. Accessibility for object elements needs to be handled another way.	The <object> element in XHTML does not support using longdescref for accessibility. To make the object accessible, you may need to add text before or after the element. You may also be able to handle it with a <param> element inside the object.
DOTX039W	Warning	Required cleanup area found. To remove this message and hide the content, build your content without using the DRAFT parameter.	This message is generated when creating draft output in order to help you locate all topics that need to be cleaned up; the cleanup items will appear in your output with styling that makes it stand out. The content will be hidden when the draft parameter is not active.
DOTX040I	Informational	Draft comment area found. To remove this message and hide the comments, build your content without using the DRAFT parameter.	This message is generated when creating draft output in order to help you locate all topics that have draft comments. Each comment will appear in your XHTML output; the comments will be hidden when the draft parameter is not active.
DOTX041W	Warning	Found more than one title element in a section. Using the first one for the section's title.	Because of the way XML and DITA are defined, it is generally not possible to prohibit adding a second title to a section during editing (or to force that title to come first). However, the DITA specification states that only one title should be used in a section. When multiple titles are found, only the first one will appear in the output.
DOTX042I	Informational	DITAVAL based flagging is not currently supported for inline phrases in XHTML; ignoring flag value on '*%1*' attribute.	If it is important to flag this piece of information, try placing a flag on the block element that contains your phrase. If you just want to have an image next to the phrase, you

Message ID	Severity	Message text	Additional details
			may place an image directly into the document.
DOTX043I	Informational	The link to '*%1*' may appear more than once in '*%2*'.	The DITA-OT is able to remove duplicate links in most cases. However, if two links to the same resource use different attributes or link text, it is possible for them to appear together. For example, if the same link shows up with role="next" and again with no specified role, it may show up as both the "Next topic" link and as a related link. Note that links generated from a <reltable> in a DITA Map will have the role attribute set to "friend".
DOTX044E	Error	The area element in an image map does not specify a link target. Please add an xref element with a link target to the area element.	The <area> element in an image map must provide a link target for the specified area. Please add an <xref> element as a child of <area> and ensure that it specifies a link target.
DOTX045W	Warning	The area element in an image map should specify link text for greater accessibility. Link text should be specified directly when the target is not a local DITA resource.	Cross reference text inside the <area> element is used to provide accessibility for screen readers that can identify different areas of an image map. If text cannot be retrieved automatically by referencing a DITA element, it should be specified directly in the cross reference.
DOTX046W	Warning	Area shape should be: default, rect, circle, poly, or blank (no value). The value '*%1*' is not recognized.	The specified value was passed as-is through to the area element in the XHTML.
DOTX047W	Warning	Area coordinates are blank. Coordinate points for the shape need to be specified.	The area element is intended to define a region in an image map; coordinates must be specified in order to define that region.
DOTX048I	Informational	In order to include peer or external topic '*%1*' in your help file, you may need to recompile the CHM file after making the file available.	The build will not look for peer or external topics before compiling your CHM file, so they may not be included. If you are referencing an actual HTML file that will not be available, it cannot be included in the project, and you should set the toc attribute to "no" on your topicref element. Otherwise, check to be sure your HTML file was included in the CHM; if it was not, you will need to place it in the correct location with your other output files and recompile.
DOTX049I	Informational	References to non-dita files will be ignored by the PDF, ODT, and RTF output transforms.	The PDF, ODT, and RTF output processes cannot automatically convert non-DITA content into DITA in

Message ID	Severity	Message text	Additional details
			order to merge it with the rest of your content. The referenced items are ignored.
DOTX050W	Warning	Default id "org.sample.help.doc" is used for Eclipse plug-in. If you want to use your own plug-in id, please specify it using the id attribute on your map.	Eclipse requires that an ID be specified when creating an Eclipse Help project; the toolkit expects to locate that ID on the root element of your input map.
DOTX052W	Warning	No string named '*%1*' was found when creating generated text; using the value '*%1*' in your output file.	The toolkit is attempting to add generated text, such as the string "Related information" that appears above links. The requested string could not be found in any language. Your output may contain a meaningful string, or it may contain a code that was intended to map to a string. This likely indicates an error in a plug-in or XSL override; either the string was requested incorrectly, or you will need to provide a mapping for the string in all of the languages you require.
DOTX053E	Error	A element that references another map indirectly includes itself, which results in an infinite loop. The original map reference is to '*%1*'.	This will occur if a map references another map, and then that second map (or another further nested map) references the original map. The result is an infinite nesting of maps; please correct the chain of map references to remove circular reference.
DOTX054W	Warning	Conflict text style is applied on the current element based on DITAVAL flagging rules. Please check ditaval and dita source to make sure there is no style conflict on the element which needs to be flagged.	This will occur when a DITAVAL file contains multiple styling rules that apply to the same element.
DOTX055W	Warning	Customized stylesheet uses deprecated template "flagit". Conditional processing is no longer supported using this template. Please update your stylesheet to use template "start-flagit" instead of deprecated template "flagit".	The "flagit" named template was deprecated in DITA-OT version 1.4, when the OASIS standard formalized the DITAVAL syntax. The template is removed in DITA-OT 1.6. Stylesheets that used this template need to be updated.
DOTX056W	Warning	The file '*%1*' is not available to resolve link information.	The build attempted to access the specified file in order to retrive a title or short description, but the file could not be found. If the file exists, it is possible that a DITAVAL file was used to remove the file's contents from the build. Another possibility is that the file is located outside of the scope of the main input directory, and was not available because the *onlytopic.in.map* or */onlytopicinmap* parameter was

Message ID	Severity	Message text	Additional details
			specified. Be aware that the path information above may not match the link in your topic.
DOTX057W	Warning	The link or cross reference target '*%1*' cannot be found, which may cause errors creating links or cross references in your output file.	The link appears to use valid syntax to reference a DITA element, but that element cannot be found. Please verify that the element exists, and is not removed from the build by DITAVAL based filtering.
DOTX058W	Warning	No glossary entry was found associated with key '*%1*' on *%2* element. The build will try to determine the best display text and hover text for terms and abbreviations.	Processing for terms, acronyms, or abbreviated forms will associate the key from the element's keyref attribute with a glossentry (glossary entry) topic. This message will appear if the key was defined, but was not associated with a glossentry topic. The process will try to use the best available fallback (usually the title of the referenced topic).
DOTX060W	Warning	Key '*%1*' was used in an abbreviated-form element, but the key is not associated with a glossary entry. Abbreviated-form should ONLY be used to reference to a glossary entry.	Processing for abbreviated form elements will associate the key from the element's keyref attribute with a glossentry (glossary entry) topic. This message will appear if the key was defined, but was not associated with a glossentry topic. This element is only supported with keys that are associated with glossary topics; the element will not generate any output. Please correct the reference, or use a different element to reference your topic.
DOTX061W	Warning	ID '*%1*' was used in topicref tag but did not reference a topic element. The href attribute on a topicref element should only reference topic level elements.	According to the DITA Specification, references from maps should either go to DITA Maps, DITA Topics, or any non-DITA resource. References below the topic level should only be made from cross references (using <xref> or similar) inside of a topic. For details, see the href attribute description in the OASIS standard's definition of the *topicref element*.
DOTX062I	Informational	It appears that this document uses constraints, but the conref processor cannot validate that the target of a conref is valid. To enable constraint checking, please upgrade to an XSLT 2.0 processor.	
DOTX063W	Warning	The dita document '*%1*' is linked to from your content, but is not referenced by a topicref tag in the ditamap file. Include the topic in your map to avoid a broken link.	This will appear when generating PDF or ODT output that includes a link to a local topic, but the referenced topic is not part of the map itself. This will result in a broken link. You

Message ID	Severity	Message text	Additional details
			should include the topic in your map or remove the link from the build.
DOTX064W	Warning	The copy-to attribute [copy-to="*%1*"] uses the name of a file that already exists, so this attribute is ignored.	The copy-to attribute is used to copy a topic over a document that already exists. Please make sure that any copy-to attributes use a unique name so that the copy will not overwrite existing content.
DOTX065W	Warning	Two unique source files each specify copy-to="*%2*", which results in a collision. The value associated with href="*%1*" is ignored.	Two different topics are copied to the same location using copy-to; as a result, one of these files would be over-written. Only the first instance of this copy-to value will be recognized. Please correct the use of copy-to attributes.
DOTX066W	Warning	Template "*%1*" is deprecated. Remove references to this template from your custom XSLT or plug-ins.	This message indicates that your custom XSLT or plug-ins rely on templates that will be removed in an upcoming release. Typically this occurs when a named template has been converted to a mode template; any code that uses the deprecated template should be updated.
DOTX067E	Error	No string named '*%1*' was found for language '*%2*'. Add a mapping for the string '*%1*'.	This PDF build uses generated text, such as the phrase "Related information" (which is generated above many link groups). The toolkit was unable to locate the string *%1* for your specified language, so the string will appear in the default language. This generally indicates that the toolkit's strings needs to be updated to support your language, or that your language setting is incorrect.
DOTX068W	Warning	A topicref element that references a map contains child topicref elements. Child topicref elements are ignored.	
PDFJ001E	Error	Index entry '*%1*' is dropped, because corresponding group is not found.	
PDFJ002E	Error	Build stopped. Problems occured during Index preprocess task. Please check the messages above.	
PDFX001W	Warning	There is no index entry found which closing range for ID="*%1*".	
PDFX002W	Warning	There are multiple index entry found which is opening range for ID="*%1*" but there is only one which close it or ranges are overlapping.	

Message ID	Severity	Message text	Additional details
PDFX003W	Warning	There are multiple index entry found which closing range for ID="*%1*".	
PDFX004F	Fatal	Empty href was specified for some topic reference. Please correct your ditamap or bookmap file.	
PDFX005F	Fatal	Topic reference (href : *%1*) not found. Reference may be incorrect. Please correct your ditamap or bookmap file.	
PDFX006E	Error	Number of columns must be specified.	
PDFX007W	Warning	There is no index entry found which opening range for ID="*%1*".	
PDFX008W	Warning	Font definition not found for the logical name or alias '*%1*'.	
PDFX009E	Error	Attribute set reflection can't handle XSLT element *%1*.	
PDFX010W	Warning	Index generation is not supported in FOP.	
PDFX011E	Error	Both index-see and *%1* defined for index entry '*%2*'. Recovering by treating the index-see as an index-see-also.	

Other error messages

In addition to error messages generated by the DITA Open Toolkit, you might also encounter error messages generated by Java or other tools.

Out of Memory error

In some cases, you might receive a message stating the build has failed due to an `Out of Memory` error. Try the following approaches to resolve the problem:

1. (For custom-configured environments, not the DITA-OT Full Easy Install) If you use Xalan as the default XSLT processor, switch to Saxon.
2. Increase the memory available to Java; see *Increasing Java memory allocation* on page 50.
3. Reduce memory consumption by setting the generate-debug-attributes option to `false`. This option is set in the `lib/configuration.properties` file. This will disable debug attribute generation (used to trace DITA-OT error messages back to source files) and will reduce memory consumption.
4. Set `dita.preprocess.reloadstylesheet` Ant property to `true`. This will allow the XSLT processor to release memory when converting multiple files.
5. Run the transformation again.

java.io.IOException: Can't store Document

After running a JavaHelp transformation, you may receive a `java.io.IOException: Can't store Document` message.

This problem occurs when HTML files unrelated to the current transformation are found in the output directory. Delete the content of the output directory and run the transformation again.

Stack Overflow error

If you receive an error about a stack memory overflow, increase the JVM and run the transformation again. See *Increasing Java memory allocation* on page 50.

Log files

When you run the DITA-OT, key information is logged on the screen. This information also is written to a log file. If you encounter a problem, you can analyze this information to determine the source of the problem and then take action to resolve it.

The logging behavior varies depending on whether you use the DITA-OT command-line tool or Ant to invoke a toolkit build.

Ant	By default, status information is written to the screen. If you issue the -l parameter, the build runs silently and the information is written to a log file with the name and location that you specified. (You also can use other Ant loggers; see the Ant documentation for more information.)
Command-line tool	Status information is written to the screen and the log file. The log file name contains the input file name and transformation type; by default, it is located in the output directory. If you issue the /logdir parameter, you can specify a different location for where the log file is written.

Accessing help from the command-line tool

You can access a list of supported parameters for the command-line tool by issuing the -help parameter.

Procedure

1. Run the `startcmd` file that is applicable for your operating system.
   The `startcmd.bat` and `startcmd.sh` files are in the directory where you installed the DITA-OT.
2. From the command prompt, issue the following command:

```
java -jar lib/dost.jar -help
```

Results

You can see the brief description of the supported parameters in the command-line window.

Determing the version of the DITA Open Toolkit

You can use the command-line tool to determine the version of the DITA OT.

Procedure

1. Run the `startcmd` file that is applicable for your operating system.
   The `startcmd.bat` and `startcmd.sh` files are in the directory where you installed the DITA-OT.
2. From the command prompt, issue the following command:

```
java -jar lib/dost.jar -version
```

Enabling debug mode

When the debug mode is enabled, additional diagnostic information is written to the log file. This information, which includes environment variables and stack trace data, can help you determine the root cause of a problem.

Procedure

From the command prompt, add the following parameters:

Application	Parameters
Ant	`-v -Dargs.debug=yes`
Command-line tool	`/d` or `-debug`

You also can add a <property> element to an Ant target in your build file, for example:

```
<property name="args.debug" value="yes"/>
```

Increasing Java memory allocation

If you are working with large documents with extensive metadata or key references, you will need to increase the memory allocation for the Java process. You can do this from the command-line prompt for a specific session, or you can increase the value of the ANT_OPTS environmental variable.

Procedure

- To change the value for an specific session, from the command prompt, issue the following command:

Platform	Command
Windows	`set ANT_OPTS=%ANT_OPTS% -Xmx`*`1024`*`M`
Linux/OS X	`export ANT_OPTS=$ANT_OPTS -Xmx`*`1024`*`M`

  This increases the JVM memory allocation to 1024 megabytes. The amount of memory which can be allocated is limited by available system memory and the operating system.
- To persistently change the value, change the value allocated to the ANT_OPTS environment variable on your system. If you use the `startcmd` file from the Full Easy Install to set up a toolkit session, edit that file to change the value.

Reference

This section is designed to help users to locate information easily and quickly. It includes documentation for the DITA Open Toolkit (DITA-OT) parameters and configuration properties.

Ant parameters

Certain parameters apply to all DITA-OT transformations. Other parameters are common to the HTML-based transformations. Finally, some parameters apply only to the specific transformation types.

Ant parameters: All transformations

Certain parameters apply to all transformations that are supported by the DITA Open Toolkit.

Table 3: Ant parameters: All transformations

Parameters	Description
args.debug	Specifies whether debugging information is included in the log. The allowed values are yes and no; the default value is no.

Parameters	Description
args.draft	Specifies whether the content of <draft-comment> and <required-cleanup> elements is included in the output. The allowed values are yes and no; the default value is no. Corresponds to XSLT parameter DRAFT in most XSLT modules.  **Tip:** For PDF output, setting the args.draft parameter to yes causes the contents of the <titlealts> element to be rendered below the title.
args.figurelink.style	Specifies how cross references to figures are styled in output. The allowed values are NUMBER and TITLE. Specifying NUMBER results in "Figure 5"; specifying TITLE results in the title of the figure. Corresponds to the XSLT parameter FIGURELINK.  **Note:** This parameter is not available for the PDF transformation.
args.filter	Specifies a filter file to be used to include, exclude, or flag content. Filter files must have a .ditaval or .DITAVAL extension.
args.grammar.cache	Specifies whether the grammar-caching feature of the XML parser is used. The allowed values are yes and no; the default value is no.  **Note:** This option dramatically speeds up processing time. However, there is a known problem with using this feature for documents that use XML entities. If your build fails with parser errors about entity resolution, set this parameter to no.
args.input	Specifies the master file for your documentation project. Typically this is a DITA map, however it also can be a DITA topic if you want to transform a single DITA file. The path can be absolute, relative to args.input.dir, or relative to the directory where your project's ant build script resides if args.input.dir is not defined.
args.input.dir	Specifies the base directory for your documentation project. The default value is the parent directory of the file specified by args.input.
args.logdir	Specifies the location where the DITA-OT places log files for your project.
args.tablelink.style	Specifies how cross references to tables are styled. Specifying NUMBER results in "Table 5"; specifying TITLE results in the title of the table. Corresponds to the XSLT parameter TABLELINK.  **Note:** This parameter is not available for the PDF transformation.
clean.temp	Specifies whether the DITA-OT deletes the files in the temporary directory after it finishes a build. The allowed values are yes and no; the default value is yes.
dita.dir	Specifies where the DITA-OT is installed.
dita.ext	Specifies an extension to use for DITA topics; All DITA topics will use this single extension in the temp directory. The default value is .xml. Corresponds to XSLT parameter DITAEXT.
dita.extname	Specifies the file extension that the DITA-OT uses for files in the temporary directory. The allowed values are xml and dita; the default value is xml.  **Note:** This parameter is deprecated in favor of the dita.ext parameter.

Parameters	Description
dita.temp.dir	Specifies the location of the temporary directory. The temporary directory is where the DITA-OT writes temporary files that are generated during the transformation process.
dita.input.valfile	Specifies a filter file to be used to include, exclude, or flag content. Filter files must have a .ditaval or .DITAVAL extension.  **Notice:** Deprecated in favor of the args.filter parameter.
generate.copy.outer	Specifies whether to generate output files for content that is not located in or beneath the directory containing the DITA map file. The following values are supported: • 1 (default) – Do not generate output for content that is located outside the DITA map directory.. • 2 – Generate output for the content that is located outside the DITA map directory. • 3 – Shift the output directory so that it contains all output for the publication. See *generate.outer.copy parameter* on page 54 for more information.
outer.control	Specifies how the DITA OT handles content files that are located in or below the directory containing the master DITA map. The following values are supported: • fail – Fail quickly if files are going to be generated or copied outside of the directory • warn (default) – Complete the operation if files will be generated or copied outside of the directory, but log a warning • quiet – Quietly finish with only those files; do not generate warnings or errors. The gen-list-without-flagging Ant task generates a harmless warning for content that is located outside the map directory; you can suppress these warnings by setting the property to quiet.  **Warning:** Microsoft HTML Help Compiler cannot produce HTML Help for documentation projects that use outer content. The content files must reside in or below the directory containing the master DITA map file, and the map file cannot specify ".." at the start of the @href attributes for <topicref> elements.
output.dir	Specifies the name and location of the output directory. By default, the output is written to `DITA-dir\out`.
transtype	Specifies the output format. You can create plug-ins to add new values for this parameter; by default, the following values are available: • docbook • eclipsehelp • eclipsecontent • htmlhelp • javahelp • legacypdf • odt • pdf • rtf • troff

Parameters	Description
	• xhtml
validate	Specifies whether the DITA-OT validates the content. The allowed values are true and false; the default value is true.

Ant parameters: Common HTML-based transformations

Certain parameters apply to all the HTML-based transformation types: Eclipse content, Eclipse help, HTML Help, JavaHelp, TocJS, and XHTML.

Table 4: Ant parameters: HTML-based transformations

Parameters	Description
args.artlbl	Specifies whether to generate a label for each image; the label will contain the image file name. The allowed values are yes and no; the default value is no.
args.breadcrumbs	Specifies whether to generate breadcrumb links. The allowed values are yes and no; the default value is no. Corresponds to the XSLT parameter BREADCRUMBS.
args.copycss	Specifies whether to copy the custom .css file to the output directory.
args.css	Specifies the name of a custom .css file.
args.csspath	Specifies the location of a copied .css file relative to the output directory. Corresponds to XSLT parameter CSSPATH.
args.cssroot	Specifies the directory that contains the custom .css file. DITA-OT will copy the file from this location.
args.dita.locale	Specifies the language locale file to use for sorting index entries.  **Note:** This parameter is not available for the XHTML transformation.
args.ftr	Specifies an XML file that contains content for a running footer. Corresponds to XSLT parameter FTR.  **Note:** The XML file must contain valid XML. A common practice is to place all content into a element.
args.gen.default.meta	Specifies whether to generate extra metadata that targets parental control scanners, meta elements with name="security" and name="Robots". The allowed values are yes and no; the default value is no. Corresponds to the XSLT parameter genDefMeta.
args.gen.task.lbl	Specifies whether to generate headings for sections within task topics. The allowed values are YES and NO; the default value is NO. Corresponds to the XSLT parameter GENERATE-TASK-LABELS.
args.hdf	Specifies an XML file that contains content to be placed in the document head.
args.hdr	Specifies an XML file that contains content for a running header. Corresponds to the XSLT parameter HDR.  **Note:** The XML file must contain valid XML. A common practice is to place all content into a element.

Parameters	Description
args.hide.parent.link	Specifies whether to hide links to parent topics in the HTML or XHTML output. The allowed values are yes and no; the default value is no. Corresponds to the XSLT parameter NOPARENTLINK.  **Notice:** This parameter is deprecated in favor of the args.rellinks parameter.
args.rellinks	Specifies which links to include in the output. The following values are supported: • none – No links are included. • all – All links are included. • nofamily – Parent, child, next, and previous links are not included. Default value depends on the transformation type.
args.indexshow	Specifies whether the content of <indexterm> elements are rendered in the output. The allowed values are yes and no; the default value is no.
args.outext	Specifies the file extension for HTML or XHTML output. The default value is html. Corresponds to XSLT parameter OUTEXT.
args.xhtml.classattr	Specifies whether to include the DITA class ancestry inside the XHTML elements .For example, the <prereq> element (which is specialized from section) would generate `class="section prereq`. The allowed values are yes and no; the default value is yes. Corresponds to the XSLT parameter PRESERVE-DITA-CLASS.  **Note:** Beginning with DITA OT release 1.5.2, the default value is yes. For release 1.5 and 1.5.1, the default value was no.
args.xsl	Specifies a custom XSL file to be used instead of the default XSL transformation (`xsl\dita2xhtml.xsl`). The parameter must specify a fully qualified file name.
onlytopic.in.map	Specifies whether files that are linked to, or referenced with a @conref attribute, generate output. If set to yes, only files that are referenced directly from the map will generate output.

generate.outer.copy parameter

Elaboration on how the generate.outer.copy parameter functions.

Background

This is an issue in the following situations:

- The DITA map is in a directory that is a peer to directories that contain referenced objects.
- The DITA map is in a directory that is below the directories that contain the referenced objects.

Let's assume that the directory structure for the DITA content looks like the following:

```
maps
topics
images
```

The DITA map is in the `maps` directory, the topics are in the `topics` directory, and the images are in the `images` directory.

Setting the generate.outer.copy parameter to 1

Let's assume that you run the XHTML transformation and specify an output directory of `C:\A-test`. By default, The DITA-OT uses the generate.outer.copy parameter with a value of 1. Output is not built for the topics. You receive only the following output:

```
A-test
--- dita.list
--- dita.xml.properties
--- index.html
--- commonltr.css
--- commonrtl.css
```

The `index.html` file contains the navigation structure, but all the links are broken, since no XHTML files were built for the topics.

How do you fix this? By specifying a value of 2 or 3 for the generate.outer.copy parameter.

Setting the generate.outer.copy parameter to 2

Let's assume that you run the XHTML transformation again and specify the following parameters:

- The generate.outer.copy parameter is set to 2.
- The output.dir parameter is set to `C:\A-test`.

This is what your output looks like:

```
C:\A-test
--- dita.list
--- dita.xml.properties
--- index.html
--- commonltr.css
--- commonrtl.css
...
C:\images
...
C:\topics
```

The links in the output all work properly. However, depending on how many other directories are located at the same level of your build system as the output directory, it might not be easy gather all the output together if you need to copy it elsewhere.

Setting the generate.outer.copy parameter to 3

Now your output directory structure looks like this:

```
C:\A-test
--- images\
--- maps\
--- topics\
```

The index.html file is in the maps directory, and the CSS and other files are located in the output directory, `C:\A-test`. Copying the output directory is simplified.

Ant parameters: Eclipse content transformation

Certain parameters are specific to the Eclipse content transformation.

Table 5: Ant parameters: Eclipse content transformation

Parameters	Description
args.eclipsecontent.toc	Specifies the name of the TOC file

Ant parameters: Eclipse help transformation

Certain parameters are specific to the Eclipse help transformation.

Table 6: Ant parameters: Eclipse help transformation

Parameters	Description
args.eclipsehelp.toc	Specifies the name of the TOC file.
args.eclipse.country	Specifies the region for the language that is specified by the args.eclipse.language parameter. For example, us, ca, and gb would clarify a value of en set for the args.eclipse.language parameter. The content will be moved into the appropriate directory structure for an Eclipse fragment.
args.eclipse.language	Specifies the base language for translated content, such as en for English. This parameter is a prerequisite for the args.eclipse.country parameter. The content will be moved into the appropriate directory structure for an Eclipse fragment.
args.eclipse.provider	Specifies the name of the person or organization that provides the Eclipse help. The default value is DITA.  **Tip:** The toolkit ignores the value of this parameter when it processes an Eclipse map.
args.eclipse.version	Specifies the version number to include in the output. The default value is 0.0.0.  **Tip:** The toolkit ignores the value of this parameter when it processes an Eclipse map.
args.eclipse.symbolic.name	Specifies the symbolic name (aka plugin ID) in the output for an Eclipse Help project. The @id value from the DITA map or the Eclipse map collection (Eclipse help specialization) is the symbolic name for the plugin in Eclipse. The default value is org.sample.help.doc.  **Tip:** The toolkit ignores the value of this parameter when it processes an Eclipse map.

Ant parameters: HTML Help transformation

Certain parameters are specific to the HTML Help transformation.

Table 7: Ant parameters: HTML Help transformation

Parameters	Description
args.htmlhelp.includefile	Specifies the name of a file that you want included in the HTML Help.

Ant parameters: JavaHelp transformation

Certain parameters are specific to the JavaHelp transformation.

Table 8: Ant parameters: JavaHelp transformation

Parameters	Description
args.javahelp.map	Specifies the name of the ditamap file for a JavaHelp project.
args.javahelp.toc	Specifies the name of the file containing the TOC in your JavaHelp output. Default value is the name of the ditamap file for your project.

Ant parameters: Legacy PDF transformation

Certain parameters are specific to the legacy PDF transformation.

Table 9: Ant parameters: Legacy PDF transformation

Parameters	Description
args.fo.output.rel.links	Specifies whether to render related links in the output. The allowed values are yes and no; the default value is no. If the args.fo.include.rellinks parameter is specified, this parameter is ignored.
args.fo.userconfig	Specifies the user configuration file for FOP.

Ant parameters: ODT transformation

Certain parameters are specific to the ODT transformation.

Table 10: Ant parameters: ODT transformation

Parameters	Description
args.odt.img.embed	Determines whether images are embedded as binary objects within the ODT file.

Ant parameters: Other

Table 11: Ant parameters: Other

Parameter	Description
dita.preprocess.reloadstylesheet dita.preprocess.reloadstylesheet.conref dita.preprocess.reloadstylesheet.mapref dita.preprocess.reloadstylesheet.mappull dita.preprocess.reloadstylesheet.maplink dita.preprocess.reloadstylesheet.topicpull	Specifies whether the DITA-OT reloads the XSL style sheets that are used for the transformation. The allowed values are true and false; the default value is false. **Tip:** Set the parameter to true if you want to use more than one set of style sheets to process a collection of topics. The parameter also is useful for large projects that generate Java out-of-memory errors during transformation. Alternatively, you can adjust the size of your Java memory heap if setting `dita.preprocess.reloadstylesheet` for this reason.

Ant parameters: PDF transformation

Certain parameters are specific to the PDF2 transformation.

Table 12: Ant parameters: PDF transformation

Parameters	Description
args.bookmap-order	Specifies if the frontmatter and backmatter content order is retained in bookmap. The allowed values are retain and discard; the default value is discard.
args.fo.userconfig	Specifies the user configuration file for FOP.
args.gen.task.lbl	Specifies whether to generate headings for sections within task topics. The allowed values are YES and NO; the default value is NO. Corresponds to the XSLT parameter GENERATE-TASK-LABELS.
args.rellinks	Specifies which links to include in the output. The following values are supported: • none – No links are included. • all – All links are included. • nofamily – Parent, child, next, and previous links are not included.

Parameters	Description
	Default value depends on the transformation type.
args.xsl.pdf	Specifies an XSL file that is used to override the default XSL transformation (`plugins\org.dita.pdf2\xsl\fo\topic2fo_shell.xsl`). You must specify the fully qualified file name.
custom.xep.config	Specifies the user configuration file for RenderX.
customization.dir	Specifies the customization directory.
pdf.formatter	Specifies the XSL processor. The following values are supported: • ah – Antenna House Formatter • fop (default) – Apache FOP • xep – RenderX XEP Engine The full-easy-install package comes with Apache FOP; other XSL processors must be separately installed.
publish.required.cleanup	Specifies whether draft-comment and required-cleanup elements are included in the output. The allowed values are yes and no; the default value is the value of the args.draft parameter. Corresponds to XSLT parameter publishRequiredCleanup. **Notice:** This parameter is deprecated in favor of the args.draft parameter.
retain.topic.fo	Specifies whether to retain the generated FO file. The allowed values are yes and no; the default value is no. If the configuration property org.dita.pdf2.use-out-temp is set to false, this parameter is ignored.

Ant parameters: XHTML transformation

Certain parameters are specific to the XHTML transformation.

Table 13: Ant parameters: XHTML transformation

Parameters	Description
args.xhtml.contenttarget	Specifies the value of the @target attribute on the <base> element in the TOC file. The default value is contentwin.
args.xhtml.toc	Specifies the base name of the TOC file. The default value is index.
args.xhtml.toc.class	Specifies the value of the @class attribute on the <body> element in the TOC file. Found in `map2htmltoc.xsl`.

Command-line tool parameters

Certain parameters apply to all DITA-OT transformations. Other parameters are common to the HTML-based transformations. Finally, some parameters apply only to the specific transformation types.

You must supply the parameters to the command-line tool using the following syntax:

```
/parameter:value
```

Command-line tool parameters: All transformations

Certain parameters apply to all transformations that are supported by the DITA Open Toolkit.

Table 14: Command-line tool parameters: All transformations

Parameters	Description
basedir	The directory where your project's ant build script resides. The DITA-OT will look for your .dita files relative to this directory. DITA-OT's default build script sets this as an attribute of the project, but you can also define it as a project property.
cleantemp	Specifies whether the DITA-OT deletes the files in the temporary directory after it finishes a build. The allowed values are yes and no; the default value is yes.
debug	Specifies whether debugging information is included in the log. The allowed values are yes and no; the default value is no.
ditadir	Specifies where the DITA-OT is installed.
ditaext	Specifies the file extension that the DITA-OT uses for files in the temporary directory. The allowed values are xml and dita; the default value is xml.  **Note:** This parameter is deprecated in favor of the dita.ext parameter.
ditalocale	Specifies the language locale file to use for sorting index entries.  **Note:** This parameter is not available for the XHTML transformation.
draft	Specifies whether the content of <draft-comment> and <required-cleanup> elements is included in the output. The allowed values are yes and no; the default value is no. Corresponds to XSLT parameter DRAFT in most XSLT modules.  **Tip:** For PDF output, setting the args.draft parameter to yes causes the contents of the <titlealts> element to be rendered below the title.
filter	Specifies a filter file to be used to include, exclude, or flag content. Filter files must have a .ditaval or .DITAVAL extension.  **Notice:** Deprecated in favor of the args.filter parameter.
grammarcache	Specifies whether the grammar-caching feature of the XML parser is used. The allowed values are yes and no; the default value is no.  **Note:** This option dramatically speeds up processing time. However, there is a known problem with using this feature for documents that use XML entities. If your build fails with parser errors about entity resolution, set this parameter to no.
i	Specifies the master file for your documentation project. Typically this is a DITA map, however it also can be a DITA topic if you want to transform a single DITA file. The path can be absolute, relative to args.input.dir, or relative to the directory where your project's ant build script resides if args.input.dir is not defined.
logdir	Specifies the location where the DITA-OT places log files for your project.
outdir	Specifies the name and location of the output directory. By default, the output is written to *DITA-dir*\out.
outext	Specifies an extension to use for DITA topics; All DITA topics will use this single extension in the temp directory. The default value is .xml. Corresponds to XSLT parameter DITAEXT.

Parameters	Description
tempdir	Specifies the location of the temporary directory. The temporary directory is where the DITA-OT writes temporary files that are generated during the transformation process.
transtype	Specifies the output format. You can create plug-ins to add new values for this parameter; by default, the following values are available: • docbook • eclipsehelp • eclipsecontent • htmlhelp • javahelp • legacypdf • odt • pdf • rtf • troff • xhtml
validate	Specifies whether the DITA-OT validates the content. The allowed values are true and false; the default value is true.

Command-line tool parameters: All HTML-based transformations

Certain parameters apply to all the HTML-based transformation types: Eclipse content, Eclipse help, HTML Help, JavaHelp, TocJS, and XHTML.

Note: You must specify an absolute path as the value for the following parameters:

- ftr
- hdr
- hdf

Table 15: Command-line tool parameters: All HTML-based transformations

Parameters	Description
args.css	Specifies the name of a custom .css file.
artlbl	Specifies whether to generate a label for each image; the label will contain the image file name. The allowed values are yes and no; the default value is no.
copycss	Specifies whether to copy the custom .css file to the output directory.
csspath	Specifies the location of a copied .css file relative to the output directory. Corresponds to XSLT parameter CSSPATH.
cssroot	Specifies the directory that contains the custom .css file. DITA-OT will copy the file from this location.
ftr	Specifies an XML file that contains content for a running footer. Corresponds to XSLT parameter FTR.  **Note:** The XML file must contain valid XML. A common practice is to place all content into a element.
generateouter	
hdf	Specifies an XML file that contains content to be placed in the document head.

Parameters	Description
hdr	Specifies an XML file that contains content for a running header. Corresponds to the XSLT parameter HDR.  **Note:** The XML file must contain valid XML. A common practice is to place all content into a element.
indexshow	Specifies whether the content of <indexterm> elements are rendered in the output. The allowed values are yes and no; the default value is no.
onlytopicinmap	Specifies whether files that are linked to, or referenced with a @conref attribute, generate output. If set to yes, only files that are referenced directly from the map will generate output.
outercontrol	
usetasklabels	Specifies whether to generate headings for sections within task topics. The allowed values are YES and NO; the default value is NO. Corresponds to the XSLT parameter GENERATE-TASK-LABELS.
xhtmlclass	Specifies whether to include the DITA class ancestry inside the XHTML elements .For example, the <prereq> element (which is specialized from section) would generate `class="section prereq`. The allowed values are yes and no; the default value is yes. Corresponds to the XSLT parameter PRESERVE-DITA-CLASS.  **Note:** Beginning with DITA OT release 1.5.2, the default value is yes. For release 1.5 and 1.5.1, the default value was no.
xsl	Specifies a custom XSL file to be used instead of the default XSL transformation (`xsl\dita2xhtml.xsl`). The parameter must specify a fully qualified file name.

Command-line tool parameters: Eclipse content transformation

Certain parameters are specific to the Eclipse content transformation.

Table 16: Command-line tool parameters: Eclipse content transformation

Parameters	Description
eclipsecontenttoc	Specifies the name of the TOC file

Command-line tool parameters: Eclipse help transformation

Certain parameters are specific to the Eclipse help transformation.

Table 17: Command-line tool parameters: Eclipse help transformation

Parameters	Description
eclipsehelptoc	Specifies the name of the TOC file.
provider	Specifies the name of the person or organization that provides the Eclipse help. The default value is DITA.  **Tip:** The toolkit ignores the value of this parameter when it processes an Eclipse map.
version	Specifies the version number to include in the output. The default value is 0.0.0.

Parameters	Description
	Tip: The toolkit ignores the value of this parameter when it processes an Eclipse map.

Command-line tool parameters: HTML help transformation

Certain parameters are specific to the HTML help transformation.

Table 18: Command-line tool parameters: HTML help transformation

Parameters	Description
htmlhelpincludefile	Specifies the name of a file that you want included in the HTML Help.

Command-line tool parameters: JavaHelp transformation

Certain parameters are specific to the JavaHelp transformation.

Table 19: Command-line tool parameters: JavaHelp transformation

Parameters	Description
javahelpmap	Specifies the name of the ditamap file for a JavaHelp project.
javahelptoc	Specifies the name of the file containing the TOC in your JavaHelp output. Default value is the name of the ditamap file for your project.

Command-line tool parameters: ODT transformation

Certain parameters are specific to the ODT transformation.

Table 20: Command-line tool parameters: ODT transformation

Parameters	Description
odtimgembed	Determines whether images are embedded as binary objects within the ODT file.

Command-line tool parameters: PDF transformation

Certain parameters are specific to the PDF2 transformation.

Table 21: Command-line tool parameters: PDF transformation

Parameters	Description
fooutputrellinks	Specifies whether to render related links in the output. The allowed values are yes and no; the default value is no. If the args.fo.include.rellinks parameter is specified, this parameter is ignored.
fouserconfig	Specifies the user configuration file for FOP.
retaintopicfo	Specifies whether to retain the generated FO file. The allowed values are yes and no; the default value is no. If the configuration property org.dita.pdf2.use-out-temp is set to false, this parameter is ignored.
xslpdf	Specifies an XSL file that is used to override the default XSL transformation (`plugins\org.dita.pdf2\xsl\fo\topic2fo_shell.xsl`). You must specify the fully qualified file name.

Command-line tool parameters: XHTML transformation

Certain parameters are specific to the XHTML transformation.

Table 22: Command-line tool parameters: XTML transformation

Parameters	Description
xhtmltoc	Specifies the base name of the TOC file. The default value is index.

`lib/configuration.properties` file

The `lib/configuration.properties` file controls certain common properties, as well as some properties that control PDF processing.

Table 23: Properties set in the `lib/configuration.properties` file

Property	Description
default.language	Specifies the language that is used if the input file does not have the @xml:lang attribute set on the root element. By default, this is set to en. The allowed values are those that are defined in IETF BCP 47, *Tags for the Identification of Languages*.
generate-debug-attributes	Specifies whether the @xtrf and @xtrc debugging attributes are generated in the temporary files. The following values are allowed: • true (default) — Enables generation of debugging attributes • false —Disables generation of debugging attributes **Note:** Disabling debugging attributes reduces the size of temporary files and thus reduces memory consumption. However, the log messages no longer have the source information available and thus the ability to debug problems might deteriorate.
processing-mode	Specifies how the DITA-OT handles errors and error recovery. The following values are allowed: • strict — When an error is encountered, the DITA-OT stops processing. • lax (default) — When an error is encountered, the DITA-OT attempts to recover from it. • skip — When an error is encountered, the DITA continues processing but does not attempt error recovery.
org.dita.pdf2.index.frame-markup	(PDF transformation only) Specifies how the DITA-OT handles legacy FrameMaker syntax for <indexterm> elements. The following values are allowed: • true— Enables special processing of legacy FrameMaker syntax for <indexterm> elements. Standard DITA <indexterm> elements are processed also. • false (default) — Disables special processing of legacy FrameMaker syntax for <indexterm> elements. **Note:** Setting the org.dita.pdf2.index.frame-markup parameter to yes only affects how index entries are generated in PDF output. For example, an `<indexterm>files:topic</index>` element will generate an index entry of "files:topic" in a CHM file.
org.dita.pdf2.i18n.enabled	(PDF transformation only) Enables I18N font processing. The following values are allowed: • true (default) — Enables I18N processing • false — Disables I18N processing

Property	Description
org.dita.pdf2.use-out-temp	(PDF transformation only) Specifies whether the XSL-FO processing writes the intermediate files (for example, the `topic.fo` file) to the output directory. The following values are allowed: • true — Write intermediate files to the output directory • false (default) — Write intermediate files to the temporary directory
plugindirs	A semicolon-separated list of directory paths that the DITA-OT searches for plug-ins to integrate; any relative paths are resolved against the DITA-OT base directory. Any immediate subdirectory that contains a `plugin.xml` file is integrated
plugin.ignores	A semicolon-separated list of directory names to be ignored during plug-in integration; any relative paths are resolved against the DITA-OT base directory.

Chapter 3

DITA Open Toolkit Developer Reference

Topics:

The *DITA Open Toolkit Developer Reference* is designed to provide more advanced information about the DITA OT. It is geared to an audience that needs information about the DITA-OT architecture, configuring and extending the DITA-OT, and creating DITA-OT plug-ins.

Architecture of the DITA Open Toolkit

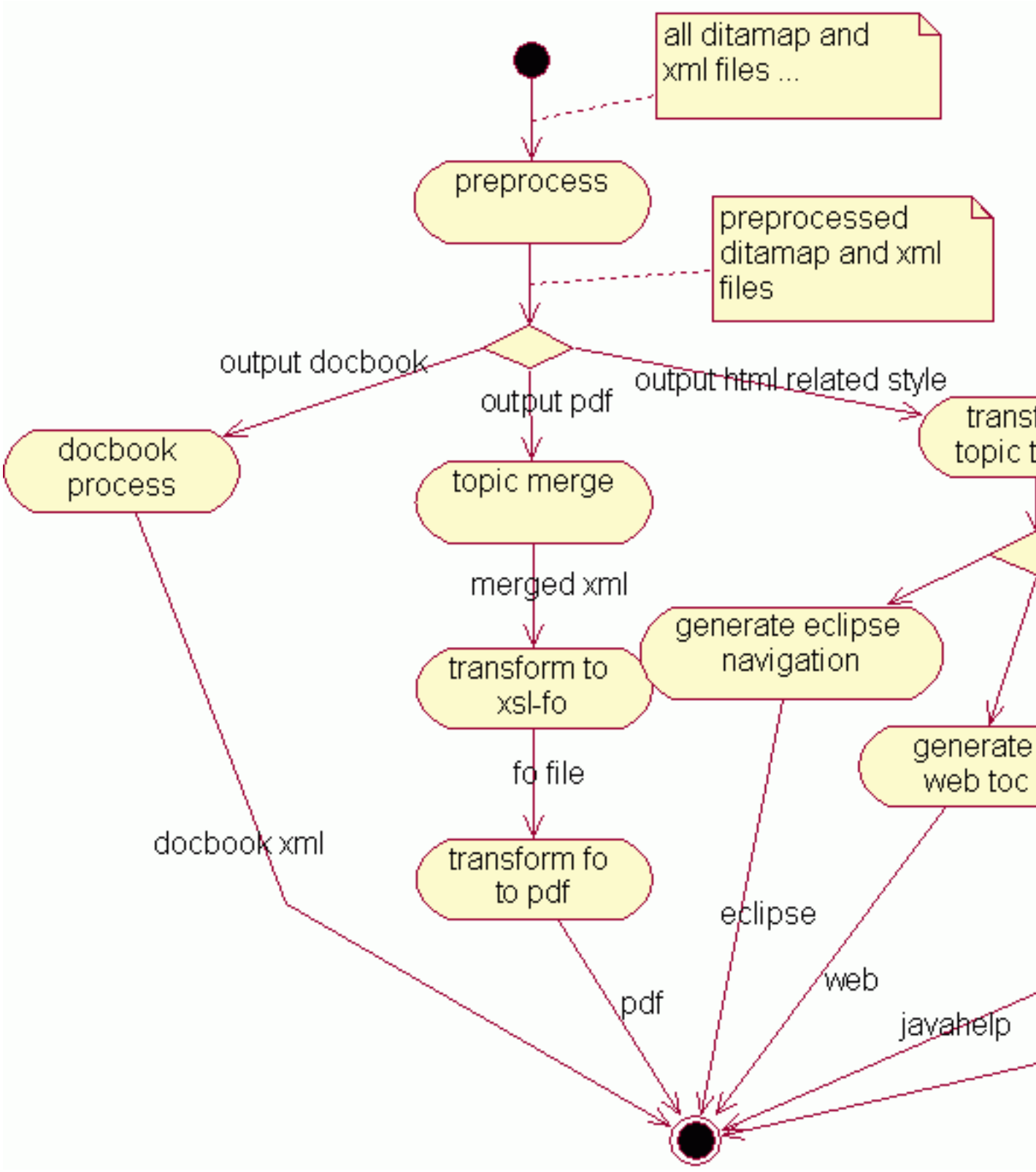
The DITA Open Toolkit (DITA-OT) is an open-source implementation of the OASIS specification for the Darwin Information Typing Architecture (DITA). The toolkit uses ANT, XSLT, and Java to implement transforming DITA content (maps and topics) into different deliverable formats.

DITA-OT processing structure

The DITA-OT implements a multi-stage, map-driven architecture to process DITA content. Each stage in the process examines some or all of the content; some stages result in temporary files that are used by later steps, while others stages result in updated copies of the DITA content. Most of the processing takes place in a temporary working directory; the source files themselves are never modified.

The DITA-OT is designed as a pipeline. Most of the pipeline is common to all output formats; it is known as the *pre-processing stage*. In general, any DITA process begins with this common set of pre-processing routines. Once the pre-processing is completed, the pipeline diverges based on the requested output format. Some processing is still common to multiple output formats; for example, Eclipse Help and HTML Help both use the same routines to generate XHTML topics, after which the two pipelines branch to create different sets of navigation files.

The following image illustrates how the pipeline works for some common output types: Docbook, PDF, Eclipse Help, XHTML, JavaHelp, and HTML Help.



DITA-OT processing modules

The DITA-OT processing pipeline is implemented using Ant. Individual modules within the Ant script are implemented in either Java or XSLT, depending on such factors as performance or requirements for customization.

Virtually all Ant and XSLT modules can be extended by adding a plug-in to the toolkit; new Ant targets may be inserted before or after common processing, and new rules may be imported into common XSLT modules to override default processing.

XSLT modules

The XSLT modules use shell files. Typically, each shell file begins by importing common rules that apply to all topics. This set of common processing rules may in turn import additional common modules, such as those used for reporting errors or determining the document locale. After the common rules are imported, additional imports can be included in order to support processing for DITA specializations.

For example, XHTML processing is controlled by the `xsl\dita2xhtml.xsl` file. The shell begins by importing common rules that are applicable to all general topics: `xslhtml\dita2htmlImpl.xsl`. After that, additional XSLT overrides are imported for specializations that require modified processing. For example, an override for reference topics is imported in order to add default headers to property tables. Additional modules are imported for tasks, for the highlighting domain, and for several other standard specializations. After the standard XSLT overrides occur, plug-ins may add in additional processing rules for local styles or for additional specializations.

Java modules

Java modules are typically used when XSLT is a poor fit, such as for processes that make use of standard Java libraries (like those used for index sorting). Java modules are also used in many cases where a step involves copying files, such as the initial process where source files are parsed and copied to a temporary processing directory.

DITA-OT processing order

The order of processing is often significant when evaluating DITA content. Although the DITA specification does not mandate a specific order for processing, the DITA-OT has determined that performing filtering before conref resolution best meets user expectations. Switching the order of processing, while legal, may give different results.

The DITA-OT project has found that filtering first provides several benefits. Consider the following sample that contains a <note> element that both uses conref and contains a @product attribute:

```
<note conref="documentA.dita#doc/note" product="MyProd"/>
```

If the @conref attribute is evaluated first, then documentA must be parsed in order to retrieve the note content. That content is then stored in the current document (or in a representation of that document in memory). However, if all content with product="MyProd" is filtered out, then that work is all discarded later in the build.

If the filtering is done first (as in the DITA-OT), this element is discarded immediately, and documentA is never examined. This provides several important benefits:

- Time is saved by discarding unused content as early as possible; all future steps can load the document without this extra content.
- Additional time is saved case by not evaluating the @conref attribute; in fact, documentA does not even need to be parsed.
- Any user reproducing this build does not need documentA. If the content is sent to a translation team, that team can reproduce an error-free build without documentA; this means documentA can be kept back from translation, preventing accidental translation and increased costs.

If the order of these two steps is reversed, so that conref is evaluated first, it is possible that results will differ. For example, in the code sample above, the @product attribute will override the product setting on the referencing note. Assume that the <note> elements in documentA is defined as follows:

```
<note id="note" product="SomeOtherProduct">This is an important note!</note>
```

A process that filters out product="SomeOtherProduct" will remove the target of the original conref before that conref is ever evaluated, which will result in a broken reference. Evaluating conref first would resolve the reference, and only later filter out the target of the conref. While some use cases can be found where this is the desired behavior, benefits such as those described above resulted in the current processing order used by the DITA-OT..

Pre-processing modules

The pre-processing operation is a set of steps that typically runs at the beginning of every DITA-OT transformation. Each step or stage corresponds to an Ant target in the build pipeline; the preprocess target calls the entire set of steps.

Generate lists (gen-list)

The `gen-list` step examines the input files and creates lists of topics, images, document properties, or other content. These lists are used by later steps in the pipeline. For example, one list includes all topics that make use of the conref attribute; only those files are processed during the conref stage of the build. This step is implemented in Ant and Java.

The result of this list is a set of several list files in the temporary directory, including `dita.list` and `dita.xml.properties`.

List file property	List file	List property	Usage
canditopicsfile	`canditopics.list`	canditopicslist	
chunkedditamapfile	`chunkedditamap.list`	chunkedditamaplist	
chunkedtopicfile	`chunkedtopic.list`	chunkedtopiclist	
codereffile	`coderef.list`	codereflist	topics with coderef
conreffile	`conref.list`	conreflist	Documents that contains conref attribute that need to be resolved in preprocess.
conrefpushfile	`conrefpush.list`	conrefpushlist	
conreftargetsfile	`conreftargets.list`	conreftargetslist	
copytosourcefile	`copytosource.list`	copytosourcelist	
copytotarget2sourcemapfile	`copytotarget2sourcemap.list`	copytotarget2sourcemaplist	
flagimagefile	`flagimage.list`	flagimagelist	
fullditamapandtopicfile	`fullditamapandtopic.list`	fullditamapandtopiclist	All of the ditamap and topic files that are referenced during the transformation. These may be referenced by href or conref attributes.
fullditamapfile	`fullditamap.list`	fullditamaplist	All of the ditamap files in dita.list
fullditatopicfile	`fullditatopic.list`	fullditatopiclist	All of the topic files in dita.list
hrefditatopicfile	`hrefditatopic.list`	hrefditatopiclist	All of the topic files that are referenced with an href attribute
hreftargetsfile	`hreftargets.list`	hreftargetslist	link targets
htmlfile	`html.list`	htmllist	resource files
imagefile	`image.list`	imagelist	Images files that are referenced in the content
keyreffile	`keyref.list`	keyreflist	Topics and maps which have key references.
outditafilesfile	`outditafiles.list`	outditafileslist	

List file property	List file	List property	Usage
relflagimagefile	`relflagimage.list`	relflagimagelist	
resourceonlyfile	`resourceonly.list`	resourceonlylist	
skipchunkfile	`skipchunk.list`	skipchunklist	
subjectschemefile	`subjectscheme.list`	subjectschemelist	
subtargetsfile	`subtargets.list`	subtargetslist	
tempdirToinputmapdir.relative.value			
uplevels			
user.input.dir			Absolute input directory path
user.input.file.listfile			Input file list file
user.input.file			Input file path, relative to input directory

Debug and filter (debug-filter)

The `debug-filter` step processes all referenced DITA content and creates copies in a temporary directory. As the DITA content is copied, filtering is performed, debugging information is inserted, and table column names are adjusted. This step is implemented in Java.

The following modifications are made to the DITA source:

- If a DITAVAL file is specified, the DITA source is filtered according to the entries in the DITAVAL file.
- Debug information is inserted into each element using the @xtrf and @xtrc attributes. The values of these attributes enable messages later in the build to reliably indicate the original source of the error. For example, a message might trace back to the fifth <ph> element in a specific DITA topic. Without these attributes, that count might no longer be available due to filtering and other processing.
- The table column names are adjusted to use a common naming scheme. This is done only to simplify later conref processing. For example, if a table row is pulled into another table, this ensures that a reference to "column 5 properties" will continue to work in the fifth column of the new table.

Copy related files (copy-files)

The `copy-files` step copies non-DITA resources to the output directory, such as HTML files that are referenced in a map or images that are referenced by a DITAVAL file.

Conref push (conrefpush)

The `conrefpush` step resolves "conref push" references. This step only processes documents that use conref push or that are updated due to the push action. This step is implemented in Java.

Conref (conref)

The `conref` step resolves conref attributes, processing only the DITA maps or topics that use the @conref attribute. This step is implemented in XSLT.

The values of the @id attribute on referenced content are changed as the elements are pulled into the new locations. This ensures that the values of the @id attribute within the referencing topic remain unique.

If an element is pulled into a new context along with a cross reference that references the target, both the values of the @id and @xref attributes are updated so that they remain valid in the new location. For example, a referenced topic might include a section as in the following example:

```
<topic id="referenced_topic">
  <title>...</title>
  <body>
    <section id="sect"><title>Sample section</title>
```

```
      <p>Figure <xref href="#referenced_topic/fig"/> contains an code sample
 that demonstrates ... .</p>
      <fig id="fig"><title>Code sample</title>
        <codeblock>....</codeblock>
      </fig>
    </section>
  </body>
</topic>
```

Figure 2: Referenced topic that contains a section and cross reference

When the section is referenced using a @conref attribute, the value of the @id attribute on the <fig> element is modified to ensure that it remains unique in the new context. At the same time, the <xref> element is also modified so that it remains valid as a local reference. For example, if the referencing topic has an @id set to "new_topic", then the conrefed <section> element may look like this in the intermediate document.

```
<section id="sect"><title>Sample section</title>
    <p>Figure <xref href="#new_topic/d1e25"/> contains an code sample that
 demonstrates ... .</p>
    <fig id="d1e25"><title>Code sample</title>
        <codeblock>....</codeblock>
    </fig>
</section>
```

Figure 3: Resolved conrefed <section> element after the conref step

In this case, the value of the @id attribute on the <fig> element has been changed to a generated value of "d1e25". At the same time, the <xref> element has been updated to use that new generated ID, so that the cross reference remains valid.

Move metadata (move-meta-entries)

The `move-meta-entries` step pushes metadata back and forth between maps and topics. For example, index entries and copyrights in the map are pushed into affected topics, so that the topics can be processed later in isolation while retaining all relevant metadata. This step is implemented in Java.

Resolve keyref (keyref)

The `keyref` step examines all the keys that are defined in the DITA source and resolved the key references. Links that make use of keys are updated so that any @href value is replaced by the appropriate target; key-based text replacement is also performed. This step is implemented in Java.

Resolve code references (codref)

The `coderef` step resolves references made with the <coderef> element. This step is implemented in Java.

The <coderef> is used to reference code stored externally in non-XML documents. During the pre-processing step, the referenced content is pulled into the containing <codeblock> element.

Resolve map references (mapref)

The `mapref` step resolves references from one DITA map to another. This step is implemented in XSLT.

Maps reference other maps by using the following sorts of markup:

```
<topicref href="other.ditamap" format="ditamap"/>
...
<mapref href="other.ditamap"/>
```

As a result of the mapref step, the element that references another map is replaced by the topic references from the other map. Relationship tables are pulled into the referencing map as a child of the root element (<map> or a specialization of <map>).

Pull content into maps (mappull)

The `mappull` step pulls content from referenced topics into maps, and then cascades data within maps. This step is implemented in XSLT.

The `mappull` step makes the following changes to the DITA map:

- Titles are pulled from referenced DITA topics. Unless the @locktitle attribute is set to "yes", the pulled titles replace the navigation titles specified on the <topicref> elements.
- The <linktext> element is set based on the title of the referenced topic, unless it is already specified locally.
- The <shortdesc> element is set based on the short description of the referenced topic, unless it is already specified locally.
- The @type attribute is set on <topicref> elements that reference local DITA topics. The value of the @type attribute is set to value of the root element of the topic; for example, a <topicref> element that references a task topic is given a @type attribute set to "task"".
- Attributes that cascade, such as @toc and print, are made explicit on any child <topicref >elements. This allows future steps to work with the attributes directly, without reevaluating the cascading behavior.

Chunk topics (chunk)

The `chunk` step breaks apart and assembles referenced DITA content based on the @chunk attribute in maps. This step is implemented in Java.

The DITA-OT has implemented processing for the following values of the @chunk attribute:

- select-topic
- select-document
- select-branch
- by-topic
- by-document
- to-content
- to-navigation

Map based linking (maplink and move-links)

These two steps work together to create links based on a map and move those links into the referenced topics. The links are created based on hierarchy in the DITA map, the @collection-type attribute, and relationship tables. This step is implemented in XSLT and Java.

The `maplink` module runs an XSLT program that evaluates the map; it places all the generated links into a single file in the temporary directory. The `move-links` module then runs a Java program that pushes the generated links into the applicable topics.

Pull content into topics (topicpull)

The `topicpull` step pulls content into <xref> and <link> elements. This step is implemented in XSLT.

If an <xref> element does not contain link text, the target is examined and the link text is pulled. For example, a reference to a topic pulls the title of the topic; a reference to a list item pulls the number of the item. If the <xref> element references a topic that has a short description, and the <xref> element does not already contain a child <desc> element, a <desc> element is created that contains the text from the topic short description.

The process is similar for <link> elements. If the <link> element does not have a child <linktext> element, one is created with the appropriate link text. Similarly, if the <link> element does not have a child <desc> element, and the short description of the target can be determined, a <desc> element is created that contains the text from the topic short description.

Flagging in the toolkit

Beginning with DITA-OT 1.7, flagging support is implemented as a common preprocess module. The module evaluates the DITAVAL against all flagging attributes, and adds DITA-OT specific hints in to the topic when flags are active. Any extended transform type may use these hints to support flagging without adding logic to interpret the DITAVAL.

Evaluating the DITAVAL flags

Flagging is implemented as a reusable module during the preprocess stage. If a DITAVAL file is not used with a build, this step is skipped with no change to the file.

When a flag is active, relevant sections of the DITAVAL itself are copied into the topic as a sub-element of the current topic. The active flags are enclosed in a pseudo-specialization of the <foreign> element (referred to as a pseudo-specialization because it is used only under the covers, with all topic types; it is not integrated into any shipped document types).

<ditaval-startprop>

When any flag is active on an element, a <ditaval-startprop> element will be created as the first child of the flagged element:

```
<ditaval-startprop class="+ topic/
foreign ditaot-d/ditaval-startprop
 ">
```

The <ditaval-startprop> element will contain the following:

- If the active flags should create a new style, that style is included using standard CSS markup on the @outputclass attribute. Output types that make use of CSS, such as XHTML, can use this value as-is.
- If styles conflict, and a <style-conflict> element exists in the DITAVAL, it will be copied as a child of <ditaval-startprop>.
- Any <prop> or <revprop> elements that define active flags will be copied in as children of the <ditaval-startprop> element. Any <startflag> children of the properties will be included, but <endflag> children will not.

<ditaval-endprop>

When any flag is active on an element, a <ditaval-endprop> element will be created as the last child of the flagged element:

```
<ditaval-endprop class="+ topic/
foreign ditaot-d/ditaval-endprop ">
```

CSS values and <styleconflict> elements are not included on this element.

Any <prop> or <revprop> elements that define active flags will be copied in as children of <ditaval-prop>. Any <endflag> children of the properties will be included, but <startflag> children will not.

Supporting flags in overrides or custom transform types

For most transform types, the <foreign> element should be ignored by default, because arbitrary non-DITA content may not mix well unless coded for ahead of time. If the <foreign> element is ignored by default, or if a rule is added to specifically ignore <ditaval-startprop> and <ditaval-endprop>, then the added elements will have no impact on a transform. If desired, flagging support may be integrated at any time in the future.

The processing described above runs as part of the common preprocess, so any transform that uses the default preprocess will get the topic updates. To support generating flags as images, XSLT based transforms can use default fallthrough processing in most cases. For example, if a paragraph is flagged, the first child of <p> will contain the

start flag information; adding a rule to handle images in <ditaval-startprop> will cause the image to appear at the start of the paragraph content.

In some cases fallthrough processing will not result in valid output; for those cases, the flags must be explicitly processed. This is done in the XHTML transform for elements like <ol>, because fallthrough processing would place images in between <ol> and <li>. To handle this, the code processes <ditaval-startprop> before starting the element, and <ditaval-endprop> at the end. Fallthrough processing is then disabled for those elements as children of <ol>.

Example DITAVAL

Assume the following DITAVAL file is in use during a build. This DITAVAL will be used for each of the following content examples.

```
<?xml version="1.0" encoding="UTF-8"?>
<val>
  <!-- Define what happens in the case of conflicting styles -->
  <style-conflict background-conflict-color="red"/>

  <!-- Define two flagging properties that give styles (no
 image) -->
  <prop action="flag" att="audience" style="underline"
 val="user" backcolor="green"/>
  <prop action="flag" att="platform" style="overline" val="win"
 backcolor="blue"/>

  <!-- Define a property that includes start and end image flags
 -->
  <prop action="flag" att="platform" val="linux"
 style="overline" backcolor="blue">
    <startflag imageref="startlin.png"><alt-text>Start linux</
alt-text></startflag>
    <endflag imageref="endlin.png"><alt-text>End linux</alt-
text></endflag>
  </prop>

  <!-- Define a revision that includes start and end image flags
 -->
  <revprop action="flag" style="double-underline" val="rev2">
    <startflag imageref="start_rev.gif"><alt-
text>sssssssssstart</alt-text></startflag>
    <endflag imageref="end_rev.gif"><alt-text>eeeeeeeeeeeeeend</
alt-text></endflag>
  </revprop>
</val>
```

Content example 1: adding style

Now assume the following paragraph exists in a topic. Class attributes are included, as they would normally be in the middle of the preprocess routine; @xtrf and @xtrc are left off for clarity.

```
<p audience="user">Simple user; includes style but no images</p>
```

Based on the DITAVAL above, audience="user" results in a style with underlining and with a green background. The interpreted CSS value is added to @outputclass on <ditaval-startprop>, and the actual property definition is included at the start and end of the element. The output from the flagging step looks like this (with newlines added for clarity, and class attributes added as they would appear in the temporary file):

The resulting file after the flagging step looks like this; for clarity, newlines are added, while @xtrf and @xtrc are removed:

```
<p audience="user" class="- topic/p ">
  <ditaval-startprop class="+ topic/foreign ditaot-d/ditaval-
startprop "
           outputclass="background-color:green;text-
decoration:underline;">
    <prop action="flag" att="audience" style="underline"
 val="user" backcolor="green"/>
  </ditaval-startprop>
  Simple user; includes style but no images
  <ditaval-endprop class="+ topic/foreign ditaot-d/ditaval-
endprop ">
    <prop action="flag" att="audience" style="underline"
 val="user" backcolor="green"/>
  </ditaval-endprop>
</p>
```

Content example 2: conflicting styles

This example includes a paragraph with conflicting styles. When the audience and platform attributes are both evaluated, the DITAVAL indicates that the background color is both green and blue. In this situation, the <style-conflict> element is evaluated to determine how to style the content.

```
<p audience="user" platform="win">Conflicting styles (still no
 images)</p>
```

The <style-conflict> element results in a background color of red, so this value is added to @outputclass on <ditaval-startprop>. As above, active properties are copied into the generated elements; the <style-conflict> element itself is also copied into the generated <ditaval-startprop> element.

The resulting file after the flagging step looks like this; for clarity, newlines are added, while @xtrf and @xtrc are removed:

```
<p audience="user" platform="win" class="- topic/p ">
  <ditaval-startprop class="+ topic/foreign ditaot-d/ditaval-
startprop "
           outputclass="background-color:red;">
    <style-conflict background-conflict-color="red"/>
    <prop action="flag" att="audience" style="underline"
 val="user" backcolor="green"/>
    <prop action="flag" att="platform" style="overline"
 val="win" backcolor="blue"/>
  </ditaval-startprop>
  Conflicting styles (still no images)
  <ditaval-endprop class="+ topic/foreign ditaot-d/ditaval-
endprop ">
    <prop action="flag" att="platform" style="overline"
 val="win" backcolor="blue"/>
    <prop action="flag" att="audience" style="underline"
 val="user" backcolor="green"/>
  </ditaval-endprop>
</p>
```

Content example 3: adding image flags

This example includes image flags for both @platform and @rev, which are defined in DITAVAL `<prop>` and `<revprop>` elements.

```
<ol platform="linux" rev="rev2">
  <li>Generate images for platform="linux" and rev="2"</li>
</ol>
```

As above, the `<ditaval-startprop>` and `<ditaval-endprop>` nest the active property definitions, with the calculated CSS value on @outputclass. The `<ditaval-startprop>` drops the ending image, and `<ditaval-endprop>` drops the starting image. To make document-order processing more consistent, property flags are always included before revisions in `<ditaval-startprop>`, and the order is reversed for `<ditaval-endprop>`.

The resulting file after the flagging step looks like this; for clarity, newlines are added, while @xtrf and @xtrc are removed:

```
<ol platform="linux" rev="rev2" class="- topic/ol ">
  <ditaval-startprop class="+ topic/foreign ditaot-d/ditaval-
startprop "
           outputclass="background-color:blue;text-
decoration:underline;text-decoration:overline;">
    <prop action="flag" att="platform" val="linux"
 style="overline" backcolor="blue">
      <startflag imageref="startlin.png"><alt-text>Start linux</
alt-text></startflag>
    </prop>
    <revprop action="flag" style="double-underline" val="rev2">
      <startflag imageref="start_rev.gif"><alt-
text>sssssssssstart</alt-text></startflag>
    </revprop>
  </ditaval-startprop>
  <li class="- topic/li ">Generate images for platform="linux"
 and rev="2"</li>
  <ditaval-endprop class="+ topic/foreign ditaot-d/ditaval-
endprop ">
    <revprop action="flag" style="double-underline" val="rev2">
      <endflag imageref="end_rev.gif"><alt-
text>eeeeeeeeeeeeeend</alt-text></endflag>
    </revprop>
    <prop action="flag" att="platform" val="linux"
 style="overline" backcolor="blue">
      <endflag imageref="endlin.png"><alt-text>End linux</alt-
text></endflag>
    </prop>
  </ditaval-endprop>
</ol>
```

XHTML processing modules

The DITA-OT ships with several varieties of XHTML output, each of which follows roughly the same path through the processing pipeline. All XHTML-based transformation begin with the same call to the pre-processing module, after which they generate XHTML files and then branch to create the transformation-specific navigation files.

Common XHTML processing

After the pre-processing operation runs, XHTML-based builds each run a common series of Ant targets to generate XHTML file. Navigation may be created before or after this set of common routines.

After the pre-processing is completed, the following targets are run for all of the XHTML-based builds:

- If the arg.css parameter is passed to the build to add a CSS file, the `copy-css` target copies the CSS file from its source location to the relative location in the output directory.
- If a DITAVAL file is used, the `copy-revflag` target copies the default start- and end-revision flags into the output directory.
- The DITA topics are converted to XHTML files. Unless the @chunk attribute was specified, each DITA topic in the temporary directory now corresponds to one XHTML file. The`dita.inner.topics.xhtml` target is used to process documents that are in the map directory (or subdirectories of the map directory). The `dita.outer.topics.xhtml` target is used to process documents that are outside of the scope of the map, and thus might end up outside of the designated output directory. Various DITA-OT parameters control how documents processed by the `dita.outer.topics.xhtml` target are handled.

Default XHTML processing

After the XHTML files are generated by the common routine, the `dita.map.xhtml` target is called by the xhtml transformation. This target generates a TOC file called `index.html`, which can be loaded into a frameset.

Eclipse help processing

The eclipsehelp transformation generates XHTML-based output and files that are needing to create an Eclipse Help system plug-in. Once the normal XHTML process has run, the `dita.map.eclipse` target is used to create a set of control files and navigation files.

Eclipse use multiple files to control the plug-in behavior. Some of these control files are generated by the build, while others might be created manually. The following Ant targets control the Eclipse help processing:

`dita.map.eclipse.init`	Sets up various default properties
`dita.map.eclipse.toc`	Creates the XML file that defines an Eclipse table of contents
`dita.map.eclipse.index`	Creates the sorted XML file that defines an Eclipse index
`dita.map.eclipse.plugin`	Creates the `plugin.xml` file that controls the behavior of an Eclipse plug-in
`dita.map.eclipse.plugin.properties`	Creates a Java properties file that sets properties for the plug-in, such as name and version information
`dita.map.eclipse.manifest.file`	Creates a `MANIFEST.MF` file that contains additional information used by Eclipse
`copy-plugin-files`	Checks for the presence of certain control files in the source directory, and copies those found to the output directory
`dita.map.eclipse.fragment.language.init`	Works in conjunction with the `dita.map.eclipse.fragment.language.country.init` and `dita.map.eclipse.fragment.error` targets to control Eclipse fragment files, which are used for versions of a plug-in created for a new language or locale

Several of the targets listed above have matching templates for processing content that is located outside of the scope of the map directory, such as `dita.out.map.eclipse.toc`.

TocJS processing

The tocjs transformation was originally created as a plug-in that distributed outside of the toolkit, but it now ships bundled in the default packages. This XHTML-based output type creates a JavaScript based frameset with TOC entries that expand and collapse.

The following Ant targets control most of the TocJS processing:

tocjsInit	Sets up default properties. This target detects whether builds have already specified a name for JavaScript control file; if not, the default name `toctree.js` is used.
map2tocjs	Calls the `dita.map.tocjs` target, which generates the contents frame for TocJS output.
tocjsDefaultOutput	Ensures that the XHTML processing module is run. If scripts are missing required information, such as a name for the default frameset, this target copies default style and control files. This target was add to the DITA-OT in version 1.5.4; earlier versions of the TocJS transformation created only the JavaScript control file by default.

HTML Help processing

The htmlhelp transformation created HTML Help control files. If the build runs on a system that has the HTML Help compiler installed, the control files are compiled into a CHM file.

Once the pre-processing and XHTML processes are completed, most of the HTML Help processing is handled by the following targets:

dita.map.htmlhelp	Create the HHP, HHC, and HHK files. The HHK file is sorted based on the language of the map.
dita.htmlhelp.convertlang	Ensures that the content can be processed correctly by the compiler, and that the appropriate code pages and languages are used.
compile.HTML.Help	Attempts to detect the HTML Help compiler. If the compiler is found, the full project is compiled into a single CHM file.

JavaHelp processing

The javahelp transformation runs several additional Ant targets after the XHTML processing is completed in order to create control files for the JavaHelp output.

There are two primary Ant targets:

dita.map.javahelp	Creates all of the files that are needed to compile JavaHelp, including a table of contents, sorted index, and help map file.
compile.Java.Help	Searches for a JavaHelp compiler on the system. If a compiler is found, the help project is compiled.

PDF processing modules

The PDF (formerly known as PDF2) transformation process runs the pre-processing routine and follows it by a series of additional targets. These steps work together to create a merged set of content, convert the merged content to XSL-FO, and then format the XSL-FO file to PDF.

The PDF process includes many Ant targets. During a typical conversion from map to PDF, the following targets are most significant.

map2pdf2	Creates a merged file by calling a common Java merge module. It then calls the `publish.map.pdf` target to do the remainder of the work.

publish.map.pdf

Performs some initialization and then calls the `transform.topic2pdf` target to do the remainder of processing.

transform.topic2pdf

Converts the merged file to XSL-FO, generates the PDF, and deletes the `topic.fo` file, unless instructed to keep it. Uses the following targets to perform those tasks:

transform.topic2fo

Convert the merged file to an XSL-FO file. This process is composed of several Ant targets.

Ant target	Description
transform.topic2fo.index	Runs a Java process to set up index processing, based on the document language. This step generates the file `stage1.xml` in the temporary processing directory.
transform.topic2fo.flag	Sets up flagging preprocessing for flagging based on a DITAVAL file. This step generates the file `stage1a.xml` in the temporary processing directory.
transform.topic2fo.main	Does the main bulk of the conversion from DITA to XSL-FO. It runs the XSLT based process

Ant target	Description
	that creates `stage2.fo` in the temporary processing directory
transform.topics.i18n	Does additional localization processing on the FO file; it runs a Java process that converts `stage2.fo` into `stage3.fo`, followed by an XSLT process that converts `stage3.fo` into `topic.fo`.

transform.fo2pdf Converts the `topic.fo` file into PDF using the specified FO processor (Antenna House, XEP, or Apache FOP).

delete.fo2pdf.topic.fo Deletes the `topic.fo` file, unless otherwise specified by setting an Ant property or command-line option.

Open Document Format processing modules

The odt transformation creates a binary file using the OASIS Open Document Format.

The odt transformation begins with pre-processing. It then runs either the `dita.odt.package.topic` or `dita.odt.package.map` target, depending on whether the input to the transformation is a DITA topic or a DITA map. The following description focuses on the map process, which is made up of the following targets:

`dita.map.odt` Converts the map into a merged XML file using the Java-based `topicmerge` module. Then an XSLT process converts the merged file into the `content.xml` file.

`dita.map.odt.stylesfile` Reads the input DITA map, and then uses XSLT to create a `styles.xml` file in the temporary directory.

dita.out.odt.manifest.file	Creates the `manifest.xml` file

Once these targets have run, the generated files are zipped up together with other required files to create the output ODT file.

Extending the DITA Open Toolkit

There are several methods that can be used to extend the toolkit; not all of them are recommended or supported. The best way to create most extensions is with a plug-in; extended documentation for creating plug-ins is provided in the next section.

- Creating a plug-in can be very simple to very complex, and is generally the best method for changing or extending the toolkit. Plug-ins can be used to accomplish almost any modification that is needed for toolkit processing, from minor style tweaks to extensive, complicated new output formats.
- The PDF process was initially developed independently of the toolkit, and created its own extension mechanism using customization directories. Many (but not quite all) of the capabilities available through PDF customization directories are now available through plug-ins.
- Using a single XSL file as an override by passing it in as a parameter. For example, when building XHTML content, the XSL parameter allows users to specify a single local XSL file (inside or outside of the toolkit) that is called in place of the default XHTML code. Typically, this code imports the default processing code, and overrides a couple of processing routines. This approach is best when the override is very minimal, or when the style varies from build to build. However, any extension made with this sort of override is also possible with a plug-in.
- Editing DITA-OT code directly may work in some cases, but is not advised. Modifying the code directly significantly increases the work and risk involved with future upgrades. It is also likely that such modifications will break plug-ins provided by others, limiting the function available to the toolkit.

Installing plug-ins

Plug-ins are generally distributed as zip files. There are two steps to installing a plug-in: unzipping and integrating.

About this task

It is possible to define a plug-in so that it may be installed anywhere, although most expect to be placed in `plugins/` directory inside of the DITA-OT. Most plug-ins do not require a specific install directory and can go in either of the default locations, but some may come with instructions for a particular install directory.

Procedure

1. The unzip the plug-in file to `plugins` subdirectory.

   The plug-in directory should be named after plug-in ID and version, for example `plugins/com.example.xhtml_1.0.0`.
2. Run plug-in integration process.
   - From the toolkit directory, run the following command to integrate all installed plug-ins:

     ```
     ant -f integrator.xml
     ```
   - Any build that uses the Java command line interface automatically runs the integrator before processing begins.
   - Ant based builds may import the `integrator.xml` file, and add `integrate` to the start of the dependency chain for the build.

     Note: The integration process in considered part of the installation process and running it before each conversion will incur a performance penalty.

The integration process has two modes, lax and strict. In the strict mode the integration process will immediately fail if it encounters errors in plug-in configurations or installation process. In the lax mode, the integration process will continue to finish regardless of errors; the lax mode does not imply error recovery and may leave the DITA-OT installation into a broken state. The default mode is lax due to backwards compatibility, to run the integration in strict mode:

```
ant -f integrator.xml strict
```

To get more information about the integration process, run Ant in verbose mode:

```
ant -f integrator.xml -verbose strict
```

Removing plug-ins

Plug-ins can be installed by removing the plug-in and running integration process.

Procedure

1. Remove plug-in installation directory.
2. Run integration process.

```
ant -f integrator.xml
```

Rebuilding the DITA-OT documentation

The DITA-OT ships with Ant scripts that enable you to rebuild the toolkit documentation. This is especially helpful if your environment contains plug-ins that integrate additional messages into the toolkit.

Procedure

1. Change to the `doc` directory.
2. Run the following command:

```
ant -f build.xml target
```

The *target* parameter is optional and specifies a specific transformation type. It takes the following values:

- build-html
- build-htmlhelp
- build-pdf

If you do not specify an Ant target, all three output formats (XHTML, HTML help, and PDF) are generated.

Configuring the DITA Open Toolkit

The DITA OT uses `.properties` files that store configuration settings for the DITA OT and its plug-ins. The configuration properties are available to both Ant and Java processes, but unlike argument properties, they cannot be set at run time.

`plugin.properties` file

The `plugin.properties` file is used to store configuration properties that are set by the integration process. The file is located in the `lib\org.dita.dost.platform` directory; it is regenerated each time the integration process is run and so should not be edited manually.

Creating DITA-OT plug-ins

The DITA Open Toolkit comes with a built in mechanism for adding in extensions through plug-ins. These plug-ins may do a wide variety of things, such as adding support for specialized DITA DTDs or Schemas, integrating processing overrides, or even providing entirely new output transforms. Plug-ins are the best way to extend the toolkit in a way that is consistent, easily sharable, and easy to preserve through toolkit upgrades.

A plug-in consists of a directory, typically stored directly within the `plugins/` directory inside of the DITA-OT. Every plug-in is controlled by a file named `plugin.xml`, located in the plug-in's root directory.

Benefits of extending the toolkit through plug-ins include:

- Plug-ins are easily sharable with other users, teams, or companies; typically, all that is needed is to unzip and run a single integration step. With many builds, even that integration step is automatic.
- Allows overrides or customizations to grow from simple to complex over time, with no increased complexity to the extension mechanism.
- Plug-ins can be moved from version to version with an upgraded toolkit simply by unzipping again, or by copying the directory from one install to another; there is no need to re-integrate code based on updates to the core processing.
- Plug-ins can build upon each other. If you like a plug-in provided by one user, simply install that plug-in, and then create your own that builds on that extension. The two plug-ins can then be distributed to your team as a unit, or you can even share your own extensions with the original provider.

Plug-in configuration file

The `plugin.xml` controls all aspects of a plug-in, making each extension visible to the rest of the toolkit. The file uses pre-defined extension points to locate changes, and integrates those changes into the core code.

The root element of the plugin.xml file is `<plugin>`, and must specify an `id` attribute. The `id` attribute is used to identify the plug-in, as well as to identify whether pre-requisite plug-ins are available. The `id` attribute should follow the syntax rules:

```
id    ::= token('.'token)*
token ::= ( [0..9] | [a..zA..Z] | '_' | '-' )+
```

The `<plugin>` element supports the following child elements:

- `<feature>` defines an *extension* to contribute to a defined *extension point*. The following attributes are supported:

Attribute	Description	Required
`extension`	extension point identifier	yes
`value`	comma separated string value of the extension	either `value` or `file`
`file`	file path value of the extension, relative to `plugin.xml`	either `value` or `file`
`type`	type of the `value` attribute	no

- `extension-point` defines new a *extension point* that can be used by other plug-ins. The following attributes are supported:

Attribute	Description	Required
`id`	extension point identifier	yes
`name`	extension point name	no

- `<require>` defines plug-in dependencies. The following attributes are supported:

Attribute	Description	Required
plugin	vertical bar separated list of plug-ins that are required	yes
importance	flag whether plug-in is required or optional	no

- `<template>` defines files that should be treated as *templates*. The following attributes are supported:

Attribute	Description	Required
file	file path to the template, relative to `plugin.xml`	yes

- `<meta>` defines metadata. The following attributes are supported:

Attribute	Description	Required
type	metadata name	yes
value	metadata value	yes

Any extension that is not recognized by the DITA-OT is ignored; all elements other than `<plugin>` are optional. Since version 1.5.3 multiple extension definitions within a plug-in configuration file are combined; in older versions only the last extension definition is used.

Extending the XML Catalog

The XML Catalogs extension point is used to update the XML Catalogs used to resolve DTD or Schema document types, or to add URI mappings. This is required in order to support DITA specializations or new DITA document type shells.

To do this, first create a catalog with only your new values, using the OASIS Catalog format, and place that in your plug-in. Local file references in the catalog should be relative to the location of the catalog. The following extension points are available to work with catalogs.

dita.specialization.catalog.relative
dita.specialization.catalog

Adds the content of the catalog file defined in `file` attribute to main DITA-OT catalog file.

Remember: The `dita.specialization.catalog` extension is deprecated. Use `dita.specialization.catalog.relative` instead.

org.dita.pdf2.catalog.relative

Adds the content of the catalog file defined in `file` attribute to main PDF plug-in catalog file.

Example

This example assumes that "`catalog-dita.xml`" contains an OASIS catalog for any DTDs or Schemas inside this plug-in. The catalog entries inside of `catalog-dita.xml` are relative to the catalog itself; when the plug-in is integrated, they will be added to the core DITA-OT catalog (with the correct path).

```
<plugin id="com.example.catalog">
  <feature extension="dita.specialization.catalog.relative"
 file="catalog-dita.xml"/>
```

```
</plugin>
```

Adding new targets to the Ant build process

The Ant conductor extension point is used to make new targets available to the Ant processing pipeline. This may be done as part of creating a new transform, extending pre-processing, or simply to provide Ant targets for the use of other plug-ins.

dita.conductor.target.relative	Add Ant import to main Ant build file.
dita.conductor.target	 **Remember:** The `dita.conductor.target` extension is deprecated. Use `dita.conductor.target.relative` instead.

Example

To extend And processing, first place your extensions in an Ant project file within your plug-in, such as `myAntStuff.xml`. Next, create a small wrapper file `myAntStuffWrapper.xml` in the same directory:

```
<dummy> <import file="myAntStuff.xml"/> </dummy>
```

Then create the following feature:

```
<plugin id="com.example.ant">
  <feature extension="dita.conductor.target.relative"
 file="myAntStuffWrapper.xml"/>
</plugin>
```

When the plug-in is integrated, the imports from `myAntStuffWrapper.xml` will be copied into `build.xml` (using the correct path). This makes targets in `myAntStuff.xml` available to any other processing.

Adding Ant targets to the pre-process pipeline

Every step in the pre-process pipeline defines an extension point before and after the step, to allow plug-ins to integrate additional processing. This allows a plug-in to insert a new step before any pre-processing step, as well as before or after the entire preprocess pipeline.

The group of preprocessing steps defines extension points before and after the full preprocessing chain.

depend.preprocess.pre	Preprocessing pre-target; extending this target runs your Ant target before the full preprocess routine begins.
depend.preprocess.post	Preprocessing post-target; extending this target runs your Ant target after the full preprocess routine completes.

In addition, there are extension points to execute an Ant target before individual preprocessing steps.

depend.preprocess.clean-temp.pre	Clean temp pre-target
depend.preprocess.gen-list.pre	Generate list pre-target
depend.preprocess.debug-filter.pre	Debug and filter pre-target
depend.preprocess.conrefpush.pre	Content reference push pre-target

depend.preprocess.move-meta-entries.pre	Move meta entries pre-target
depend.preprocess.conref.pre	Content reference pre-target
depend.preprocess.coderef.pre	Code reference pre-target
depend.preprocess.mapref.pre	Map reference pre-target
depend.preprocess.keyref.pre	Resolve key reference pre-target
depend.preprocess.mappull.pre	Map pull pre-target
depend.preprocess.chunk.pre	Chunking pre-target
depend.preprocess.maplink.pre	Map link pre-target
depend.preprocess.move-links.pre	Move links pre-target
depend.preprocess.topicpull.pre	Topic pull pre-target
depend.preprocess.copy-files.pre	Copy files pre-target
depend.preprocess.copy-image.pre	Copy images pre-target
depend.preprocess.copy-html.pre	Copy HTML pre-target
depend.preprocess.copy-flag.pre	Copy flag pre-target
depend.preprocess.copy-subsidiary.pre	Copy subsidiary pre-target
depend.preprocess.copy-generated-files.pre	Copy generated files pre-target

Example

The following feature adds "myAntTargetBeforeChunk" Ant target to be executed before the chunk step in preprocessing. It assumes that an Ant file defining that target has already been integrated.

```
<plugin id="com.example.extendchunk">
  <feature extension="depend.preprocess.chunk.pre"
 value="myAntTargetBeforeChunk"/>
</plugin>
```

When integrated, the Ant target "myAntTargetBeforeChunk" will be added to the Ant dependency list so that it always runs immediately before the Chunk step.

Integrating a new transform type

Plug-ins may integrate an entire new transform type. The new transform type can be very simple, such as an XHTML build that creates an additional control file; it can also be very complex, adding any number of new processing steps.

The transtype extension point is used to define a new "transtype", or transform type, which makes use of targets in your Ant extensions. When a transform type is defined, the build expects Ant code to be integrated to define the transform process. The Ant code must define a target based on the name of the transform type; if the transform type is "mystuff", the Ant code must define a target named dita2mystuff.

dita.conductor.transtype.check	Add new value to list of valid transformation type names.
dita.transtype.print	Declare transtype as a print type.

Example

The following feature defines a transform type of "newtext" and declares it as a print type; using this transform type will cause the build to look for a target `dita2newtext`, defined in a related Ant extension from the third feature:

```
<plugin id="com.example.newtext">
  <feature extension="dita.conductor.transtype.check"
 value="newtext"/>
  <feature extension="dita.transtype.print" value="newtext"/>
  <feature extension="dita.conductor.target.relative"
 file="antWrapper.xml"/>
</plugin>
```

Override styles with XSLT

The XSLT import extension points are used to override various steps of XSLT processing. For this, the extension attribute indicates the step that the override applies to; the `file` attribute is a relative path to the override within the current plugin. The plugin installer will add an XSL import statement to the default code so that your override becomes a part of the normal build.

The following XSLT steps are available to override in the core toolkit:

dita.xsl.xhtml	Overrides default (X)HTML output (including HTML Help and Eclipse Help). The referenced file is integrated directly into the XSLT step that generates XHTML.
dita.xsl.xslfo	Overrides default PDF output (formerly known as PDF2). The referenced file is integrated directly into the XSLT step that generates XSL-FO for PDF.
dita.xsl.docbook	Overrides default DocBook output.
dita.xsl.rtf	Overrides default RTF output.
dita.xsl.eclipse.plugin	Overrides the step that generates plugin.xml for Eclipse.
dita.xsl.conref	Overrides the preprocess step that resolves conref.
dita.xsl.topicpull	Overrides the preprocess step "topicpull" (the step that pulls text into <xref> elements, among other things).
dita.xsl.mapref	Overrides the preprocess step "mapref" (the step that resolves references to other maps).
dita.xsl.mappull	Overrides the preprocess step "mappull" (the step that updates navtitles in maps and causes attributes to cascade).
dita.xsl.maplink	Overrides the preprocess step "maplink" (the step that generates map-based links).
dita.xsl.fo	Override the (now deprecated) original PDF output, which is still available with the transform type "legacypdf".

Example

The following two files represent a complete, simple style plug-in. The `plugin.xml` file declares an XSLT file that extends XHTML processing; the XSLT file overrides default header processing to provide a (theoretical) banner.

```
plugin.xml:
<?xml version="1.0" encoding="UTF-8"?>
<plugin id="com.example.brandheader">
  <feature extension="dita.xsl.xhtml" file="xsl/header.xsl"/>
</plugin>

xsl/header.xsl:
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="1.0"
                xmlns:xsl="http://www.w3.org/1999/XSL/
Transform">
  <xsl:template name="gen-user-header">
    <div><img src="http://www.example.com/company_banner.jpg"
              alt="Example Company Banner"/></div>
  </xsl:template>
</xsl:stylesheet>
```

Modifying or adding generated text

Generated text is the term for strings that are automatically added by the build, such as "Note" before the contents of a <note> element.

The generated text extension point is used to add new strings to the default set of generated text. There are several reasons you may want to use this:

- It can be used to add new text for your own processing extensions; for example, it could be used to add localized versions of the string "User response" to aid in rendering troubleshooting information.
- It can be used to override the default strings in the toolkit; for example, it could be used to reset the English string "Figure" to "Fig".
- It can be used to add support for new languages (for non-PDF transforms only; PDF requires more complicated localization support). For example, it could be used to add support for Vietnamese or Gaelic; it could also be used to support a new variant of a previously supported language, such as Australian English.

`dita.xsl.strings` Add new strings to generated text file.

Example: adding new strings

First copy the file `xsl/common/strings.xml` to your plug-in, and edit it to contain the languages that you are providing translations for ("en-us" must be present). For this sample, copy the file into your plug-in as `xsl/my-new-strings.xml`. The new strings file will look something like this:

```
<?xml version="1.0" encoding="utf-8"?>
<!-- Provide strings for my plug-in; this plug-in supports
     English, Icelandic, and Russian. -->
<langlist>
  <lang xml:lang="en"     filename="mystring-en-us.xml"/>
  <lang xml:lang="en-us"  filename="mystring-en-us.xml"/>
  <lang xml:lang="is"     filename="mystring-is-is.xml"/>
  <lang xml:lang="is-is"  filename="mystring-is-is.xml"/>
  <lang xml:lang="ru"     filename="mystring-ru-ru.xml"/>
  <lang xml:lang="ru-ru"  filename="mystring-ru-ru.xml"/>
</langlist>
```

Next, copy the file `xsl/common/strings-en-us.xml` to your plug-in, and replace the content with your own strings (be sure to give them unique name attributes). Do the same for each language that you are providing a translation for. For example, the file `mystring-en-us.xml` might contain:

```
<?xml version="1.0" encoding="utf-8"?>
<strings xml:lang="en-us">
  <str name="String1">English generated text</str>
  <str name="Another String">Another String in English</str>
</strings>
```

Use the following extension code to include your strings in the set of generated text:

```
<plugin id="com.example.strings">
  <feature extension="dita.xsl.strings" file="xsl/my-new-
strings.xml"/>
</plugin>
```

The string is now available to the "getString" template used in many DITA-OT XSLT files. For example, if processing in a context where the xml:lang value is "en-us", the following call would return "Another String in English":

```
<xsl:call-template name="getString">
  <xsl:with-param name="stringName" select="'Another String'"/>
</xsl:call-template>
```

Note: If two plug-ins define the same string, the results will be non-deterministic, so multiple plug-ins should not try to create the same generated text string. One common way to avoid this problem is to ensure the name attributes used to look up the string value are related to the ID or purpose of your plug-in.

Example: modifying existing strings

The process for modifying existing generated text is exactly the same as for adding new text, except that the strings you provide override values that already exist. To begin, set up the `xsl/my-new-strings.xml` file in your plug-in as in the previous example.

Next, copy the file `xsl/common/strings-en-us.xml` to your plug-in, and choose the strings you wish to change (be sure to leave the name attribute unchanged, because this is the key used to look up the string). Create a strings file for each language that needs to modify existing strings. For example, the new file `mystring-en-us.xml` might contain:

```
<?xml version="1.0" encoding="utf-8"?>
<strings xml:lang="en-us">
  <str name="Figure">Fig</str>
  <str name="Draft comment">ADDRESS THIS DRAFT COMMENT</str>
</strings>
```

To integrate the new strings, use the same method as above to add these strings to your `plugin.xml` file. Once this plug-in is integrated, where XHTML output previously generated the term "Figure", it will now generate "Fig"; where it previously generated "Draft comment", it will now generate "ADDRESS THIS DRAFT COMMENT". The same strings in other languages will not be modified unless you also provide new versions for those languages.

Note: If two plug-ins override the same string in the same language, the results will be non-deterministic (either string may be used under different conditions). Multiple plug-ins should not override the same generated text string for a single language.

Example: adding a new language

The process for adding a new language is exactly the same as for adding new text, except you are effectively just translating an existing strings file. To begin, set up the `xsl/my-new-strings.xml` file in your plug-in as in the previous examples. In this case, the only difference is that you are adding a mapping to new languages; for example, the following file would be used to set up support for Vietnamese:

```
<?xml version="1.0" encoding="utf-8"?>
<!-- Map languages with xml:lang="vi" or xml:lang="vi-vn"
     to the translations in this plug-in. -->
<langlist>
  <lang xml:lang="vi"     filename="strings-vi.xml"/>
  <lang xml:lang="vi-vn"  filename="strings-vi.xml"/>
</langlist>
```

Next, copy the file `xsl/common/strings-en-us.xml` to your plug-in, and rename it to match the language you wish to add. For example, to support Vietnamese strings you may want to pick a name like `strings-vi.xml`. In that file, change the `xml:lang` attribute on the root element to match your new language.

Once the file is ready, translate the contents of each `<str>` element (be sure to leave the name attribute unchanged). Repeat this process for each new language you wish to add.

To integrate the new languages, use the same method as above to add these strings to your `plugin.xml` file. Once this plug-in is integrated, non-PDF builds will include support for Vietnamese; instead of generating the English word "Caution", the element `<note type="caution" xml:lang="vi">` may generate something like "*chú ý*".

Note: If two plug-ins add support for the same language using different values, the results will be non-deterministic (translations from either plug-in may be picked up under different conditions).

Passing parameters to existing XSLT steps

Plug-ins can define new parameters to be passed from the Ant build into existing XSLT pipeline stages, usually to have those parameters available as global `<xsl:param>` values within XSLT overrides.

To create new parameters, create a file `insertParameters.xml` which contains one or more Ant `<param>` elements. It also needs a <dummy> wrapper element around the parameters. For example, the following parameter will be passed in to the XSLT file with a value of `${antProperty}`, but only if that parameter is defined:

```
<dummy>
  <!-- Any Ant code allowed in xslt task is possible. Common example: -->
  <param name="paramNameinXSLT" expression="${antProperty}"
 if="antProperty"/>
</dummy>
```

Pass the value using the following extensions:

`dita.conductor.html.param`	Pass parameters to HTML and HTML Help XSLT
`dita.conductor.xhtml.param`	Pass parameters to XHTML and Eclipse Help XSLT
`dita.conductor.xhtml.toc.param`	Pass parameters to XHTML TOC XSLT
`dita.conductor.eclipse.toc.param`	Pass parameters to Eclipse Help TOC XSLT
`dita.preprocess.conref.param`	Pass parameters to conref XSLT
`dita.preprocess.mapref.param`	Pass parameters to mapref XSLT

dita.preprocess.mappull.param	Pass parameters to mappull XSLT
dita.preprocess.maplink.param	Pass parameters to maplink XSLT
dita.preprocess.topicpull.param	Pass parameters to topicpull XSLT
dita.conductor.pdf2.param	Pass parameters to PDF2 XSLT

Example

The following plug-in will pass the parameters defined inside of `insertParameter.xml` as input to the XHTML process. Generally, an additional XSLT override will make use of the parameter to do something new with the generated content.

```
<plugin id="com.example.newparam">
  <feature extension="dita.conductor.xhtml.param"
 file="insertParameters.xml"/>
</plugin>
```

Adding Java libraries to the classpath

If your Ant or XSLT extensions require additional Java libraries in the classpath, you can add them to the global DITA-OT classpath with the following feature.

dita.conductor.lib.import	Add Java libraries to DITA-OT classpath.

Example

The following plug-in adds the compiled Java code from `myJavaLibrary.jar` into the global DITA-OT classpath. XSLT or Ant code can then make use of the added code.

```
<plugin id="com.example.addjar">
  <feature extension="dita.conductor.lib.import"
 file="myJavaLibrary.jar"/>
</plugin>
```

Now assume that in this case myJavaLibrary.jar performs some validation step in the middle of processing, and you always want it to run immediately before the conref step. In that case you need to make use of several features in this plug-in

- The JAR file must be added to the classpath.
- An Ant target must be created that uses this class, and the Ant wrapper integrated into the code.
- The Ant target must be added to the dependency chain for conref.

In this extended example, the files might look something like this.

```
plugin.xml:
<?xml version="1.0" encoding="UTF-8"?>
<plugin id="com.example.samplejava">
  <!-- Add the JAR file to the DITA-OT CLASSPATH -->
  <feature extension="dita.conductor.lib.import"
 file="com.example.sampleValidation.jar"/>
  <!-- Integrate the Ant code -->
  <feature extension="dita.conductor.target.relative"
 file="antWrapper.xml"/>
  <!-- Define the Ant target that is called, and the location
 (before conref) -->
  <feature extension="depend.preprocess.conref.pre"
 value="validateWithJava"/>
</plugin>
```

```
antWrapper.xml imports the new Ant code:
<?xml version="1.0" encoding="UTF-8"?>
<dummy>
  <import file="calljava-antcode.xml"/>
</dummy>

calljava-antcode.xml:
<?xml version="1.0" encoding="UTF-8"?>
<project default="validateWithJava">
  <target name="validateWithJava">
    <java classname="com.example.sampleValidation">
      <!-- The class was added to dost.class.path (the DITA-OT
 classpath) -->
      <classpath refid="dost.class.path"/>
    </java>
  </target>
</project>
```

Adding diagnostic messages

Plug-in specific warning and error messages can be added to the set of messages supplied by the DITA-OT. These messages can then be used by any XSLT override.

`dita.xsl.messages` Add new messages to diagnostic message file.

Example

To add your own messages, create the new messages in an XML file such as `myMessages.xml`:

```
<dummy>
  <!-- See resource/messages.xml for the details. -->
  <message id="DOTXmy-msg-numW" type="WARN">
    <reason>Message text</reason>
    <response>How to resolve</response>
  </message>
</dummy>
```

There are three components to the message ID:

1. The prefix DOTX is used by all DITA-OT XSLT transforms, and must be part of the ID.
2. This is followed by the message number ("my-msg-num" in the sample above). By convention, this should be a three digit integer.
3. Finally, a letter corresponds to the severity. This should be one of:
   - I = Informational, used with type="INFO"
   - W = Warning, used with type="WARN"
   - E = Error, used with type="ERROR"
   - F = Fatal, used with type="FATAL"

Once the message file is defined, it is incorporated with this extension:

```
<plugin id="com.example.newmsg">
  <feature extension="dita.xsl.messages" file="myMessages.xml"/>
</plugin>
```

XSLT modules can then generate the message using the following call:

```
<xsl:call-template name="output-message">
  <xsl:with-param name="msgnum">my-msg-num</xsl:with-param>
  <xsl:with-param name="msgsev">W</xsl:with-param>
```

```
</xsl:call-template>
```

Managing plug-in dependencies

The <require> element in a plugin.xml file is used to create a dependency on another plug-in. The <require> element requires the plugin attribute in order to reference the dependency.

If the current plug-in requires a plug-in with id="plugin-id" before it can be installed, it would include the following:

```
<require plugin="plugin-id">
```

Prerequisite plug-ins are integrated before the current plug-in is integrated. This does the right thing with respect to XSLT overrides. If your plug-in is a specialization of a specialization, it should <require> its base plug-ins, in order from general to specific.

If a prerequisite plug-in is missing, a warning will be printed during integration. To suppress this, but keep the integration order if both plug-ins are present, add importance="optional" to the <require> element.

If your plug-in can depend on any one of several optional plug-ins, separate the plug-in ids with a vertical bar. This is most useful when combined with importance="optional":

Example

The following plug-in will only be installed if the plug-in with id="com.example.primary" is available. If that one is not available, a warning will be generated during the integration process.

```
<plugin id="com.example.builds-on-primary">
  <!-- ...extensions here -->
  <require plugin="com.example.primary"/>
</plugin>
```

The following plug-in will only be installed if either the plug-in with id="pluginA" or the plug-in with id="pluginB" are available. If neither of those are installed, the current plug-in will be ignored.

```
<plugin id="pluginC">
  <!-- ...extensions here -->
  <require plugin="pluginA|pluginB" importance="optional"/>
</plugin>
```

Version and support information

The following extension points are used by convention to define version and support info within a plug-in.

- package.support.name
- package.support.email
- package.version

Note:

The toolkit does not currently do anything with these values, but may do so in the future.

The package.version value should follow the syntax rules:

```
version   ::= major ( '.' minor ( '.' micro ( '.' qualifier )? )? )?

major     ::= number
minor     ::= number
micro     ::= number
```

```
qualifier ::= ( [0..9] | [a..zA..Z] | '_' | '-' )+
```

The default value is `0.0.0`.

Example

```
<plugin id="com.example.WithSupportInfo">
  <feature extension="package.support.name" value="Joe the
 Author"/>
  <feature extension="package.support.email"
 value="joe@example.com"/>
  <feature extension="package.version" value="1.2.3"/>
</plugin>
```

Creating a new plug-in extension point

If your plug-in needs to define its own extension point in an XML file, add the string "`_template`" to the filename before the file suffix. During integration, this file will be processed like the built-in DITA-OT templates.

Template files are used to integrate most DITA-OT extensions. For example, the file `dita2xhtml_template.xsl` contains all of the default rules for converting DITA topics to XHTML, along with an integration point for plug-in extensions. When the integrator runs, the file dita2xhtml.xsl is recreated, and the integration point is replaced with references to all appropriate plug-ins.

To mark a new file as a template file, use the `<template>` element.

The template extension namespace has the URI `http://dita-ot.sourceforge.net`. It is used to identify elements and attributes that have a special meaning in template processing. This documentation uses a prefix of `dita:` for referring to elements in the template extension namespace. However, template files are free to use any prefix, provided that there is a namespace declaration that binds the prefix to the URI of the template extension namespace.

`dita:extension` element

The `dita:extension` elements are used to insert generated content during integration process. There are two required attributes:

- The `id` attribute defines the extension point ID which provides the argument data.
- The `behaviour` attribute defines which processing action is used.

Supported values for `behavior` attribute:

`org.dita.dost.platform.CheckTranstypeAction`	Create Ant condition elements to check if `${transtype}` property value equals a supported transtype value.
`org.dita.dost.platform.ImportAntLibAction`	Create Ant `pathelement` elements for *library imported extension point*. The `id` attribute is used to define the extension point ID.
`org.dita.dost.platform.ImportPluginCatalogAction`	Load plug-in metadata catalog content.
`org.dita.dost.platform.ImportPluginInfoAction`	Create plug-in metadata Ant properties.
`org.dita.dost.platform.ImportStringsAction`	Include plug-in string file content base on *generated text extension point*. The `id` attribute is used to define the extension point ID.
`org.dita.dost.platform.ImportXSLAction`	Create `xsl:import` elements based on *XSLT import extension point*. The `id` attribute is used to define the extension point ID.

org.dita.dost.platform.InsertAction	Include plug-in conductor content based on *Ant import extension point*. The `id` attribute is used to define the extension point ID.
org.dita.dost.platform.InsertAntActionRelative	Include plug-in conductor content based on *relative Ant import extension point*. The `id` attribute is used to define the extension point ID.
org.dita.dost.platform.InsertCatalogActionRelative	Include plug-in catalog content based on *catalog import extension point*. The `id` attribute is used to define the extension point ID.
org.dita.dost.platform.ListTranstypeAction	Create a pipe delimited list of supported transtypes.

`dita:extension` attribute

The `dita:extension` attribute is used to process attributes in elements which are not in template extension namespace. The value of the attribute is a space delimited tuple, where the first item is the name of the attribute to process and the second item is the action ID.

Supported values:

depends **org.dita.dost.platform.InsertDependsAction**	Ant target dependency list is processed to replace all target names which start with an open curly bracket and end with a close curly bracket. The value of the extension point is the ID between the curly brackets.

Example

The following plug-in defines `myBuildFile_template.xml` as a new template for extensions, and two new extension points.

```
<plugin id="com.example.new-extensions">
  <extension-point id="com.example.new-extensions.pre"
                   name="Custom target preprocess"/>
  <extension-point id="com.example.new-extensions.content"
                   name="Custom target content"/>
  <template file="myBuildFile_template.xml"/>
</plugin>
```

When the integrator runs, this will be used to recreate `myBuildFile.xml`, replacing Ant file content based on extension point use.

```
<project xmlns:dita="http://dita-ot.sourceforge.net">
  <target name="dita2custom"
          depends="dita2custom.init,
                   {com.example.new-extensions.pre},
                   dita2xhtml"
          dita:extension="depends
 org.dita.dost.platform.InsertDependsAction">
    <dita:extension id="com.example.new-extensions.content"

 behaviour="org.dita.dost.platform.InsertAction"/>
  <target>
</project>
```

Example plugin.xml file

The following is a sample of a `plugin.xml` file. This file adds support for a new set of specialized DTDs, and includes an override for the XHTML output processor.

This `plugin.xml` file would go into a directory such as `DITA-OT\plugins\music\` and referenced supporting files would also exist in that directory. A more extensive sample using these values is available in the actual music plug-in, available at the *DITA-OT download page* at SourceForge

```
<plugin id="org.metadita.specialization.music">
  <feature extension="dita.specialization.catalog.relative"
 file="catalog-dita.xml">
  <feature extension="dita.xsl.xhtml" file="xsl/
music2xhtml.xsl"/>
</plugin>
```

Migrating style sheets and XSLT overrides

XHTML migration for flagging updates in DITA-OT 1.7

This topic is primarily of interest to developers with XHTML transform overrides written prior to DITA-OT 1.7. Due to significant changes in the flagging process with the 1.7 release, some changes may be needed to make overrides work properly with DITAVAL based flagging. The new design is significantly simpler than the old design; in many cases, migration will consist of deleting old code that is no longer needed.

Which XHTML overrides need to migrate?

If your override does not contain any code related to DITAVAL flagging, then there is nothing to migrate.

If your builds do not make use of DITAVAL based flagging, but calls the deprecated flagging templates, then you should override but there is little urgency. You will not see any difference in the output, but those templates will be removed in a future release.

If you do make use of DITAVAL based flagging, try using your override with 1.7. Check the elements you override:

1. In some cases flags may be doubled. This will be the case if you call routines such as `"start-flagit"`.
2. In some cases flags may be removed. This will be the case if you call shortcut routines such as `"revtext"` or `"revblock"`.
3. In other cases, flags may still appear properly, in which case migration is less urgent

For any migration that needs migration, please see the instructions that follow.

Deprecated templates in DITA-OT 1.7

All of the old DITAVAL based templates are deprecated in DITA-OT 1.7. If your overrides include any of the following templates, they should be migrated for the new release; in many cases the templates below will not have any effect on your output, but all instances should be migrated.

- The `"gen-style"` template used to add CSS styling
- The `"start-flagit"` and `"end-flagit"` templates used to generate image flags based on property attributes like @audience
- The `"start-revflag"` and `"end-revflag"` templates, used to generate images for active revisions
- Shortcut templates that group these templates into a single call, such as:
  - `"start-flags-and-rev"` and `"end-flags-and-rev"`, used to combine flags and revisions into one call
  - `"revblock"` and `"revtext"`, both used to output start revisions, element content, and end revisions
  - The modes `"outputContentsWithFlags"` and `"outputContentsWithFlagsAndStyle"`, both used to combine processing for property/revision flags with content processing
- All other templates that make use of the `$flagrules` variable, which is no longer used in any of the DITA-OT 1.7 code

- All templates within `flag.xsl` that were called from the templates listed above
- Element processing handled with mode="elementname-fmt", such as `mode="ul-fmt"` for processing unordered lists and `mode="section-fmt"` for sections.

What replaces the templates?

The new flagging design described in the preprocess design section now adds literal copies of relevant DITAVAL elements, along with CSS based flagging information, into the relevant section of the topic. This allows most flags to be processed in document order; in addition, there is never a need to read the DITAVAL, interpret CSS, or evaluate flagging logic. The `htmlflag.xsl` file contains a few rules to match and process the start/end flags; in most cases, all code to explicitly process flags can be deleted.

For example, the common logic for most element rules before DITA-OT 1.7 could be boiled down to the following:

Match element
Create `"flagrules"` variable by reading DITAVAL for active flags
Output start tag such as `<div>` or `<span>`
Call `"commonattributes"` and ID processing
Call `"gen-style"` with `$flagrules`, to create DITAVAL based CSS
Call `"start-flagit"` with `$flagrules`, to create start flag images
Call `"start-revflag"` with `$flagrules`, to create start revision images
Output contents
Call `"end-revflag"` with `$flagrules`, to create end revision images
Call `"end-flagit"` with `$flagrules`, to create end flag images
Output end tag such as `</div>` or `</span>`

In DITA-OT 1.7, style and images are typically handled with XSLT fallthrough processing. This removes virtually all special flag coding from element rules, because flags are already part of the document and processed in document order. The sample above is reduced to:

Match element
Output start tag such as `<div>` or `<span>`
Call `"commonattributes"` and ID processing
Output contents
Output end tag such as `</div>` or `</span>`

Migrating `"gen-style"` named template

Calls to the `"gen-style"` template should be deleted. There is no need to replace this call for most elements.

The `"gen-style"` template was designed to read a DITAVAL file, find active style-based flagging (such as colored or bold text), and add it to the generated @style attribute in HTML.

With DITA-OT 1.7, the style is calculated in the pre-process flagging module. The result is created as @outputclass on a `<ditaval-startprop>` sub-element. The `"commonattributes"` template now includes a line to process that value; the result is that for every element that calls `"commonattributes"`, DITAVAL style will be processed when needed. Because virtually every element includes a call to this common template, there is little chance that your override needs to explicitly process the style. The new line in `"commonattributes"` that handles the style is:

```
<xsl:apply-templates select="*[contains(@class,' ditaot-d/ditaval-startprop
 ')]/@outputclass" mode="add-ditaval-style"/>
```

Migrating `"start-flagit"`, `"start-revflag"`, `"end-flagit"`, and `"end-flagit"` named templates

Calls to these templates fall into two general groups.

If the flow of your element rule is to create a start tag like , "start-flagit"/"start-revflag", process contents, "end-revflag"/"end-flagit", end tag - you just need to delete the calls to these templates. Flags will be generated simply by processing the element contents in document order.

If the flow of your element rule processes flags outside of the normal document-order. There are generally two reasons this is done. The first case is for elements like <ol>, where flags must appear before the <ol> in order to create valid XHTML. The second is for elements like <section>, where start flags are created, followed by the title or some generated text, element contents, and finally end flags. In either of these cases, support for processing flags in document order is disabled, so they must be explicitly processed out-of-line. This is done with the following two lines (one for start flag/revision, one for end flag/revision):

```
Create starting flag and revision images:
<xsl:apply-templates select="*[contains(@class,' ditaot-d/ditaval-startprop
 ')]" mode="out-of-line"/>

Create ending flag and revision images:
<xsl:apply-templates select="*[contains(@class,' ditaot-d/ditaval-endprop
 ')]" mode="out-of-line"/>
```

For example, the following lines are used in DITA-OT 1.7 to process the <ul> element (replacing the 29 lines used in DITA-OT 1.6):

```
<xsl:template match="*[contains(@class,' topic/ul ')]">
  <xsl:apply-templates select="*[contains(@class,' ditaot-d/ditaval-
startprop ')]" mode="out-of-line"/>
  <xsl:call-template name="setaname"/>
  <ul>
    <xsl:call-template name="commonattributes"/>
    <xsl:apply-templates select="@compact"/>
    <xsl:call-template name="setid"/>
    <xsl:apply-templates/>
  </ul>
  <xsl:apply-templates select="*[contains(@class,' ditaot-d/ditaval-endprop
 ')]" mode="out-of-line"/>
  <xsl:value-of select="$newline"/>
</xsl:template>
```

Migrating "start-flags-and-rev" and "end-flags-and-rev"

- "start-flags-and-rev" is equivalent to calling "start-flagit" followed by "start-revflag"; it should be migrated as in the previous section.
- "end-flags-and-rev" is equivalent to calling "end-revflag" followed by "end-flagit"; it should be migrated as in the previous section.

Migrating "revblock" and "revtext"

Calls to these two templates can be replaced with a simple call to <xsl:apply-templates/>.

Migrating modes "outputContentsWithFlags" and "outputContentsWithFlagsAndStyle"

Processing an element with either of these modes can be replaced with a simple call to <xsl:apply-templates/>.

Migrating mode="elementname-fmt"

Prior to DITA-OT 1.7, many elements were processed with the following logic:

```
Match element
    Set variable to determine if revisions are active and $DRAFT is on
    If active
```

```
        create division with rev style
            process element with mode="elementname-fmt"
        end division
    Else
        process element with mode="elementname-fmt"

Match element with mode="elementname-fmt"
    Process as needed
```

Beginning with DITA-OT 1.7, styling from revisions is handled automatically with the `"commonattributes"` template. This means there is no need for the extra testing, or the indirection to `mode="elementname-fmt"`. These templates are deprecated, and element processing will move into the main element rule. Overrides that include this indirection may remove it; overrides should also be sure to match the default rule, rather than matching with `mode="elementname-fmt"`.

Customizing PDF output

Example of PDF output customization with a custom transformation type.

Procedure

1. Create a new plug-in directory `com.example.print-pdf` into DITA-OT `plugins` directory.
2. Create a plug-in configuration file `plugin.xml`, declare the new transformation type print-pdf and dependencies.

```
<?xml version='1.0' encoding='UTF-8'?>
<plugin id="com.example.print-pdf">
  <require plugin="org.dita.pdf2"/>
  <feature extension="dita.conductor.transtype.check" value="print-pdf"/>
  <feature extension="dita.transtype.print" value="print-pdf"/>
  <feature extension="dita.conductor.target.relative"
 file="integrator.xml"/>
</plugin>
```

3. Add an Ant script `integrator.xml` to define the transformation type.

```
<?xml version='1.0' encoding='UTF-8'?>
<project name="com.example.print-pdf">
  <target name="dita2print-pdf.init">
    <property name="customization.dir"
 location="${dita.plugin.com.example.print-pdf.dir}/cfg"/>
  </target>
  <target name="dita2print-pdf" depends="dita2print-pdf.init, dita2pdf2"/>
</project>
```

4. Add a `cfg/catalog.xml` file to take custom XSLT stylesheets into use.

```
<?xml version="1.0" encoding="UTF-8"?>
<catalog prefer="system"
 xmlns="urn:oasis:names:tc:entity:xmlns:xml:catalog">
  <uri name="cfg:fo/attrs/custom.xsl" uri="fo/attrs/custom.xsl"/>
  <uri name="cfg:fo/xsl/custom.xsl" uri="fo/xsl/custom.xsl"/>
</catalog>
```

5. Add attribute and variable overrides to `cfg/fo/attrs/custom.xsl`

```
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
                version="2.0">
  <!-- Change page size to A4 -->
```

```
  <xsl:variable name="page-width">210mm</xsl:variable>
  <xsl:variable name="page-height">297mm</xsl:variable>
</xsl:stylesheet>
```

6. Add XSLT overrides to `cfg/fo/xsl/custom.xsl`

```
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
                xmlns:xs="http://www.w3.org/2001/XMLSchema"
                xmlns:fo="http://www.w3.org/1999/XSL/Format"
                version="2.0">
  <!-- Move figure title to top and description to bottom -->
  <xsl:template match="*[contains(@class,' topic/fig ')]">
    <fo:block xsl:use-attribute-sets="fig">
      <xsl:call-template name="commonattributes"/>
      <xsl:if test="not(@id)">
        <xsl:attribute name="id">
          <xsl:call-template name="get-id"/>
        </xsl:attribute>
      </xsl:if>
      <xsl:apply-templates select="*[contains(@class,' topic/title ')]"/>
      <xsl:apply-templates select="*[not(contains(@class,' topic/title ')
 or contains(@class,' topic/desc '))]"/>
      <xsl:apply-templates select="*[contains(@class,' topic/desc ')]"/>
    </fo:block>
  </xsl:template>
</xsl:stylesheet>
```

7. Add variable definition file `cfg/common/vars/en.xml` for English to override generated text.

```
<?xml version="1.0" encoding="UTF-8"?>
<vars xmlns="http://www.idiominc.com/opentopic/vars">
  <!-- Remove dot from list number -->
  <variable id="Ordered List Number"><param ref-name="number"/></variable>
  <!-- Change unordered list bullet to an em dash -->
  <variable id="Unordered List bullet">&#x2014;</variable>
</vars>
```

Results

The plug-in directory should have the layout and files:

```
com.example.print-pdf/
  cfg/
    common/
      vars/
        en.xml
    fo/
      attrs/
        custom.xsl
      xsl/
        custom.xsl
    catalog.xml
  integrator.xml
  plugin.xml
```

What to do next

Run integration process to install the plug-in and take the print-pdf transformation type into use.

Internal Ant properties

Reference list of Ant properties used by DITA-OT internally.

`include.rellinks`

Space separated list of link roles to be output; value token `#default` denotes default role value. Property default value depends on transformation type. Defined by `args.rellinks`, but may be overridden directly.

Implementation dependent features

Chunking

Supported chunking methods:

- select-topic
- select-document
- select-branch
- by-topic
- by-document
- to-content
- to-navigation.

When no chunk attribute values are given, no chunking is performed.

Note: In effect, for HTML based transformation types this is equivalent to select-document and by-document defaults.

Error recovery:

- When two tokens from the same category are used, no error or warning is thrown.
- When an unrecognized chunking method is used, no error or warning is thrown.

Filtering

Error recovery:

- When there are multiple `revprop` elements with the same val attribute, no error or warning is thrown
- When multiple prop elements define a duplicate attribute and value combination, attribute default, or fall-back behaviour, DOTJ007E error is thrown.

Debug attributes

The debug attributes are populated as follows:

xtrf	absolute system path of the source document
xtrc	element counter that uses the format

```
element-name ":" integer-counter ";"
 line-number ":" column-number
```

Image scaling

If both height and width attributes are given, image is scaled non-uniformly.

If scale attribute is not an unsigned integer, no error or warning is thrown during preprocessing.

Map processing

When a `topicref` element that references a map contains child `topicref` elements, DOTX068W error is thrown and the child `topicref` elements are ignored.

Link processing

When the value of `href` attribute is not a valid URI reference, DOTJ054E error is thrown. Depending on *error recover mode*, error recover may be attempted.

Copy-to processing

When the `copy-to` attribute is specified on a `topicref`, the content of the `shortdesc` element is not used to override the short description of the topic.

Extended functionality

Code reference processing

Charset definition

DITA-OT supports defining the code reference target file encoding using the `format` attribute. The supported format is:

```
format (";" space* "charset=" charset)?
```

If charset is not defined system default charset will be used. If charset is not recognized or supported, DOTJ052E error is thrown and system default charset is used as a fall-back.

```
<coderef href="unicode.txt" format="txt; charset=UTF-8"/>
```

Line range extraction

Code reference can extract only a given line ranges with `line-range` pointer in the URI fragment. The format is:

```
uri ("#line-range(" start ("," end)? ")" )?
```

Start and end line numbers start from 1 and are inclusive. If end range is omitted, range ends in last line of the file.

```
<coderef href="Parser.scala#line-range(5, 10)" format="scala"/>
```

Only lines from 5 to 10 will be included in the output.

Appendix
A

DITA Open Toolkit Project Management Guidelines

Topics:

The *DITA Open Toolkit Project Management Guidelines* are designed to provide information about how the project is managed. These guidelines are geared to an audience that needs information about how to participate in the development of the DITA-OT.

The project is managed similarly to commercial software-development projects; it uses requirements gathering, plan validation with stakeholders and contributors, scheduled activities, tests, reviews, and builds. Quality is strongly emphasized.

Goals and objectives of the DITA Open Toolkit

The goal of the DITA Open Toolkit (DITA-OT) is to provide a high-quality implementation for production-level output of DITA content, built in a professionally-managed project environment by vetted contributors, and tested thoroughly for each release.

The DITA-OT is designed to meet the needs of users who want to publish DITA content, from individual users running the toolkit in a stand-alone mode to vendors who incorporate the toolkit into their software products. The different distribution packages are designed to meet the needs of these different audiences.

The DITA-OT project keeps up to date with the latest DTD and Schema updates from the OASIS DITA Technical Committee (TC), which develops and maintains the DITA standard. As the DITA TC produces drafts of future versions, the DITA-OT works to create early support for new features and helps to test the new draft versions of the standard.

The project agrees with the open-source motto of "Release early and often" and seeks to develop wide consensus on issues.

DITA Open Toolkit development process

The DITA Open Toolkit (DITA-OT) development process is modeled after development processes for other popular and successful open-source projects, most notably Eclipse.

Version 1.0 was released February 27, 2005. Version 2.0 was released June 29, 2012.

Project roles and responsibilities

The DITA Open Toolkit (DITA-OT) project has the following roles: Project manager, committer, and contributor. Each role has different rights and obligations.

Project manager (PM)

The project manager is responsible for managing the project. The PM provides leadership to guide the overall direction of the project and removes obstacles, solves problems, and resolves conflicts. The PM works to ensure that the following goals are met:

- The project operates effectively.
- All project plans, technical documents, and reports are publicly available.
- The project operates using the open-source rules of engagement, which stress meritocracy, transparency, and open participation.

Committer

Committers oversee the quality and originality of all contributions. Committers influences the development of the project and have write access to the source-code repository. This position reflects a track record of high-quality contributions to the project.

Contributor

Contributors contribute code, documentation, fixes, tests, or other work to the project. Contributors do not have write access to the source-code repository. There is no limit to the scope of such contributions, though contributors who expect to donate a large amount of new function to the project are encouraged to work with committers in advance.

DITA Open Toolkit release management

The DITA-OT project works with an agile development process; it releases test (milestone) builds approximately every month, and it encourages feedback on the test builds while function is being developed. Stable releases are typically issued approximately every six months.

Each iteration begins with a meeting of project contributors. The meeting minutes are stored on the project Wiki and are available to the public. Active contributors are directly invited to these meetings, but anybody interested in the DITA-OT development is welcome to attend. If you are interested in attending these meetings, join the dita-ot-developer mailing list and send a note to the list or list owners.

Each iteration kick-off meeting covers the following topics:

- Issues from the previous iteration
- Plans from each contributor for the upcoming iteration or for new work that will span multiple iterations
- Design discussion for any significant planned features or fixes
- Longer-term plans for contributions to the current or following release
- (As needed) Other project issues or hot topics, such as changes to the test and build process, interest from new contributors, etc.

The kick-off meeting for the final iteration before a stable build covers the following topics:

- Evaluation of what is allowed in the iteration; the final iteration typically has no major changes in order to assure quality in the stable build.
- Assessment of whether all release notes and other artifacts are up-to-date and ready for a final build.

When an iteration is complete, the build is uploaded to SourceForge. Test builds are placed in the `Latest Test Build` folder. At the end of a release cycle, the builds are loaded to the `Stable Release` folder, and the project information is updated to reflect the latest release.

Feature requests and defect reports

Feature requests and defect reports can be submitted at any time through the project page at GitHub.

The core project contributors track and address bugs reported against the project; they issue patches based on urgency. The core contributors also will provide feedback on requests for new features or design changes, but they might not be able to provide development assistance.

All new bug reports or feature requests should be submitted through github: *DITA-OT bug and feature tracker*.

Feature requests

The project committers periodically review new feature requests with contributors and interested parties; when possible, they make plans to implement the new features.

If an existing project contributor is interested in a new request, the item is assigned to the contributor and implemented based on the contributor's schedule. Otherwise, if the request is valid and in line with project goals, it is left open for an interested party to pick up and implement. Some requests are best implemented as a plug-in rather than in the core DITA-OT code; in those cases, project committers suggest alternatives and close the request.

Defect reports

The project committers determine the owner of the relevant components and assign the defect to the component owner for validation and disposition. Responses, fixes, and workarounds are issued faster if the defect report includes sample files and clear instructions for reproducing the issue.

If bugs are found in the OASIS DITA DTDs or Schemas, they are fixed in the toolkit and reported to the OASIS DITA Technical Committee.

How to participate in the DITA Open Toolkit

Any individual or any organization can contribute to the project; contributions must adhere to the existing toolkit license(s) and should fit in with the general goals of the project. All major contributors will get appropriate recognition in release announcements and on the project home page.

Contributors can submit new features, patches, and bug fixes using existing github facilities (this is done by creating a "pull request" within github). The Committer(s) who owns the relevant components will first do due diligence to check code originality and licensing according to the *DITA Open Toolkit Contribution Policy* on page 106. After due diligence, the Committer(s) will use his/her own judgment on whether to accept the code into the original code base, request updates to the code, or suggest that the code be maintained as an external patch or plug-in.

Contributions are always encouraged, and generally fall into one of two groups, as determined by project Committers:

- Bug fixes and minor patches are accepted with little overhead.
- Major contributions require the contributor to sign a form stating that the submitter is free to commit the code (individually or on behalf of an employer), and that the code complies with the current toolkit license terms.

Due diligence for submission of bug fixes and patches from non-committers

Any organization or individual may submit bug fixes using a github "pull request", generally tied to a specific report in the project's issue tracker.

Before committing code from a bug fix or patch provided by a third party who has not signed a current contribution form for the project, Committers should ask the following questions and follow up as appropriate in order to ensure that the code can be contributed to the project:

- What is your name and who is your employer?
- Did you write the code that you wish to contribute to the DITA Open Toolkit project? (If the contributor says no, the code should not become a “Contribution” to the project. The contributor may be asked to identify the complete details of the code’s source and of any licenses or restrictions applicable to the code, but the work should be conspicuously marked as “Submitted on behalf of a third-party: [name of contributor]”.)
- Do you have the right to grant the copyright and patent licenses for the contribution that are set forth in the CPL version 1.0 license and Apache License version 2.0?
- Does your employer have any rights to code that you have written, for example, through your contract for employment? If so, has your employer given you permission to contribute the code on its behalf or waived its rights in the code?
- Are you aware of any third-party licenses or other restrictions (such as related patents or trademarks) that could apply to your contribution? If so, what are they?

DITA Open Toolkit Contribution Policy

The purpose of the DITA Open Toolkit Contribution Policy is to set forth the general principles under which the DITA Open Toolkit project shall accept contributions, license contributions, license materials owned by this project, and manage other intellectual property matters.

Overview

The *Common Public License* (CPL) and *Apache License 2.0*, which are incorporated herein by reference, will serve as the primary licenses under which the Committer will accept contributions of software, documentation, information (including, but not limited to, ideas, concepts, know-how and techniques) and/or other materials (collectively "Content") to the project from Contributors. A copy of the CPL and Apache License 2.0 can be found at the root directory of the DITA Open Toolkit deliverable package.

This Contribution Policy should at all times be interpreted in a manner that is consistent with the Purposes of the this project as set forth in the *DITA Open Toolkit Development Process* goals and objectives. This Contribution Policy shall serve as the basis for how non-Committers interact with this project through participation in this project, web-sites owned, controlled, published and/or managed under the auspices of the this project, or otherwise.

The Common Public License and Apache License 2.0 shall serve as the primary licenses under which the Committer(s) shall accept software, documentation, information (including, but not limited to, ideas, concepts, know-how and techniques) and/or other materials (collectively "Content") from contributors including, but not limited to, Contributors and Committers.

The DITA Open Toolkit project provides a process for accepting bug fixes and contributions from parties who have not accepted the license to be Contributors. See *Due Diligence for Submission of Bug Fixes and Patches from Non-Committers*

DUE DILIGENCE AND RECORD KEEPING

The Committer(s), shall be responsible for scrutinizing all Content contributed to the DITA Open Toolkit project and help ensure that the Contribution Policy licensing requirements set forth above are met. Except as set forth below, the applicable Committer shall conduct the following activities prior to uploading any Content into the repository or otherwise making the Content available for distribution:

1. Contact the potential contributor of the Content through an appropriate channel of communication and collect/confirm the following:
    - Contributor's name, current address, phone number and e-mail address;
    - Name and contact information of the contributor's current employer, if any;
    - If the contributor is not self-employed, the Committer must request and receive a signed *consent form* (to be provided by the Committer) from the contributor's employer confirming that the employer does not object to the employee contributing the Content.
    - Determine if the Content can be contributed under the terms of the CPL and Apache License 2.0 or the alternative terms and conditions supplied by the Contributor. This can be done by asking the contributor questions such as;
        1. Did you develop all of the Content from scratch;
        2. If not, what materials did you use to develop the Content?
        3. Did you reference any confidential information of any third party?
        4. If you referenced third party materials, under what terms did you receive such materials?
    - If it is determined by the Committer that the Content is not the original work of the Contributor, collect the contact information of the copyright holder of the original or underlying work. The copyright holder of the Content or the underlying work may then need to be contacted to collect additional information.
2. The Contributor(s) shall document all information requested in (1) above and fill in Contribution Questionnaire (to be provided by the Committer) and provide the completed Contribution Questionnaire to the Committer.
3. The Committer shall also be responsible for running a scan tool to help ensure that the Content does not include any code not identified by the contributor.
4. Based on the information collected, the Committer shall use his/her reasonable judgment to determine if the Content can be contributed under terms and conditions that are consistent with the licensing requirements of this IP Policy.

If the applicable Committer has any doubts about the ability to distribute the Content under terms and conditions that are consistent with the CPL and Apache License 2.0 or the proposed alternative terms and conditions, the Committer may not upload the code to the repository or otherwise distribute the Content. The Committer(s) shall be responsible for filing/maintaining the information collected for future reference as needed.

The above record keeping requirements shall not apply to

- Minor modifications to Content previously contributed to and accepted by the Committer(s).
- Articles and White Papers
- Information or minor Content modifications provided through bug reports, mailing lists and news groups

While the record keeping requirements do not apply to the items listed above, Committers must conduct reasonable due diligence to satisfy themselves that proposed Contributions can be licensed under the terms of the CPL and Apache License 2.0.

DITA-OT Contribution Questionnaire Form 1.2

The Contribution Questionnaire is the first step in initiating the due diligence and approval process by the Project Manager (PM) for any significant contribution of content to be committed to the project. Prior to completing this Questionnaire, the Committer should have technical agreement from the PM that the new code is required. Once the PM has approved, the Committer, with the assistance of one or more of the contributors, may begin the due diligence and approval process by completing and submitting this questionnaire.

What is meant by a significant contribution?

Any initial code contribution used to kick off a new project. By definition, this code has been written elsewhere and it needs to be reviewed.

or

Any contribution authored by someone other than a committer which is adding new functionality to the codebase. In most cases, bug fixes do not add new functionality although it's not impossible.

or

Any contribution containing third-party code maintained by another open source project, individual, group, or organization. In addition to reviewing the contribution, if the license is not the Common Public License (CPL) or Apache License 2.0, the PM will need to review and approve the third-party license for compatibility with the CPL or Apache License 2.0.

How to send PM this form?

Please fill in this form and sign your name and get your employer's authorized signature, such as your manager's. then send a scanned copy to Project Manager Robert D Anderson. The scanned copy may be sent to rdanderson at users.sourceforge.net.

NOTE: A questionnaire and approval is not required for bug fixes or minor enhancements. If you have any questions, please send an email to the Project Manager.

Your Info

Please provide your contact details:

Name:	
Organization:	
Address:	
Phone Number:	
E-mail:	

Committer

Please provide contact details for the committer who will be incorporating this contribution into the code base. If this is the same as above, just put "same" in the Name field.

Name:	
Organization:	
Address:	
Phone Number:	
E-mail:	

PM Approval

PM Approval is required for all significant contributions. Please provide the contact info of the PM who has given approval for this contribution:

Name:	
Phone Number:	
E-mail:	

Contribution

Please provide details about the contribution:

Component/Module (if known):	
Contribution Name:	
Contribution Version:	
Contribution Size (in lines of code):	
Contribution Description:	
Does this contribution require any packages maintained by a 3rd party?	
Please list all pkgs required by the contribution which are maintained by a 3rd party: (Please list one package per line e.g 3rd party package name v1.0)	
Supporting Information:	
Do you agree to distribute the Contribution under Common Public License 1.0?	
Do you agree to distribute the Contribution under Apache License 2.0?	
Provide any additional information you may have regarding intellectual property rights (patents, trademarks, etc.) related to the Contribution. If there is more than one committer who worked on this contribution, please list their name and email addresses.	

Contributor

Note: All of the contributors should ensure that they possess the necessary rights to make the contribution under the terms and conditions set out in the *Contribution Policy*.

Please provide contact details for the contributor or the primary contributor if there is more than one:

Name:	
Organization:	
Phone Number:	
E-mail:	
% of content authored in the contribution:	

If there are other contributors, please provide names, organizations, e-mail, and percentage of content authored in the contribution:

Other Contributors:	

Cryptography

If the contribution deals in any way with cryptography, please provide details:

Details:	
Identify the Cryptography algorithm used:	

Contributor's signature

Name (Type or Print)	
Title	
Signature	
Date	

Contributor employer's signature

Name (Type or Print)	
Title	
Signature	
Date	

Appendix
B

DITA and DITA-OT resources

Topics:

In addition to the DITA-OT documentation, there are other resources about DITA and the DITA-OT that you might find helpful.

Web-based resources

There are many vital DITA resources online, including the Yahoo! dita-users group and the DITA-OT project page at dita.xml.org.

DITA-OT project page at dita.xml.org	The DITA-OT project page at dita.xml.org provides news about the latest toolkit builds, plans for the next milestone release, and other rapidly-changing information. It also contains release notes for all past and upcoming releases.
Yahoo! dita-users group	The DITA-OT project page at dita.xml.org provides news about the latest toolkit builds, plans for the next milestone release, and other rapidly-changing information. It also contains release notes for all past and upcoming releases.
Home page for the OASIS DITA Technical Committee	The OASIS DITA Technical Committee develops the DITA standard.

developerWorks articles

Between 2001 and 2005, IBM DITA experts published an important collection of articles on the developerWorks Web site.

- *Introduction to the Darwin Information Typing Architecture*
- *Specializing topic types in DITA*
- *Specializing domains in DITA*
- *Frequently Asked Questions about the Darwin Information Typing Architecture*
- *Why use DITA to produce HTML deliverables?*
- *Design patterns for information architecture with DITA map domains*
- *Migrating HTML to DITA, Part 1: Simple steps to move from HTML to DITA*
- *Migrating HTML to DITA, Part 2: Extend the migration for more robust results*
- *Transform Eclipse navigation files to DITA navigation files*