DITA Open Toolkit User Guide

First Edition, August 10, 2006 (DITA Open Toolkit release 1.2.2)

OASIS (Organization for the Advancement of Structured Information Standards)

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Authors	Anna van Raaphorst and Richard H. (Dick) Johnson, principals, VR Communications, Inc. (*http://www.vrcommunications.com*).
Description	This document is the definitive source of information about DITA Open Toolkit (OT). It is also a product of the architecture and the recommended best practices, having been written entirely in DITA XML and produced using the principles and procedures described in the document. With a few minor exceptions (in anticipation of some major enhancements in release 1.3, we made use of the existing bookmap and PDF2 functionality), *DITA Open Toolkit User Guide and Reference* is "vanilla DITA." By processing this document to a given target environment you can see output with no specializations or other special configurations applied. In general, we have found the vanilla outputs adequate for our needs, if not always glamorous or exciting.
Acknowledgements	The authors would like to thank those members of the DITA community who have authored or contributed to one or more topics in this document: Kylene Bruski, Don Day, Anne Gentle, JoAnn Hackos, Jennifer Linton, Deborah Pickett, and various anonymous IBM writers. We are also grateful to others in the community who have offered valuable encouragement, feedback, suggestions, and sources of information: Robert Anderson, Bernard Aschwanden, Ricardo Mattiazzi Baumgartner, Bob Doyle, Andy Hall, Erik Hennum, Carolyn Henry, Ellen Livengood, Shawn McKenzie, Scott Prentice, Paul Prescod, Michael Priestley, Todd Rose, Kate Wilhelm, Stacey Winn, Chris Wong, Bonnie Yelverton, and Stephen Zhang.
Invitation to contribute to future editions	The authors invite others in the DITA community to contribute to future editions of this document. Comments on the current document are always welcome. Other contributions might include new topics, additions or changes to the core vocabulary, use cases, and guidelines or best practices based on user experience with DITA and DITA Open Toolkit. Please contact the authors with your ideas (contact information is on (*http://www.vrcommunications.com*).

Contents

Release 1.2.2 information

Information about release 1.2.2 of DITA Open Toolkit: system requirements, supported applications, and known problems.
System requirements, supported applications, and supported languages for release 1.2.2 of DITA Open Toolkit.
Known problems in release 1.2.2 of DITA Open Toolkit.

System requirements and supported applications

System requirements, supported applications, and supported languages for release 1.2.2 of DITA Open Toolkit.

System requirements

DITA Open Toolkit is written in Java and requires at least a minimal set of Java applications be installed. Java SDK 1.4.2 is required to execute the applications and the Toolkit Java code.

It is highly likely that any operating system environment where the supported Java SDK can be installed will support basic Toolkit functionality. The Toolkit has been successfully installed and used on Windows XP, Mac OS X, various UNIX and Linux distributions including FreeBSD, Ubuntu Linux, Nexenta GNU/OpenSolaris, Solaris, and other operating environments.

Some optional applications can be installed and run only on Windows, for example the HTML Help compiler.

Required tools

The following tools are required to use DITA Open Toolkit.

Java Development Kits (SDKs)	Sun 1.4.2. You can download the Sun JDK from *http://java.sun.com/j2se/1.4.2/download.html*. IBM 1.4.2. You can download the IBM JDK from *http://www.ibm.com/developerworks/java/jdk*.
Ant	Ant 1.6.5. You can download Ant from *http://ant.apache.org/bindownload.cgi*.
Either the SAXON or Xalan XSLT processor	SAXON 6.5. You can download SAXON from *http://saxon.sourceforge.net/*. Xalan-J 2.6. You can download Xalan from *http://archive.apache.org/dist/xml/xalan-j/*.

Note: The XSLT 2.0 standard is not yet supported by the Toolkit.

For information about installing the required tools, see *Installing the required tools* on page 37.

Optional tools

You may also want to install one or more optional tools, depending on your needs and your operating environment. For example, if you are planning to publish JavaHelp files you will probably want to install the Sun JavaHelp processor.

For information about the optional tools and how to install them, see *Installing the optional tools* on page 38.

Supported languages

DITA and DITA Open Toolkit support the languages listed in the following table.

Language	**xml:lang value**
Arabic	ar-eg
Bulgarian	bg-bg
Catalan	ca-es
Chinese (Simplified)	zh-cn
Chinese (Traditional)	zh-tw
Croatian	hr-hr
Czech	cs-cz
Danish	da-dk
Dutch	nl-nl
Dutch (Belgian)	nl-be
English (Canadian)	en-ca
English (UK)	en-gb
English (US)	en-us
Estonian	et-ee
Finnish	fi-fi
French	fr-fr
French (Belgian)	fr-be
French (Canadian)	fr-ca
French (Swiss)	fr-ch
German	de-de
German (Swiss)	de-ch
Greek	el-gr
Hebrew	he-il
Hungarian	hu-hu
Icelandic	is-is
Italian	it-it
Italian (Swiss)	it-ch
Japanese	ja-jp
Korean	ko-lr
Latvian	lv-lv
Lithuanian	lt-lt
Macedonian	mk-mk
Norwegian	no-no
Polish	pl-pl
Portuguese	pt-pt

Language	xml:lang value
Portuguese (Brazilian)	pt-br
Romanian	ro-ro
Russian	ru-ru
Serbian	sr-sp
Slovak	sk-sk
Slovenian	sl-si
Spanish	es-es
Swedish	sv-se
Thai	th-th
Turkish	tr-tr

Known problems

Known problems in release 1.2.2 of DITA Open Toolkit.

You can get current information about bugs, patches, and change requests in the following locations:

Bug tracker *http://sourceforge.net/tracker/?group_id=132728&atid=725074*

Patch tracker *http://sourceforge.net/tracker/?group_id=132728&atid=725076*

RFE tracker *http://sourceforge.net/tracker/?group_id=132728&atid=725077*

Release history

Summary information about releases 1.0-1.2+ of DITA Open Toolkit.

Sections in this topic:

Release 1.2.2

Release 1.2.2 was a maintenance release based on release 1.2 in which 24 bugs were fixed.

Also included were the following improvements:

- Chinese support was added for Word RTF.
- The plug-in architecture and dependency handling was improved.

Release 1.2.1

Release 1.2.1 was a maintenance release based on release 1.2 in which 12 bugs were fixed.

Also included were the following improvements:

- A problem with corrupted tables generated in Word RTF was fixed.
- Pictures are now merged into the Word RTF instead of linking to them.
- The lq element is supported in Word RTF.
- Generated text can be translated to different languages in Word RTF.
- In Word RTF, if no <choption> is specified, a head is generated in tables.

Release 1.2

Release 1.2 was a major release to add new and improved functionality, fulfill new requirements, and fix bugs.

New and enhanced features

1. **Plug-in architecture**

   New capabilities were added to help users download, install, and use plug-ins, and to help developers create new plug-ins for DITA Open Toolkit.

2. **Word RTF transformation**

   Capabilities were added to allow transformations from DITA source files to output in a Microsoft® Word RTF file.

3. **HTML-to-DITA migration tool**

   A tool was added that migrates HTML files to DITA files. This tool originated from the developerWorks publication of Robert D. Anderson's how-to articles with the original h2d code.

4. **Problem determination**

   Logging was improved to capture additional status and transformation information, as well as warning, error, and fatal error messages both on-screen and in the log file.

5. **Conditional processing documentation**

   Information about conditional processing was added to the DITA Open Toolkit documentation set.

6. **Language reference documentation**

   The OASIS DITA standard language reference was added to the Toolkit documentation set.

7. **DTD files**

   The DTD files in DITA Open Toolkit were updated to the DITA 1.0.1 level.

Bug fixes: 19

Release 1.1.2.1

Release 1.1.2.1 fixed one bug: the build process failed with the "Ant all" parameter, which prevented users from running the installation verification tests.

Release 1.1.2

Release 1.1.2 was a maintenance release with 14 bug fixes, minor changes to some Ant parameters, support for additional Java parameters, and minor changes to the organization of the `doc` directory.

Release 1.1.1

Release 1.1.1 was a maintenance release with 11 bug fixes and a `dost1.0.jar` name change back to `dost.jar`.

Release 1.1

Release 1.1 was a major release to add new and improved functionality, fulfill new requirements, and fix bugs.

New and enhanced features in release 1.1

1. **Support for OASIS DITA 1.0**

   Support was added for the OASIS DITA 1.0 standard for DITA DTDs and schemas.

2. **Transformation to troff**

   Support was added for transformation to the troff document processing system.

3. **XML catalog support**

   Support was added for XML catalogs, which are logical structures containing mapping information between public IDs and URLs of DTD files. A catalog entry can be used to locate a unified resource identifier (URI) reference for a DTD file. An external entity's public identifier is used for mapping to the URI reference. The URI of any system identifier can be ignored.

4. **Topicref referring to nested topic**

   The href attribute of the topicref entity was extended to quote a nested topic in a DITA file.

5. **Localization support**

   Support was added to support DITA content in 20 languages, and translation of DITA keywords in the same 20 languages.

6. **Accessibility support**

   Accessibility partially applied to XHTML and PDF transformations.

7. **Eclipse Content Provider support**

   Release 1.1 supported the Eclipse Content Provider.

8. **Index information in HTML Help and JavaHelp**

   Index information now appeared in HTML Help and JavaHelp.

9. **Mapref element**

   The mapref element (a specialization of the topicref element) was added to allow a reference to another ditamap file.

10. **TOC generation for Eclipse Help**

    Tables of contents could be generated for Eclipse help.

11. **Helpsets supported in Java Help**

    Support was added for helpsets in JavaHelp.

12. **Additional parameter support for Java commands**

    Support was added for the following Java command parameters: /indexshot, /outext, /copycss, /xsl, and /tempdir.

13. **Additional parameter support for Ant scripts**

    Support was added for the following Ant command parameters: .args.indexshow, args.outext, args.copycss, args.xsl, and dita.temp.dir.

Bug fixes: 7

Release 1.0.2

Release 1.0.2 was a maintenance release with 7 bug fixes and minor enhancements.

Release 1.0.1

Release 1.0.1 was a maintenance release with 11 bug fixes and minor enhancements.

Release 1.0

Release 1.0 was the initial release of the open-source version of the DITA Toolkit, which evolved from a developerWorks version.

New and enhanced features in release 1.0

1. **Java-based processing**

   The Java-based processing architecture supported single-threaded execution throughout.

2. **Ant-based processing**

   Release 1.0 featured Ant-based orchestration of the processing environment, from preprocessing through transformation to any required postprocessing.

3. **Conditional processing**

   A preprocessor core supported conditional processing and conref resolution.

4. **Map-driven processing**

   The map-driven processor generated links for transformed topics.

5. **New DITA-to-HTML transform**

   A DITA-to-HTML transform that was designed for high-volume usage replaced the previous `topic2html_Impl.xsl` core transform.

Introduction

Introductory information about DITA, DITA Open Tooklit (OT), and this document. Where to get more information about DITA and the Toolkit.
Definition, use, and benefits of Darwin Information Typing Architecture (DITA).
Definition and history of DITA Open Toolkit (OT).
Contents, target audience, and prerequisites for this document. How this document was produced.

About Darwin Information Typing Architecture (DITA)

Definition, use, and benefits of Darwin Information Typing Architecture (DITA).

Definition

An XML-based, end-to-end architecture for authoring, producing, and delivering information (often called *content*) as discrete, typed topics. Typical information delivered using the DITA architecture is technical or scientific in nature and published as online help, through product support portals, or as print-ready PDF files.

The unofficial logo for DITA is the Woodpecker Finch of the Galapagos Islands, which is an example of a specialization that is also tool-using.

Usage

The DITA architecture, along with appropriate tools, is used to:

- Create, manage, and publish XML-based, structured information in a wide variety of environments and platforms
- Facilitate information sharing and reuse, and collaborative writing projects
- Reduce writing, publishing, and translation costs

DITA originated and is extensively used in the IBM Corporation; in 2005 it was adopted as an Organization for the Advancement of Structured Information Standards (OASIS) standard. DITA is currently used in many organizations world-wide, and is supported by an ever-growing list of commercial and open-source tools. DITA is actively being extended and enhanced under the direction of the OASIS DITA Technical Committee (TC).

About DITA Open Toolkit (DITA OT)

Definition and history of DITA Open Toolkit (OT).

Definition

DITA Open Toolkit is an implementation of the OASIS DITA Technical Committee's specification for DITA DTDs and schemas. The Toolkit, which can be used in the Windows, Linux, and Mac OS operating environments, transforms DITA content (maps and topics) into deliverable formats.

Usage

DITA Open Toolkit supports the following publishing environments:

- DocBook
- Eclipse content
- Eclipse help
- HTML Help
- JavaHelp
- PDF
- troff
- Word RTF
- XHTML

About this document

Contents, target audience, and prerequisites for this document. How this document was produced.

Definition

DITA Open Toolkit User Guide and Reference (this document) is the definitive source of information about DITA Open Toolkit (OT), It is also a product of the architecture and the recommended best practices, having been written entirely in DITA XML and produced using the principles and procedures described in the document.

Sections in this topic:

Document contents

Chapter (major section)	Contents
Release 1.2.2 information on page 11	Information about the current release of DITA Open Toolkit: system requirements, supported applications, and known problems.
Release history on page 15	Summary information about prior releases of DITA Open Toolkit.
Evaluating DITA and DITA Open Toolkit on page 31	How to determine what it would take to create your DITA and DITA Open Toolkit authoring and production system.
Installing and upgrading DITA Open Toolkit on page 37	How to install and upgrade DITA Open Toolkit on Windows, Linux, and Mac OS.
Setting up your working environment on page 51	How to configure your DITA editor and set up your source file directory.
Processing (building) and publishing DITA documents on page 59	How to process (build) and publish DITA documents.
Troubleshooting the build process on page 91	How to troubleshoot the build process.
Creating DITA topics on page 107	How to create DITA topics (base topics, concepts, tasks, and reference topics).

Chapter (major section)	Contents
Creating DITA maps on page 115	How to create DITA maps.
Linking content on page 119	How to link DITA topics using cross-references (xrefs), related links, and relationship tables.
Managing your content on page 127	How to manage your content.
Reuse concepts and techniques on page 131	How to reuse content (using conrefs), information design (using specializations), and processing code.
Expanding and customizing access to your information on page 135	How to expand access to your information through indexing, the use of metadata, and filtering (conditional processing).
Customizing your published output on page 139	How to customize your published output.
Localizing (translating) your DITA content on page 143	Information about localizing (translating) the content in your DITA projects.
Distributing your published content on page 147	Information about localizing (translating) the content in your DITA projects.
Migrating legacy content to DITA on page 149	How to migrate legacy content to DITA.
Sample files on page 151	Information about the DITA sample source files that come with DITA Open Toolkit.
Frequently asked questions (FAQs) on page 153	Frequently asked questions about DITA and DITA Open Toolkit (OT).
DITA core vocabulary on page 155	Information about the DITA core vocabulary, a list of the terms in the vocabulary, and links to related terms and other information.

Target audience

Definition

A target group of users.

Usage

This document was written for both beginning and advanced users currently using or planning to use DITA and DITA Open Toolkit to produce structured XML documents to be published through any of the supported channels.

Target audience categories and types for this document are:

Content specialists (for example, information architect; content creator and editor; and graphic, interface, print-document, and website designer)

Technical specialists (for example, application designer and developer, content manager, and database and system administrator)

Administrators and managers (for example, application designer and developer, content manager, and database and system administrator)

Prerequisites

Before you use this document you should be familiar with your operating system environment (Windows, Linux, or Mac OS) and the editor you will use to create DITA files. We recommend using a DITA-aware editor. You may need to consult the documentation that came with your operating system and editor as you use DITA and DITA Open Toolkit.

Before you use DITA Open Toolkit, be sure your operating environment meets the system requirements described in *System requirements and supported applications* on page 11.

How and why this document was produced

This document was produced as a collaborative effort by the two principals of VR Communications, Inc. (*www.vrcommunications.com*), Anna van Raaphorst and Richard H. (Dick) Johnson. We did the project for the following reasons:

- We have significant interest and prior involvement with structured writing, content management, scripting, and programming.
- It gave us a way to gain knowledge and experience in DITA and DITA Open Toolkit quickly.
- We wanted to help the DITA community by documenting and promoting DITA and the Toolkit.
- It was an opportunity for us to use our individual skill sets in a collaborative effort.

For more information about how we wrote the document, suggestions, guidelines, tips, and techniques, see the individual "production notes" sections that are part of each chapter. For example, for our suggestions about troubleshooting the build process, see *Production notes (troubleshooting)* on page 103.

Getting started

Suggestions about how to get started with DITA and DITA Open Toolkit.

If you are new to DITA and DITA Open Toolkit, we recommend that you follow these steps to get started.

1. Read the topics in *Evaluating DITA and DITA Open Toolkit* on page 31 for suggestions on how to evaluate for use in your environment, and how to choose your initial pilot project.
2. Be sure your system environment meets the requirements in *System requirements and supported applications* on page 11.
3. Install and become familiar with the authoring tool you plan to use to create DITA content.

   For information about choosing and installing an authoring tool, see *Installation overview* on page 37.
4. Install DITA Open Toolkit and its prerequisite tools.

   For an overview of the installation process, see *Installation overview* on page 37. Step-by-step installation instructions are in the same section.
5. Set up your DITA source file and processing (build) environments.

   Information and instructions are in *Setting up your working environment* on page 51.
6. Process (build) the garage sample, provided for your use and reference.

   For information about processing, see *Processing (building) and publishing DITA documents* on page 59.
7. Create a few demo-level DITA topics and a map to aggregate them, and process them in the same way you did the garage sample files.

   For instructions, see *Creating DITA topics* on page 107 and *Creating DITA maps* on page 115.
8. When you feel comfortable with the basics, expand your DITA skill by reading introductory DITA texts, working through DITA tutorials, and taking courses on using DITA.

   For additional sources of information about DITA and DITA Open Toolkit, see *Getting information (general)* on page 25.
9. Before you jump into more ambitious DITA projects, do a thorough information analysis of your existing content and future requirements, and map out an efficient and effective expansion plan.
10. As you gain skill and tackle more complex DITA projects, use this document and others you collect along the way for guidance and reference.

Getting information (general)

Sources of information about DITA and DITA Open Toolkit.

Sections in this topic:

General Information and Frequently Asked Questions (FAQs) about DITA and DITA Open Toolkit

Description	Information source
dita.xml.org: Official DITA community gathering place and information resource for the DITA OASIS Standard Includes a knowledge base, a wiki, news items about DITA, events, products and services, case studies, user groups, forums, blogs, and a resource directory. Hosted by OASIS.	*http://dita.xml.org*
Cover Pages: Articles, presentations, and facts about DITA Hosted by OASIS.	*http://xml.coverpages.org/dita.html*
IBM site containing a collection of information about DITA	*http://www-128.ibm.com/developer-works/xml/library/x-dita1/*

Tools, downloads

Description	Information source
Download site for the Toolkit and related/prerequisite software	*https://sourceforge.net/projects/dita-ot*
alphaWorks IBM TaskModeler: An Eclipse-based tool for rapidly creating and analyzing models of human activity for DITA and user experience design	*http://www.alphaworks.ibm.com/tech/taskmodeler*
IBM download site: Collection of DITA downloads	*http://www-128.ibm.com/developerworks/xml/library/x-dita6/x-dita_downloads.html*

Training, education

Description	Information source
Introduction to DITA: *A User Guide to the Darwin Information Typing Architecture* Book (level: beginner). Authors: Jennifer Linton and Kylene Bruski. Publisher: Comtech Services, Colorado, 2006. Task-oriented approach to learning DITA. Authored using DITA markup and methodology in a variety of XML editors. Published using the Blast Radius and Mekon FrameMaker plugin in the DITA 1.2 Open Toolkit.	*http://www.comtech-serv.com*
Introduction to the Darwin Information Typing Architecture Article (level: beginner). Authors: Eric Hennum, Don Day, John Hunt, and Dave Schell. Publisher: IBM, updated September 2005. Roadmap for the Darwin Information Typing Architecture: what it is and how it applies to technical documentation. Also a product of the architecture, having been written entirely in XML and produced using the principles described.	*http://www-128.ibm.com/developerworks/xml/library/x-dita1/*
Design patterns for information architecture with DITA map domains Article (level: intermediate). Authors: Eric Hennum, Don Day, John Hunt, and Dave Schell. Publisher: IBM, updated September 2005. Explains the design technique for creating a DITA map domain.	*http://www-128.ibm.com/developerworks/xml/library/x-dita7/*
An XML-based information architecture for learning content Part 1: A DITA specialization design. Article (level: intermediate). Authors: Robert Bernard and John P. Hunt. Publisher: IBM, August 2005. How topic-based DITA XML can provide the basis for developing an information architecture for single-sourced XML learning content.	*http://www-128.ibm.com/developerworks/xml/library/x-dita9b/*
An XML-based information architecture for learning content Part 2: A DITA content pilot. Article (level: intermediate). Authors: John P. Hunt and Robert Bernard. Publisher: IBM, August 2005. How topic-based DITA XML can provide the basis for developing an information architecture for single-sourced XML learning content.	*http://www-128.ibm.com/developerworks/xml/library/x-dita9a/*

Consulting

Description	Information source
List of DITA consultants	*http://dita.xml.org/taxonomy/term/48*

DITA and DITA Open Toolkit standards and product releases

Description	Information source
Roadmap for DITA development Lists of proposed and committed features for future releases.	*http://wiki.oasis-open.org/dita/Roadmap_for_DITA_development*
Current DITA Open Toolkit release Bugs, support requests, patches, feature requests.	*http://dita-ot.sourceforge.net/*
OASIS DITA Open Toolkit project home	*http://dita-ot.sourceforge.net/*
OASIS DITA Open Toolkit 1.3 features and issues tracking	*http://dita.xml.org/node/1282*
DITA Open Toolkit developers mailing list	*https://lists.sourceforge.net/lists/listinfo/dita-ot-developer*
DITA 1.1 proposed features	*http://wiki.oasis-open.org/dita/DITA_1.1_Features*
DITA 1.1 work items	*http://wiki.oasis-open.org/dita/List_of_DITA_1.1_Work_Items*
OASIS DITA standards committee website	*http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=dita*
OASIS DITA Language Specification version 1.0 OASIS Standard, 09 May 2005.	*http://docs.oasis-open.org/dita/v1.0/dita-v1.0-spec-os-LanguageSpecification.pdf*
OASIS DITA Archetectural Specification version 1.0 OASIS Standard, 09 May 2005.	*http://docs.oasis-open.org/dita/v1.0/dita-v1.0-spec-os-ArchitecturalSpecification.pdf*

Usage Information

Description	Information source
Apache Derby documentation: Apache Derby, an Apache database subproject, is a relational database implemented entirely in Java, and available under the Apache license, version 2.0. The Derby documentation manuals are sourced in DITA.	For an overview of the documentation, see *http://db.apache.org/derby/manuals/index.html*. For the DITA source files, see *http://db.apache.org/derby/manuals/dita.html*.

User groups, forums

Description	Information source
Forum for DITA questions and discussion	*http://groups.yahoo.com/group/dita-users*
Forum for Adobe FrameMaker/DITA questions	*http://groups.yahoo.com/group/framemaker-dita*
List of DITA user and interest groups (by location)	*http://dita.xml.org/user-groups*
DITA forums on sourceforge.net (there are three forums: developers, help, and open discussion)	*https://sourceforge.net/forum/?group_id=132728*

Conferences

Note: The following DITA-related conferences were or will be held in 2006. Some tentative dates are also given for 2007. For the latest information about these conferences, see the referenced websites.

Description	Information source
XML 2006 Date: December 5-7. Location: Boston. Audience: Those who want to use XML and related technologies.	*http://2005.xmlconference.org/*
DITA Europe 2006 Date: November 2-3. Location: Frankfurt. Audience: Those who are interested in implementing XML DITA or learning more about this new standard for topic-based authoring. Conference organizer: Center for Information Development Management.	*http://www.infomanagementcenter.com/DITAeurope/*
Tri-XML 2006 Date: July 27-29. Location: Raleigh, NC. Focus: Presentations on real-world use of XML. Conference organizer: Tri-XML, an interest group for the Research Triangle area, NC USA that focuses on educating members in XML-related technologies and potential uses.	*http://www.trixml.org//confindex.shtml*
X-Pubs 2006 Date: June 20-21. Location:London. Focus: Seeks to critique the established business justification for the adoption of both XML and DITA in organizational publishing.	*http://www.x-pubs.com/index.php*
XTech 2006 Date: May 16-19. Location: Amsterdam. XTech 2007: Paris. Audience: Developers, information designers and managers working with web and standards-based technologies.	*http://xtech06.usefulinc.com/content/about*
Content Management Strategies 2006 Date: April 3-5. Location: San Francisco, CA. CMS 07: March 26-28, Boston, MA. Conference organizer: Center for Information Development Management (CIDM).	*http://www.infomanagementcenter.com/index.htm*

Description	Information source
DITA 2006 Date: March 23-25. Location: Raleigh, NC. DITA 2007 (West Coast), February, California. DITA 2007 (East Coast), fall, Florida (tentative). Conference organizer: Bright Path Solutions.	*http://www.travelthepath.com/dita2006.html*

Evaluating DITA and DITA Open Toolkit

How to determine what it would take to create your DITA and DITA Open Toolkit authoring and production system.
Information about the DITA information development framework and the components required to support it.
List and descriptions of various DITA and DITA Open Toolkit usage scenarios.
Template for writing up DITA and DITA Open Toolkit use cases.
Production notes for the evaluation section of this document.
Additional sources of information about evaluating DITA and DITA Open Toolkit.

In a general sense, "the word is out" among professional communicators and information development and publishing organizations about the benefits of using DITA and DITA Open Toolkit to produce high-quality, reusable, structured communications. However, for many individuals and organizations simply "knowing about" DITA and the Toolkit are not enough. Not having answers to two key questions prevent them from moving from the "active interest" stage to the "assessment and adoption" stage. These key questions are:

- "What would it take to put together a DITA-based authoring and production system that would scale as my needs expand?"
- "How can I get started with DITA at a 'hands-on' level without first making an expensive, time-consuming, long-term commitment that I may come to regret?"

A key goal of this chapter is to help answer those questions, and to provide pointers to additional sources of information.

The DITA authoring/production framework

Information about the DITA information development framework and the components required to support it.

Sections in this topic:

Creating an expansible DITA authoring and production system

One of the key questions for assessing DITA and DITA Open Toolkit is "What would it take to put together a DITA-based authoring and production system that would scale as my needs expand?" The answer depends on both your near-term goals as well as what you expect your ultimate system to look like. The information below lists and defines four "DITA maturity" levels: demo, pilot project, basic end-to-end system, and enterprise-level system, and the likely requirements for each.

Base components required

The base components, which apply to all levels, include the following:

- One of the supported operating systems (Microsoft Windows, Linux, or Mac OS)
- The prerequisite processing components: Java Development Kit (JDK), Ant build tool, and an XSLT engine appropriate for the operating system (for example, SAXON or Xalan)
- DITA Open Toolkit
- A simple text editor (for example, Notepad for Windows) or "DITA-aware" editor (for example, XMLSpy) to create DITA source files
- Basic delivery components for your planned publishing environments (for example, if you publish in XHTML, you need a browser that can display XHTML)

Base skills required

The base skills, which also apply to all levels, include the following:

- A basic understanding of the operating environment where you will install the processing components and DITA Open Toolkit
- The ability to follow the installation and setup instructions for the prerequisite processing components and Toolkit
- The ability to follow instructions to create simple DITA source files

System maturity levels, and the requirements of each

Demo level

Materials written and processed at a demo level simply provide a proof-of-concept, or a way to demonstrate the end-to-end authoring and production processes. Two sets of such files (the "garage" sample and the "grocery shopping" sample) are provided with DITA Open Toolkit.

Only the base components and skills are required, unless you want to demo in a publishing environment other than XHTML (which is the default and assumed publishing environment, unless otherwise indicated).

Pilot project (prototype) level

You can do a pilot project with base-level tools and skills, without a library or content management system (CMS), and without doing extensive system-level integration. However, you may want to add the following to the base-level components:

- Components to support additional publishing environments (for example, if you plan to publish HTML Help you will need the HTML Help compiler)
- An authoring environment that supports DITA and has other features you require (for example, spellcheck and CSS support)
- If you plan to include non-text content, a specialized editing component (for example, for image content, video, or Flash)
- Tools for compiling and previewing your output in whatever publishing environment you are using (for example, you may want Microsoft's HTML Help Workshop, Sun's JavaHelp tools, or the Eclipse 2 Standalone Help System)
- If you plan to produce printed deliverables, tools that provide FO processing and preview
- Debugging and reporting tools, which may be available free or for purchase (such a tool was created by the authors of this book, and is available free)

The following additional skills may be required:

- A good understanding of your target publishing environment(s)
- Some level of expertise with the DITA-aware editor
- Skill with other tools you plan to use

Basic end-to-end system level

Individuals and organizations working at this level need to create a more formal process, and plan for the acquisition of tools that will serve you at this level and also at the enterprise level, if your project plans will take you that far. This level may require processing scripts (perhaps even with user interfaces for setting parameters and saving profiles) that link the components together and provide consistency for repeatable processing. Branding is a probably a factor important for the DITA output.

At this level, documentation is part of a formal product cycle. The information development process probably involves multiple people. Producing output may be a collaborative process between the information development and product development organizations. Writers are probably required to follow departmental style and production guidelines. Information being developed goes through at least an informal review process. Candidate output documents may need to be formally verified or tested before being released.

When you move to this kind of production system, you may also need:

- A make or macro component to program a sequence of processes
- A packaging tool for distribution

Projects at this stage may require a number of additional specialized skills, for example:

- Information architecture, planning, and workflow expertise
- The ability to install and set up additional tools of a more complex nature
- The ability to create and adapt XSLT
- Graphic design expertise
- User interface and user experience skills

Enterprise system level

This level has specific support for enterprise business rules, for editor wizards and for what the DITA architecture calls the "delivery context" layer (for example, true book-like output or specific mapping methodologies). The content may be translated into one or more languages. The distribution or fulfillment process is complex. A customer feedback mechanism needs to be present.

There is a need for extensive record-keeping, including the analysis of metadata. Content terminology and topics may be shared among a number of organizations (for example, marketing, technical writing, and training). There may be coordinated or shared content among other internal product or component development groups, or even external groups like business partners.

Writers may be required to adhere to an organization-wide set of style and terminology guidelines. Content may be formally reviewed by a group of editors, according to a complex schedule. Verification and testing is probably done by a separate test organization.

Tools at this level could include a library system, a content management system, business analysis software, and a customer feedback mechanism or system.

Use cases

List and descriptions of various DITA and DITA Open Toolkit usage scenarios.

Sections in this topic (use case categories and example types):

Problem/solution scenarios

Use cases in this category describe a particular problem and its solution using DITA and DITA Open Toolkit.

Type	Description
Translation/localization	Producing documentation that needs to be translated into a number of languages. Working with translation centers to produce high-quality documentation in all target languages on the same schedule as the English-language version of the documentation.
Working with internal or business partners	Coordinating with internal (for example, training) or external (for example, business partner) organizations. Delivering simultaneously or on separate schedules. Strong need to coordinate terminology and coverage of key content.
Using a library system or content management system	Tips on architecting, organizing, creating, and processing DITA information when using a library system or CMS.
Using a controlled vocabulary, taxonomy, or ontology	How use of a controlled vocabulary (ontology, taxonomy) relates to architecting, organizing, creating, and processing DITA content.
Modeling content	Using content modeling tools.

Type	Description
Migrating legacy content	Issues, tools, and techniques related to migration from books to topic-based information, or from unstructured to structured. A related topic could be migrating to new tools (e.g., from unstructured to structured FrameMaker, or from Microsoft Word to Arbortext Editor).
Migrating to a new tool	For example, from unstructured to structured FrameMaker, or from Microsoft Word to Arbortext Editor.
Prototyping	How and when to prototype. Use of tools to facilitate prototyping.
Lone writer scenario	Small organization where a single person needs to have all skills (architecture, communication, and technical) and wear all hats.

Industry scenarios

Examples might focus on the particular needs of the software or hardware industry, biotechnology, insurance, or finance.

Publishing environment scenarios

Use cases in this category describe scenarios particular to one or more publishing environments, for example Eclipse help, HTML Help, PDF, XHTML, or a combination of multiple publishing environments.

Access and distribution scenarios

Type	Description
RSS	Using RSS to distribute your published output.
RDF/OWL	Using RDF/OWL to improve access to your published information. Using tools like SPARQL to query RDF information.

Use case template

Template for writing up DITA and DITA Open Toolkit use cases.

This sample template was included to promote consistency in writing up use cases for DITA or DITA Open Toolkit.

Summary

Organization name

Author name

Date

Industry, sector

Category

Examples: cost; translation, localization; working with a business or internal partner; using a library system or CMS; metadata (controlled vocabulary, ontology, taxonomy); content modeling; migrating legacy content; prototyping; lone writer scenario; output type (XHTML, HTML Help, PDF, etc); industry; distribution or access scenario.

Prime motivation

Examples: contain spiraling translation costs, reduce time to market, work more effectively with business partners

Problem

What specific problem were you trying to solve? (100-200 words)

Alternatives

What alternatives did you explore or try, and what were the pros and cons of each? (50-100 words)

Solution

What was the solution, and what DITA-related tools and techniques did you use? (200-400 words)

Result

Was the original problem completely solved? What was the user reaction? Include testimonials, if possible. (100-200 words)

Future plans

Is any follow-on work planned? If so, how did this project set the stage? (50-100 words)

Production notes (evaluating)

Production notes for the evaluation section of this document.

For more information (evaluating)

Additional sources of information about evaluating DITA and DITA Open Toolkit.

Installing and upgrading DITA Open Toolkit

How to install and upgrade DITA Open Toolkit on Windows, Linux, and Mac OS.
Overview of the installation processes for Windows, Linux, and Mac OS. Key sections: required tools, optional tools, and things to consider before installing.
Information about installing the required tools.
Information about installing the optional tools.
Things to consider before selecting an authoring tool and installing DITA Open Toolkit and its prerequisite tools.
Things to consider before upgrading to a new release of DITA Open Toolkit.
How to install DITA Open Toolkit and its prerequisite software on Windows.
How to install the JDK in the Windows operating environment.
How to install the Ant processing (build) tool in the Windows operating environment.
How to install SAXON in the Windows operating environment. Install either SAXON or Xalan: you do not need both.
How to install Xalan in the Windows operating environment. Install either Xalan or SAXON: you do not need both.
How to install DITA Open Toolkit in the Windows operating environment.
(If you plan to publish HTML Help) How to install HTML Help in the Windows operating environment.
(If you plan to publish JavaHelp) How to install JavaHelp in the Windows operating environment.
(If you plan to publish PDFs) How to install FOP in the Windows operating environment.
How to set environment variables in the Windows operating environment.
How to verify the installation in the Windows operating environment.
How to install DITA Open Toolkit and its prerequisite software on Linux.
How to install the JDK in the Linux operating environment.
How to install the Ant processing (build) tool in the Linux operating environment.
How to install SAXON in the Linux operating environment. Install either SAXON or Xalan: you do not need both.
How to install Xalan in the Linux operating environment. Install either Xalan or SAXON: you do not need both.
How to install DITA Open Toolkit in the Linux operating environment.
(If you plan to publish JavaHelp) How to install JavaHelp in the Linux operating environment.
(If you plan to publish PDFs) How to install FOP in the Linux operating environment.
How to set environment variables in the Linux operating environment.
How to verify the installation in the Linux operating environment.
How to install DITA Open Toolkit and its prerequisite software on Mac OS.
How to install DITA Open Toolkit in the Mac OS operating environment.
Reference information about the directories and files in the ditaot directory.
Production notes for the installing and upgrading section of this document.
Additional sources of information about installing and upgrading DITA Open Toolkit.

Installation overview

Overview of the installation processes for Windows, Linux, and Mac OS. Key sections: required tools, optional tools, and things to consider before installing.
Information about installing the required tools.
Information about installing the optional tools.
Things to consider before selecting an authoring tool and installing DITA Open Toolkit and its prerequisite tools.

Installing the required tools

Information about installing the required tools.

The following tools and kinds of tools are required for you create and process (build) DITA documents. Each tool must be at a certain version level to allow it to work with the other tools in the set. For information about the required levels, see *System requirements and supported applications* on page 11.

An authoring tool of your choice

You can create DITA source files with a plain text editor, for example Microsoft Notepad for Windows. Editors at varying levels of "DITA-awareness" are also available, both free and for purchase. These editors help you create DITA documents that are well-formed and valid. Some well-known DITA-aware editors are Adobe FrameMaker, Altova XMLSpy, Arbortext Editor, justsystems XMetaL (DITA edition), Pixware XMLmind, Stylus Studio, SyncRO Soft <Oxygen/>, and Syntext Serna.

Authoring tools are not part of DITA Open Toolkit or any of the prerequisite tools for the Toolkit.

DITA Open Toolkit (OT)

DITA Open Toolkit is an implementation of the OASIS DITA Technical Committee's specification for DITA DTDs and schemas. The Toolkit transforms DITA content (maps and topics) into deliverable formats, and to do that, depends on the following tools, which must also be installed in your DITA processing (build) environment.

You can download DITA Open Toolkit from *http://sourceforge.net/projects/dita-ot*.

Java Development Kit (JDK)

DITA Open Toolkit is a Java-based set of tools, and as such it requires the JDK to operate.

You can download the JDK from *http://java.sun.com/j2se/1.4.2/download.html*.

Ant

Ant is an Apache, Java-based processing (build) tool.

You can download Ant from *http://ant.apache.org/bindownload.cgi*.

An XSLT processor

You can install either SAXON or Xalan (or both) to process XSLT stylesheets (a set of which are part of the Toolkit).

You can download SAXON from *http://saxon.sourceforge.net/*.

You can download Xalan from *http://archive.apache.org/dist/xml/xalan-j/*.

Installing the optional tools

Information about installing the optional tools.

Depending on the kind of output you expect to produce, you may want to install the following tools.

(If you plan to publish HTML Help) The Microsoft HTML Help processor

Download the Microsoft HTML Help processor from *http://archive.apache.org/dist/xml/xalan-j/*.

(If you plan to publish JavaHelp files) The Sun JavaHelp processor

Download the Sun JavaHelp processor from *http://archive.apache.org/dist/xml/xalan-j/*.

(If you plan to publish PDF files) The Apache FOP processor or the RenderX XEP processor

The default processing script uses Apache FOP for converting FO files into PDF. With some modification of the build scripts, you can use the RenderX XEP processor, instead. FOP is free. XEP is free for personal use.

Download the Apache FOP processor from *http://archive.apache.org/dist/xml/xalan-j/*.

Download the RenderX XEP processor from *http://www.renderx.net/Content/download/*.

(If you plan to publish Eclipse content) The IBM Eclipse content processor

For more information, see *http://www.eclipse.org/*.

(If you plan to publish Eclipse help) The IBM Eclipse help processor

For more information, see *http://www.eclipse.org/*.

Installation considerations

Things to consider before selecting an authoring tool and installing DITA Open Toolkit and its prerequisite tools.

Consider the following important points before selecting an authoring tool, and before downloading and installing DITA Open Toolkit and its prerequisite tools.

The tools you use need to work together as a set.

This means, for example, that the DITA-aware authoring tool you are already using may not be "aware" of the version of the DTDs that come with the Toolkit. It could also mean that the version of SAXON you already have installed on your laptop doesn't work with the Toolkit. Read the *System requirements and supported applications* on page 11 and check your current system environment before installing or upgrading.

You may not need to install the prerequisite tools separately.

For example, the Linux distribution Fedora Core 5 already comes with the JDK, Ant, and Xalan. The Mac OS X installation DVD also comes with some of the required components.

You may need to move or uninstall one or more tools in your current environment before installing the Toolkit and its prerequisites.

For example, if the version of one of the tools in your Fedora or Mac OS X package is incompatible with the version of the Toolkit you are installing, you may have to change your system environment.

Upgrade overview

Things to consider before upgrading to a new release of DITA Open Toolkit.

Before upgrading to a new version of DITA Open Toolkit, be sure to back up your current version so you can reapply modifications after your Toolkit upgrade. Such modifications might include:

- Specialization DTDs you added to the `dtd` directory and the corresponding updates you made to the `catalog-dita-template.xml` file
- XSLT stylesheets you have added to the `xsl` directory to override the standard stylesheets
- Plug-ins you have installed

Installing on Windows

How to install DITA Open Toolkit and its prerequisite software on Windows.
How to install the JDK in the Windows operating environment.
How to install the Ant processing (build) tool in the Windows operating environment.
How to install SAXON in the Windows operating environment. Install either SAXON or Xalan: you do not need both.
How to install Xalan in the Windows operating environment. Install either Xalan or SAXON: you do not need both.
How to install DITA Open Toolkit in the Windows operating environment.
(If you plan to publish HTML Help) How to install HTML Help in the Windows operating environment.
(If you plan to publish JavaHelp) How to install JavaHelp in the Windows operating environment.
(If you plan to publish PDFs) How to install FOP in the Windows operating environment.
How to set environment variables in the Windows operating environment.
How to verify the installation in the Windows operating environment.

Before installing DITA Open Toolkit and its prerequisite software on Windows, check to see if any of the tools are already installed on your system and, if so, whether the version you have is supported (see *System requirements and supported applications* on page 11). For any tools you need to install, complete the tasks below in the order shown.

Installing the JDK on Windows

How to install the JDK in the Windows operating environment.

1. For the Sun version of the JDK, enter the URL *http://java.sun.com/j2se/1.4.2/download.html*.
2. From the Sun Developer Network page, scroll to find the heading **J2SE v 1.4.2_12 SDK** (that is, .12 or the latest version).
3. Select **Download J2SE SDK**.
4. From the Sun Developer Network page, accept the license agreement and scroll to the heading "Windows Platform - Java(TM) 2 SDK, Standard Edition 1.4.2_12".
5. Select and download **Windows Installation, Multi-language**.
6. Save and install the .exe file.
7. If prompted, install the JDK to `C:\j2sdk1.4.2_10`.
8. Set the *JAVA_HOME* *Setting environment variables on Windows* on page 42.

> For the IBM version of the JDK, enter *http://www.ibm.com/developerworks/java/jdk*.

Installing Ant on Windows

How to install the Ant processing (build) tool in the Windows operating environment.

1. Enter the URL: *http://ant.apache.org/bindownload.cgi*
2. On the Apache Ant Project page, find the heading **Current Release of Ant**
3. Select **apache-ant-1.6.5-bin.zip [PGP] [SHA1] [MD5]**
4. Click **Save** to unzip the apache-ant-1.6.5-bin.zip [PGP] [SHA1] [MD5] file and save it to your C:\ directory as `ant`.
5. Add the `bin` directory to your *PATH* *Setting environment variables on Windows* on page 42.
6. Add the *ANT_HOME* *Setting environment variables on Windows* on page 42.
7. Add the *ANT_OPTS* *Setting environment variables on Windows* on page 42.

Installing SAXON on Windows

How to install SAXON in the Windows operating environment. Install either SAXON or Xalan: you do not need both.

1. Enter the URL: *http://saxon.sourceforge.net/*
2. From SAXON: The XSLT and XQuery Processor page, scroll to find the heading **Saxon 6.5.5**
3. Select **Download (3265 Kbytes)**.
   The SourceForge.net page opens with a list of download options.
4. Select any of the  images to start the download.

   If SAXON does not appear to be downloading, wait a few minutes before selecting another  image. You may have to select more than one  image until you find one that works.

   > **Note:** If you are an Internet Explorer user and a yellow bar appears at the top of the screen with the message, "To help protect your security, Internet Explorer blocked this site from downloading files to your computer. Click here for options..," click on the bar and select "Download File."

5. Click **Save** to unzip the Saxon 6.5.5.zip file and save it to the C:\ directory as `saxon`.
6. Set the *CLASSPATH* *Setting environment variables on Windows* on page 42 for the saxon.jar files.

Installing Xalan on Windows

How to install Xalan in the Windows operating environment. Install either Xalan or SAXON: you do not need both.

1. Enter the URL:*http://archive.apache.org/dist/xml/xalan-j/*
2. From SAXON: The Xalan Processor page, scroll to find the heading **xalan-j_2_7_0-bin.zip**. Click to download.
3. Save and unzip the xalan-j_2_7_0-bin.zip file to C:\ directory as `xalan`.
4. Set the *CLASSPATH* *Setting environment variables on Windows* on page 42 for following .jar files: `xalan.jar` file and the `xercesImpl.jar` file.

Installing Dita Open Toolkit on Windows

How to install DITA Open Toolkit in the Windows operating environment.

1. Enter the URL: *http://sourceforge.net/projects/dita-ot*
2. On the SourceForge.net page, find **Download DITA Open Toolkit**.
3. Select **dita-ot 1.2.2**.
   The `Dita-ot` table displays.
4. Select **DITA-OT1.2.2_bin.zip**
   The SourceForge.net page opens with a list of `download options`.
5. Select any of the  images to start the download.

   If the DITA Open Toolkit does not appear to be downloading, wait a few minutes before selecting another image. You may have to select more than one images until you find one that works.

   Note: If you are an Internet Explorer user and a yellow bar appears at the top of the screen with the message, "To help protect your security, Internet Explorer blocked this site from downloading files to your computer. Click here for options...,"click on the bar and select "Download File."

6. Click **Save** to unzip the DITA-OT1.2_bin.zip file and save it to your C:\ directory as `ditaot`.
7. Set the *CLASSPATH* *Setting environment variables on Windows* on page 42 for `dost.jar`

(Optional) Installing HTML Help on Windows

(If you plan to publish HTML Help) How to install HTML Help in the Windows operating environment.

1. Enter the URL:
   http://msdn.microsoft.com/library/default.asp?url=/library/en-us/htmlhelp/html/hwmicrosofthtmlhelpdownloads.asp
2. From the MSDN page, scroll to find the heading **HTML Help Workshop**
3. Select **Download Htmlhelp.exe**.
4. Click **Run** and navigate to a C:\ directory as `C:\Program Files\HTML Help Workshop`.
5. Follow the steps in the HTML Help install guide wizard to complete the installation.

If you install the Help compiler to a drive other than the C drive, you may need to customize the <property> value for "hhc.dir" in some of the build `.xml` scripts in the Toolkit root directory. The Toolkit assumes the compiler is installed on your C drive.

(Optional) Installing JavaHelp on Windows

(If you plan to publish JavaHelp) How to install JavaHelp in the Windows operating environment.

1. Enter the URL: *http://java.sun.com/products/javahelp/download_binary.html*
2. From the Sun Developer Network page, scroll to find the heading **JavaHelp 2.0_02 (Zip)**
3. Select **Download**.

4. From the Sun Developer Network page, accept the license agreement and scroll to the heading "Platform - JavaHelp API 2.0_02 FCS"
5. Select **javahelp-2_0_02.zip, 6.49 MB**
   The `File Download` window opens.
6. Click **Save** to unzip the javahelp-2_0_02.zip file and save it to the C:\ directory as `javahelp`.
7. Set the *JHHOME* *Setting environment variables on Windows* on page 42.

(Optional) Installing FOP on Windows

(If you plan to publish PDFs) How to install FOP in the Windows operating environment.

1. Enter the URL: *http://apache.tradebit.com/pub/xml/fop/*
2. From the FOP page, in the Name column, select  **"fop-0.20.5-bin.zip"**
3. Click **Save** to unzip the fop-0.20.5-bin.zip file and save it to the C:\ directory as `fop-0.20.5`
4. Set the *CLASSPATH* *Setting environment variables on Windows* on page 42 for the following jar files:

```
\build\fop.jar
\lib\batik.jar
\lib\avalon-framework-cvs-20020806.jar
```

Setting environment variables on Windows

How to set environment variables in the Windows operating environment.

1. From the Start Menu, select **Start** > **Settings** > **Control Panel.**
2. Double-click *System* to open the System Properties window.
3. On the Advanced tab, select *environmental variables* .
4. Modify each *environmental or system variable*.

   Set the *PATH* environment variable to include the directory where you installed the Ant bin directory:

   1. Find the *PATH* environment variable in the list. If *PATH* is not listed, click on **New** under the System variables section.
   2. Type `%ANT_HOME%\bin;%JAVA_HOME%\bin;`

      Important: If there are other variables listed, create a new variable separated by a semicolon. Ensure there are no spaces before or after the semicolon.

   Set the *ANT_HOME* environment variable to the directory where you installed Ant:

   1. Click on **New** under the System variables section.
   2. Type `ANT_HOME` in the variable name field.
   3. Type `C:\ant` in the variable value field.

   Set the *ANT_OPTS* environment variable to the directory where you installed Ant:

   1. Click **New** under the System variables section.
   2. Type `ANT_OPTS` in the variable name field.
   3. Type `-Xmx256M` in the variable value field.

   Set the *JAVA_HOME* environment variable to the directory where you installed the J2SE SDK application:

   1. Click on **New** under the System variables section.
   2. Type `JAVA_HOME` in the variable name field.
   3. Type `C:\j2sdk1.4.2_12` in the variable value field.

Set the *JHHOME* environment variable to the directory where you installed the JavaHelp application:

1. Click on **New** under the System variables section.
2. Type `JHHOME` in the variable name field.
3. Type `C:\javahelp\jh2.0` in the variable value field.

Create or append to the *CLASSPATH* environment variable for DITA-OT:

1. Find the *CLASSPATH* environment variable in the list. If *CLASSPATH* is not listed, click **New** under the System variables section.
2. Type `C:\ditaot\lib\dost.jar`

   👉 **Important:** If there are other variables listed, create a new variable separated from the others by a semicolon. Ensure there are no spaces before or after the semicolon.

Create or append to the *CLASSPATH* environment variable for the Apache FOP application:

1. Find the *CLASSPATH* environment variable in the list. If *CLASSPATH* is not listed, click **New** under the System variables section.
2. Type `C:\fop-0.20.5\build\fop.jar;C:\fop-0.20.5\lib\batik.jar;C:\fop-0.20.5\lib\avalon-framework-cvs-20020806.jar`

   👉 **Important:** If there are other variables listed, create a new variable separated from the others by a semicolon. Ensure there are no spaces before or after the semicolon.

(If you use SAXON) Create or append to environment variables for SAXON:

1. Find the *CLASSPATH* environment variable in the list. If *CLASSPATH* is not listed, click on **New** under the System variables section.
2. Type `C:\saxon\saxon.jar`

   👉 **Important:** If there are other variables listed, create a new variable separated by a semicolon. Ensure there are no spaces before or after the semicolon.

3. Set up ANT_OPTS. For example:

   ```
   set ANT_OPTS=%ANT_OPTS%
   -Djavax.xml.transform.TransformerFactory=com.icl.saxon.TransformerFactoryImpl
   ```

(If you use Xalan) Set the *CLASSPATH* environment variable for Xalan:

1. Find the *CLASSPATH* environment variable in the list. If *CLASSPATH* is not listed, click on **New** under the System variables section.
2. Type `C:\xalan\bin`

   👉 **Important:** If there are other variables listed, create a new variable separated by a semicolon. Ensure there are no spaces before or after the semicolon.

Verifying the installation on Windows

How to verify the installation in the Windows operating environment.

1. From the toolbar, click *Start* > *Run*.
2. In the Open field, type `cmd`.
3. Change the command prompt according to the following table.

If this prompt displays,	type the following command
D:	`C:`
H:	`C:`
C:\My Documents\...	`cd \`

4. At the prompt, type `cd ditaot`
   The command prompt changes to `C:\ditaot`
5. Type `ant all` and press Enter to process the DITA files in the `demo`, `doc`, `docbook`, and `samples` directories. This procedure also verifies the Toolkit installation.
   The testing process completes in 3-10 minutes depending on the speed of your machine. When testing completes, the confirmation message "BUILD SUCCESSFUL" displays.

Be sure the directories and files in your `ditaot` are as described in *Directories and files in the ditaot directory* on page 48.

Installing on Linux

How to install DITA Open Toolkit and its prerequisite software on Linux.
How to install the JDK in the Linux operating environment.
How to install the Ant processing (build) tool in the Linux operating environment.
How to install SAXON in the Linux operating environment. Install either SAXON or Xalan: you do not need both.
How to install Xalan in the Linux operating environment. Install either Xalan or SAXON: you do not need both.
How to install DITA Open Toolkit in the Linux operating environment.
(If you plan to publish JavaHelp) How to install JavaHelp in the Linux operating environment.
(If you plan to publish PDFs) How to install FOP in the Linux operating environment.
How to set environment variables in the Linux operating environment.
How to verify the installation in the Linux operating environment.

Before installing DITA Open Toolkit and its prerequisite software on Linux, check to see if any of the tools are already installed on your system and, if so, whether the version you have is supported (see *System requirements and supported applications* on page 11

Note: As an example, if you are using Fedora Core 5 Linux, software installation is done using the Package Manager. From this application, if you install the "Java Development" package within the "Development" group, you will install:

- Ant 1.6.5
- Java SDK 1.4.2
- Xalan-J 2.6.0

For any tools you do need to install, complete the tasks below in the order shown.

Installing the JDK on Linux

How to install the JDK in the Linux operating environment.

1. Enter the URL:*http://java.sun.com/j2se/1.4.2/download.html* (that is, .12 or the latest version).
2. From the Sun Developer Network page, scroll to find the heading **J2SE v 1.4.2_12 SDK**
3. Select **Download J2SE SDK**
4. From the Sun Developer Network page, accept the license agreement and scroll to the heading "Linux Platform - Java(TM) 2 SDK, Standard Edition 1.4.2_12"

5. Select and download **RPM in self-extracting file** .
6. Run and install into a Linux home directory.
7. Set the *JAVA_HOME* *Setting environment variables on Linux* on page 46.

Installing Ant on Linux

How to install the Ant processing (build) tool in the Linux operating environment.

1. Enter the URL: *http://ant.apache.org/bindownload.cgi*
2. On the Apache Ant Project page, find the heading **Current Release of Ant**
3. Select **apache-ant-1.6.5-bin.tar.gz [PGP] [SHA1] [MD5]**
4. Save and extract the package file into a Linux home directory.
5. Add the `bin` directory to your *PATH* *Setting environment variables on Linux* on page 46.
6. Add the *ANT_HOME* and *ANT_OPS* *Setting environment variables on Linux* on page 46.

Installing SAXON on Linux

How to install SAXON in the Linux operating environment. Install either SAXON or Xalan: you do not need both.

1. Enter the URL: *http://saxon.sourceforge.net/*
2. From SAXON: The XSLT and XQuery Processor page, scroll to find the heading **Saxon 6.5.5**
3. Select **Download (3265 Kbytes)**.
   The SourceForge.net page opens with a list of download options.
4. Select any of the  images to start the download.

   If SAXON does not appear to be downloading, wait a few minutes before selecting another  image. You may have to select more than one  image until you find one that works.

   Note: If you are an Internet Explorer user and a yellow bar appears at the top of the screen with the message, "To help protect your security, Internet Explorer blocked this site from downloading files to your computer. Click here for options.," click on the bar and select "Download File."

5. Download and unzip the Saxon 6.5.5.zip file and save it to a Linux home directory.
6. Set the *CLASSPATH* *Setting environment variables on Linux* on page 46 the saxon.jar files.

Installing Xalan on Linux

How to install Xalan in the Linux operating environment. Install either Xalan or SAXON: you do not need both.

1. Enter the URL:*http://archive.apache.org/dist/xml/xalan-j/*
2. From SAXON: The Xalan Processor page, scroll to find the heading **xalan-j_2_7_0-bin.tar.gz**. Click to download.
3. Save and unzip the xalan-j_2_7_0-bin.tar.gz file to a linux home directory.
4. Set the *CLASSPATH* *Setting environment variables on Linux* on page 46 for following .jar files: `xalan.jar` file and the `xercesImpl.jar` file

Installing DITA Open Toolkit on Linux

How to install DITA Open Toolkit in the Linux operating environment.

1. Enter the URL: *http://sourceforge.net/projects/dita-ot*
2. On the SourceForge.net page, find **Download DITA Open Toolkit**.
3. Select **dita-ot 1.2.2**.

The `Dita-ot` table displays.

4. Select **DITA-OT1.2.2_bin.tar.gz**
   The SourceForge.net page opens with a list of `download options`.
5. Save and extract the package file into a Linux home directory.

   Note: You can extract all package files and toolkits either to your private home directory for exclusive usage or to the `/usr/local/share/` directory for sharing.

6. Set the *CLASSPATH* *Setting environment variables on Linux* on page 46 for `dost.jar`

(Optional) Installing JavaHelp on Linux

(If you plan to publish JavaHelp) How to install JavaHelp in the Linux operating environment.

1. Enter the URL: *http://java.sun.com/products/javahelp/download_binary.html*
2. From the Sun Developer Network page, scroll to find the heading **JavaHelp 2.0_02 (Zip)**
3. Select **Download**.
4. From the Sun Developer Network page, accept the license agreement and scroll to the heading "Platform - JavaHelp API 2.0_02 FCS"
5. Select **javahelp-2_0_02.zip, 6.49 MB**
   The `File Download` window opens.
6. Click **Save** to unzip the javahelp-2_0_02.zip file and save it to a Linux home directory.
7. Add the *JHHOME* *Setting environment variables on Linux* on page 46.

(Optional) Installing FOP on Linux

(If you plan to publish PDFs) How to install FOP in the Linux operating environment.

1. Enter the URL: *http://apache.tradebit.com/pub/xml/fop/*
2. From the FOP page, in the Name column, select **"fop-0.20.5-bin.tar.gz"**
3. Save and extract the package file into a Linux home directory.
4. Set the *CLASSPATH* *Setting environment variables on Linux* on page 46 for the following jar files:

```
build/fop.jar
lib/batik.jar
lib/avalon-framework-cvs-20020806.jar
```

Setting environment variables on Linux

How to set environment variables in the Linux operating environment.

1. Type in the Linux Console.
2. Modify each *environmental or system variable*.

   Set the *PATH* environment variable to include the directory where you installed the Ant bin directory:

   1. `export PATH=${ANT_HOME}/bin:${JAVA_HOME}/bin:${PATH}`

   Set the *ANT_HOME* environment variable to the directory where you installed Ant:

   1. `export ANT_HOME=${ant_dir}`

   Set the *ANT_OPTS* environment variable to the directory where you installed Ant:

   1. `export ANT_OPTS="-Xmx256M"`

Set the *JAVA_HOME* environment variable to the directory where you installed the J2SE SDK application:

1. `export JAVA_HOME=${java_dir}`

Set the *JHHOME* environment variable to the directory where you installed the JavaHelp application:

1. `export JHHOME=${javahelp_dir}`

Set the *CLASSPATH* environment variable for DITA-OT:

1. Set up your environment variable CLASSPATH to include the dost.jar. For example:
   ```
   export CLASSPATH=${ditaot_dir}/lib/dost.jar
   ```

Set the *CLASSPATH* environment variable for the Apache FOP application:

1. Set up your environment variable CLASSPATH to include the fop.jar, batik.jar and avalon.jar files in the FOP directory. For example:
   ```
   export
   CLASSPATH=${fop_dir}/build/fop.jar:${fop_dir}/lib/batik.jar:${fop_dir}/lib/avalon-framework-cvs-20020806.jar:${CLASSPATH}
   ```

(If you use SAXON) Set environment variables for SAXON:

1. Set up CLASSPATH to include the saxon.jar file. For example:
   ```
   export CLASSPATH=${CLASSPATH}:${saxon_dir}/saxon.jar
   ```
2. Set up ANT_OPTS. For example:
   ```
   export ANT_OPTS=${ANT_OPTS}
   -Djavax.xml.transform.TransformerFactory=com.icl.saxon.TransformerFactoryImpl
   ```

(If you use Xalan) Set environment variables for Xalan:

1. Set up CLASSPATH to include the `xalan.jar` file and the `xercesImpl.jar` file. For example:
   ```
   export CLASSPATH=${CLASSPATH}:${xalan_dir}/bin
   ```

Verifying the installation on Linux

How to verify the installation in the Linux operating environment.

1. In the console, type `cd {ditaot_dir}`.
2. Type `ant all` and press Enter to begin to process the DITA files in the `demo`, `doc`, `docbook`, and `samples` directories. This procedure also verifies the Toolkit installation.
   The testing process completes in 3-10 minutes depending on the speed of your machine. When testing completes, the confirmation message "BUILD SUCCESSFUL" displays.

Be sure the directories and files in your `ditaot` are as described in *Directories and files in the ditaot directory* on page 48.

Installing on Mac OS

How to install DITA Open Toolkit and its prerequisite software on Mac OS.
How to install DITA Open Toolkit in the Mac OS operating environment.

Before installing DITA Open Toolkit and its prerequisite software on Mac OS X, check to see if any of the tools are already installed on your system and, if so, whether the version you have is supported (see *System requirements and supported applications* on page 11 Java is a "core component" of Mac OS X. Newer versions of Mac OS X include the

full version of the Java JDK 1.4.2 by default. This version of the JDK includes Ant and the Xalan-J XSLT processor as well. Other tools you want to install may be included on the Mac OS X Developer's Tools on the product DVD.

Installing DITA Open Toolkit on Mac OS

How to install DITA Open Toolkit in the Mac OS operating environment.

To install the Toolkit, extract the zip file to your $HOME directory, then edit your login rc file to include the Toolkit in your CLASSPATH.

Directories and files in the ditaot directory

Reference information about the directories and files in the ditaot directory.

When you have installed DITA Open Toolkit, the following directories and subdirectories should be in your root `ditaot` directory.

Directory	Description
root (ditaot)	System-level Ant scripts and other system files (for example, `conductor.xml`, `build.xml`, and `integrator.xml`). System-level scripts handle DITA source file processing and transformation into published output. They are an integral part of DITA Open Toolkit and should never be modified by users. For more information, see *About Ant scripts* on page 61.
ant	Ant scripts that can be used as-is to process sample files or modified for your use.
css	Sample CSS (cascading style sheet) files.
demo	Specializations, plug-ins, and validators that demonstrate extensions to the base DITA language. Includes: • book: bookmap specialization • elementref: simple element reference description markup • enote: data object specialization • faq: faq (frequently asked questions) specialization • fo: plug-in files to produce PDF output • FrameMaker_adapter: plug-in to produce a structured FrameMaker (7.0+) input file • h2d: plug-in to convert XHTML to DITA topics • java: validators for DITA schemas Many of these directories have README files that provide information about how to use the specializations.
doc	DITA documentation: language reference and application notes.
dtd	Core DITA definitions in XML DTD format.
lib	Contains `dost.jar`, the executable jar file.
plugins	DITA Open Toolkit plug-ins.
resource	Miscellaneous resource files, including the default (common) CSS files and error messages.
samples	Sample DITA source files and Ant scripts.
schema	Core DITA definitions in XML Schema format.
xsl	Core and process-specific stylesheets. Includes: • common: stylesheets that can be used by any process (for example, internationalization) • docbook: stylesheets used in converting DITA source content into DocBook source • preprocess: code for conditional, conref, and link resolution

Directory	Description
	• troff: stylesheets used in converting DITA source content into troff source • xslfo: code to support the processing of Formatting Objects (FO) output • xslhtml: code to support XHTML processing • xslrtf: code to support RTF processing

Production notes (installing and upgrading)

Production notes for the installing and upgrading section of this document.

Authoring tools

We recommend using a free DITA-aware authoring tool to create your first demo DITA documents; the experience you gain in a simple environment will help you make the intelligent purchase of a more sophisticated editor later on.

We deliberately chose to use an authoring tool that was free, since we thought many of our readers would be learning about the DITA Open Toolkit as part of an educational or pilot project where cost might be an issue. We also wanted to edit in "raw" XML ourselves so we would understand that technology well. A couple of months into the project we began exploring more advanced DITA-aware authoring tools that would provide us with additional functionality.

Most of our topics were written using Altova XMLSpy, which is free and "DITA-aware" (that is, it verifies that DITA source files are well-formed and valid). We had problems at first getting XMLSpy to use a catalog for the DITA DTDs, but that problem was solved (for more information, see *Configuring your authoring tool* on page 51).

Because our authoring tool didn't have "plausible preview," we did frequent builds to check the output.

For more information (installing and upgrading)

Additional sources of information about installing and upgrading DITA Open Toolkit.

You can get current information about bugs, patches, and change requests in the following locations:

Bug tracker	*http://sourceforge.net/tracker/?group_id=132728&atid=725074*
Patch tracker	*http://sourceforge.net/tracker/?group_id=132728&atid=725076*
RFE tracker	*http://sourceforge.net/tracker/?group_id=132728&atid=725077*

Setting up your working environment

How to configure your DITA authoring tool and set up your source file directory.
How to configure your authoring tool to use the catalog (using XMLSpy as an example).
How to set up your source and output file directory.
Production notes for the setting up section of this document.
Additional sources of information for the setting up section of this document.

Configuring your authoring tool

How to configure your authoring tool to use the catalog (using XMLSpy as an example).

"DITA-aware" authoring tools check source files for well-formedness and validate them against DTDs. However, you may need to configure your editor to enable it to do these tasks correctly. Some editors have a built-in copy of the DTDs; others require that you provide a catalog that can be used to look up DTD definitions specified in your source file DOCTYPE declaration. One editor that needs a catalog is Altova XMLSpy.

XMLSpy performs a catalog lookup on the PUBLIC identifier in the DOCTYPE declaration in DITA source files. If it does not find a match in its catalog, XMLSpy tries to open the disk file specified as the last URI in the DOCTYPE declaration. If the URI does not point to the relevant DTD, XMLSpy is unable to validate the DITA source file.

By modifying XMLSpy's `CustomCatalog.xml` file, you can move your source files to a new location without having to worry about incorrect URIs in your DITA source files.

Follow these steps to modify `c:\Program Files\Altova\XMLSpy2006/CustomCatalog.xml`.

1. Save the `CustomCatalog.xml` stub file under a new name (for example, `CustomCatalogOLD.xml`.
2. Open the `CustomCatalog.xml` stub file.

```
<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XML Spy v5 beta 1 U (http://www.xmlspy.com) by Vladislav Gavrielov
(Altova) -->
<catalog xmlns="urn:oasis:names:tc:entity:xmlns:xml:catalog"
 xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
 xsi:schemaLocation="urn:oasis:names:tc:entity:xmlns:xml:catalog
Catalog.xsd"/>
```

3. Keeping the `CustomCatalog.xml` stub file open, also open `ditaot/catalog-dita.xml`.

```
<catalog xmlns="urn:oasis:names:tc:entity:xmlns:xml:catalog" prefer="public">

<group xml:base="dtd">

<public publicId="-//IBM//DTD DITA Concept//EN" uri="dita132/concept.dtd"></public>
<public publicId="-//IBM//ELEMENTS DITA Concept//EN" uri="dita132/concept.mod"></public>

<public publicId="-//IBM//DTD DITA Composite//EN" uri="dita132/ditabase.dtd"></public>

<public publicId="-//IBM//DTD DITA Reference//EN" uri="dita132/reference.dtd"></public>
<public publicId="-//IBM//ELEMENTS DITA Reference//EN"
uri="dita132/reference.mod"></public>
. . .
```

4. In `ditaot/catalog-dita.xml`, change the relative path names to absolute path names.

```
<?xml version="1.0" encoding="UTF-8"?>
```

```
<catalog xmlns="urn:oasis:names:tc:entity:xmlns:xml:catalog"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"   \
xsi:schemaLocation="urn:oasis:names:tc:entity:xmlns:xml:catalog
Catalog.xsd">

<!-- XMLSPY custom XML catalog for DITA DTDs -->

<public publicId="-//IBM//DTD DITA Concept//EN"
uri="c:/ditaot/dtd/dita132/concept.dtd"></public>
<public publicId="-//IBM//ELEMENTS DITA Concept//EN"
uri="c:/ditaot/dtd/dita132/concept.mod"></public>

<public publicId="-//IBM//DTD DITA Composite//EN"
uri="c:/ditaot/dtd/dita132/ditabase.dtd"></public>

<public publicId="-//IBM//DTD DITA Reference//EN"
uri="c:/ditaot/dtd/dita132/reference.dtd"></public>
<public publicId="-//IBM//ELEMENTS DITA Reference//EN"
uri="c:/ditaot/dtd/dita132/reference.mod"></public>
. . .
```

5. Modify the `CustomCatalog.xml` file and paste the new information into it.

```
<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XML Spy v5 beta 1 U (http://www.xmlspy.com) by Vladislav Gavrielov
(Altova) -->
<catalog xmlns="urn:oasis:names:tc:entity:xmlns:xml:catalog"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="urn:oasis:names:tc:entity:xmlns:xml:catalog
[Modify below]
Catalog.xsd">

[Paste here]

</catalog>
```

6. Save the `CustomCatalog.xml` file.

The following is a complete sample `CustomCatalog.xml` created using this procedure.

```
<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XML Spy v5 beta 1 U (http://www.xmlspy.com)
by Vladislav Gavrielov (Altova) -->
<catalog xmlns="urn:oasis:names:tc:entity:xmlns:xml:catalog"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="urn:oasis:names:tc:entity:xmlns:xml:catalog
Catalog.xsd">

<!-- XMLSPY custom XML catalog for DITA DTDs -->

<public publicId="-//IBM//DTD DITA Concept//EN"
uri="c:/ditaot/dtd/dita132/concept.dtd"></public>
<public publicId="-//IBM//ELEMENTS DITA Concept//EN"
uri="c:/ditaot/dtd/dita132/concept.mod"></public>

<public publicId="-//IBM//DTD DITA Composite//EN"
uri="c:/ditaot/dtd/dita132/ditabase.dtd"></public>

<public publicId="-//IBM//DTD DITA Reference//EN"
uri="c:/ditaot/dtd/dita132/reference.dtd"></public>
<public publicId="-//IBM//ELEMENTS DITA Reference//EN"
uri="c:/ditaot/dtd/dita132/reference.mod"></public>

<public publicId="-//IBM//DTD DITA Task//EN"
uri="c:/ditaot/dtd/dita132/task.dtd"></public>
<public publicId="-//IBM//ELEMENTS DITA Task//EN"
```

```
uri="c:/ditaot/dtd/dita132/task.mod"></public>

<public publicId="-//IBM//DTD DITA Topic//EN"
uri="c:/ditaot/dtd/dita132/topic.dtd"></public>
<public publicId="-//IBM//ELEMENTS DITA Topic//EN"
uri="c:/ditaot/dtd/dita132/topic.mod"></public>
<public publicId="-//IBM//ENTITIES DITA Topic Class//EN"
uri="c:/ditaot/dtd/dita132/topic_class.ent"></public>
<public publicId="-//IBM//ENTITIES DITA Topic Definitions//EN"
uri="c:/ditaot/dtd/dita132/topic_defn.ent"></public>

<public publicId="-//IBM//DTD DITA Map//EN"
uri="c:/ditaot/dtd/dita132/map.dtd"></public>
<public publicId="-//IBM//ELEMENTS DITA Map//EN"
uri="c:/ditaot/dtd/dita132/map.mod"></public>
<public publicId="-//IBM//ENTITIES DITA Map Group Domain//EN"
uri="c:/ditaot/dtd/dita132/mapgroup.ent"></public>
<public publicId="-//IBM//ELEMENTS DITA Map Group Domain//EN"
uri="c:/ditaot/dtd/dita132/mapgroup.mod"></public>

<public publicId="-//IBM//ELEMENTS DITA Highlight Domain//EN"
uri="c:/ditaot/dtd/dita132/highlight-domain.mod"></public>
<public publicId="-//IBM//ENTITIES DITA Highlight Domain//EN"
uri="c:/ditaot/dtd/dita132/highlight-domain.ent"></public>

<public publicId="-//IBM//ELEMENTS DITA Programming Domain//EN"
uri="c:/ditaot/dtd/dita132/programming-domain.mod"></public>
<public publicId="-//IBM//ENTITIES DITA Programming Domain//EN"
uri="c:/ditaot/dtd/dita132/programming-domain.ent"></public>

<public publicId="-//IBM//ELEMENTS DITA Software Domain//EN"
uri="c:/ditaot/dtd/dita132/software-domain.mod"></public>
<public publicId="-//IBM//ENTITIES DITA Software Domain//EN"
uri="c:/ditaot/dtd/dita132/software-domain.ent"></public>

<public publicId="-//IBM//ELEMENTS DITA User Interface Domain//EN"
uri="c:/ditaot/dtd/dita132/ui-domain.mod"></public>
<public publicId="-//IBM//ENTITIES DITA User Interface Domain//EN"
uri="c:/ditaot/dtd/dita132/ui-domain.ent"></public>

<public publicId="-//IBM//ELEMENTS DITA Utilities Domain//EN"
uri="c:/ditaot/dtd/dita132/utilities-domain.mod"></public>
<public publicId="-//IBM//ENTITIES DITA Utilities Domain//EN"
uri="c:/ditaot/dtd/dita132/utilities-domain.ent"></public>

<public publicId="-//IBM//ELEMENTS DITA Metadata//EN"
uri="c:/ditaot/dtd/dita132/meta_xml.mod"></public>
<public publicId="-//IBM//ELEMENTS DITA CALS Tables//EN"
uri="c:/ditaot/dtd/dita132/tbl_xml.mod"></public>

<public publicId="-//OASIS//DTD DITA Concept//EN"
uri="c:/ditaot/dtd/concept.dtd"></public>
<public publicId="-//OASIS//ELEMENTS DITA Concept//EN"
uri="c:/ditaot/dtd/concept.mod"></public>

<public publicId="-//OASIS//DTD DITA Composite//EN"
uri="c:/ditaot/dtd/ditabase.dtd"></public>

<public publicId="-//OASIS//DTD DITA Reference//EN"
uri="c:/ditaot/dtd/reference.dtd"></public>
<public publicId="-//OASIS//ELEMENTS DITA Reference//EN"
uri="c:/ditaot/dtd/reference.mod"></public>

<public publicId="-//OASIS//DTD DITA Task//EN"
uri="c:/ditaot/dtd/task.dtd"></public>
<public publicId="-//OASIS//ELEMENTS DITA Task//EN"
uri="c:/ditaot/dtd/task.mod"></public>

<public publicId="-//OASIS//DTD DITA Topic//EN"
```

```
uri="c:/ditaot/dtd/topic.dtd"></public>
<public publicId="-//OASIS//ELEMENTS DITA Topic//EN"
uri="c:/ditaot/dtd/topic.mod"></public>
<public publicId="-//OASIS//ENTITIES DITA Topic Class//EN"
uri="c:/ditaot/dtd/topicAttr.mod"></public>
<public publicId="-//OASIS//ENTITIES DITA Topic Definitions//EN"
uri="c:/ditaot/dtd/topicDefn.ent"></public>

<public publicId="-//OASIS//DTD DITA Map//EN"
uri="c:/ditaot/dtd/map.dtd"></public>
<public publicId="-//OASIS//ELEMENTS DITA Map//EN"
uri="c:/ditaot/dtd/map.mod"></public>
<public publicId="-//OASIS//ENTITIES DITA Map Group Domain//EN"
uri="c:/ditaot/dtd/mapGroup.ent"></public>
<public publicId="-//OASIS//ELEMENTS DITA Map Group Domain//EN"
uri="c:/ditaot/dtd/mapGroup.mod"></public>

<public publicId="-//OASIS//ELEMENTS DITA Highlight Domain//EN"
uri="c:/ditaot/dtd/highlightDomain.mod"></public>
<public publicId="-//OASIS//ENTITIES DITA Highlight Domain//EN"
uri="c:/ditaot/dtd/highlightDomain.ent"></public>

<public publicId="-//OASIS//ELEMENTS DITA Programming Domain//EN"
uri="c:/ditaot/dtd/programmingDomain.mod"></public>
<public publicId="-//OASIS//ENTITIES DITA Programming Domain//EN"
uri="c:/ditaot/dtd/programmingDomain.ent"></public>

<public publicId="-//OASIS//ELEMENTS DITA Software Domain//EN"
uri="c:/ditaot/dtd/softwareDomain.mod"></public>
<public publicId="-//OASIS//ENTITIES DITA Software Domain//EN"
uri="c:/ditaot/dtd/softwareDomain.ent"></public>

<public publicId="-//OASIS//ELEMENTS DITA User Interface Domain//EN"
uri="c:/ditaot/dtd/uiDomain.mod"></public>
<public publicId="-//OASIS//ENTITIES DITA User Interface Domain//EN"
uri="c:/ditaot/dtd/uiDomain.ent"></public>

<public publicId="-//OASIS//ELEMENTS DITA Utilities Domain//EN"
uri="c:/ditaot/dtd/utilitiesDomain.mod"></public>
<public publicId="-//OASIS//ENTITIES DITA Utilities Domain//EN"
uri="c:/ditaot/dtd/utilitiesDomain.ent"></public>

<public publicId="-//OASIS//ELEMENTS DITA Metadata//EN"
uri="c:/ditaot/dtd/metaDecl.mod"></public>
<public publicId="-//OASIS//ELEMENTS DITA CALS Tables//EN"
uri="c:/ditaot/dtd/tblDecl.mod"></public>
<public publicId="-//OASIS//ELEMENTS DITA Exchange Table Model//EN"
uri="c:/ditaot/dtd/tblDecl.mod"></public>

<public publicId="-//IBM//DTD DITA Element Reference//EN"
uri="c:/ditaot/demo/elementref/elementref_shell.dtd"></public>
<public publicId="-//IBM//ELEMENTS DITA Element Reference//EN"
uri="c:/ditaot/demo/elementref/elementref.mod"></public>

<public publicId="-//IBM//DTD DITA FAQ//EN"
uri="c:/ditaot/demo/faq/faq_shell.dtd"></public>
<public publicId="-//IBM//ELEMENTS DITA FAQ//EN"
uri="c:/ditaot/demo/faq/faq.mod"></public>

<public publicId="-//IBM//DTD DITA eNote//EN"
uri="c:/ditaot/demo/enote/enote_shell.dtd"></public>
<public publicId="-//IBM//ELEMENTS DITA eNote//EN"
uri="c:/ditaot/demo/enote/enote.mod"></public>

<public publicId="-//IBM//DTD DITA BookMap//EN"
uri="c:/ditaot/demo/book/bookmap.dtd"></public>
<public publicId="-//IBM//ELEMENTS DITA BookMap//EN"
uri="c:/ditaot/demo/book/bookmap.mod"></public>
```

```
<public publicId="-//IBM//DTD DITA Book Information//EN"
uri="c:/ditaot/demo/book/bkinfo.dtd"></public>
<public publicId="-//IBM//ELEMENTS DITA Book Information//EN"
uri="c:/ditaot/demo/book/bkinfo.mod"></public>

</catalog>
```

For more detailed information about creating an XMLSpy catalog for DITA DTDs, see *http://www.altova.com/manual2006/xmlspy/spyprofessional/index.html?validate.htm*.

Setting up your source and output file directories

How to set up your source and output file directory.

In general, it is a good idea to store the DITA files you create separately from DITA Open Toolkit, because:

- It is easier to create, back up, and migrate DITA source files if they are all together in a separate master directory.
- It is easier to migrate to a new version of the Toolkit if the you don't have to separate out and migrate your source files at the same time.
- You are less likely to accidentally change or erase Toolkit files if they are not mixed in with the source files you work with every day.

Note: The most likely reasons you might have to modify files in the `ditaot` directory are (1) to create a specialization and (2) in processing reuse, to customize the output through XSLT changes.

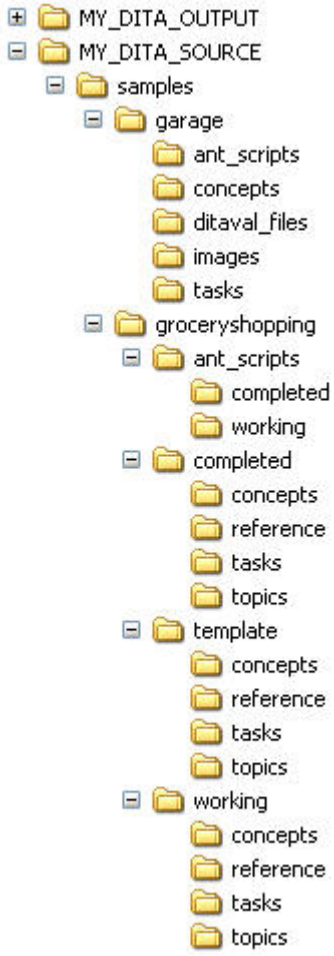
A few simple entries in your Ant build scripts allow this separation.

Follow these steps to set up a directory environment and copy to it the garage and grocery shopping sample files that come with DITA Open Toolkit.

1. Create two new directories in your `C:` root directory (on Windows) or `/home/userid` (on Linux).

   In this and other examples in this document, we assume the two directories are: `C:/MY_DITA_SOURCE` and `C:/MY_DITA_OUTPUT`. We recommend building frequently, and it is easier to find and check the output files if they are in close proximity in your directory structure to the source files.
2. Within `c:/MY_DITA_SOURCE` create a `samples` subdirectory.
3. Copy the garage sample files from `ditaot/samples` to the `samples` directory you just created.
4. Copy the grocery shopping sample files from `ditaot/samples` to the `samples` directory you just created.

Your directory structure should look like this:



For information about setting up Ant scripts to find your DITA source files in this new directory structure, see *Processing (building) and publishing DITA documents* on page 59.

For information about creating demo files of your own, see *Creating DITA topics* on page 107 and *Creating DITA maps* on page 115.

Production notes (setting up)

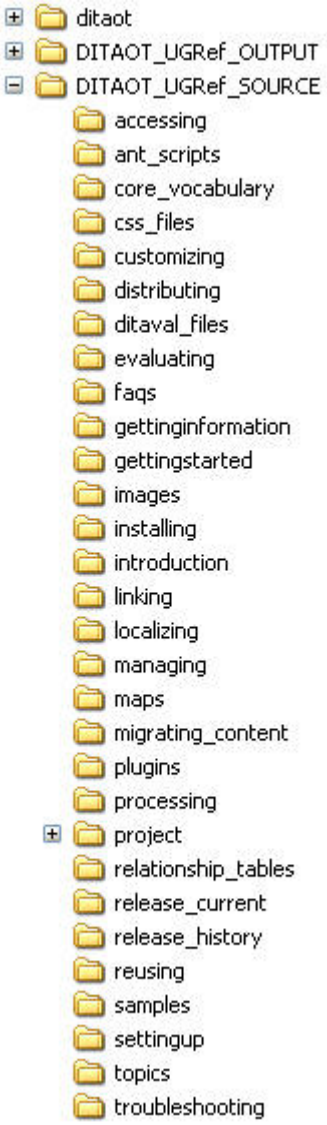
Production notes for the setting up section of this document.

How we set up our working environment

We structured the *DITA Open Toolkit User Guide and Reference* using the bookmap specialization. A single master map in the root directory contains the "chapters," and the map and files for each chapter are in separate subdirectories. Supporting files for the project (including Ant scripts, CSS files, and ditaval files) are also in separate subdirectories of the root directory.

At first we stored the root directory for the source files within the Toolkit directory structure, but when release 1.2.2 made it possible to detach source files from Toolkit files, we moved our entire source project outside the `ditaot` structure. Similarly we created a separate directory for the build output files. We found it much easier to back up our source files, which we do as often as twice a day. Moving to a new version of the Toolkit becomes easier, as well.

Our directory structure looks like this:



For more information (setting up)

Additional sources of information for the setting up section of this document.

Name, description	**Location**
Support information for **Altova XMLSpy**	*http://www.altove.com/support.center.html*
General information about configuring and using **XML catalogs**	*http://forrest.apache.org/docs_0_70/catalog.html*

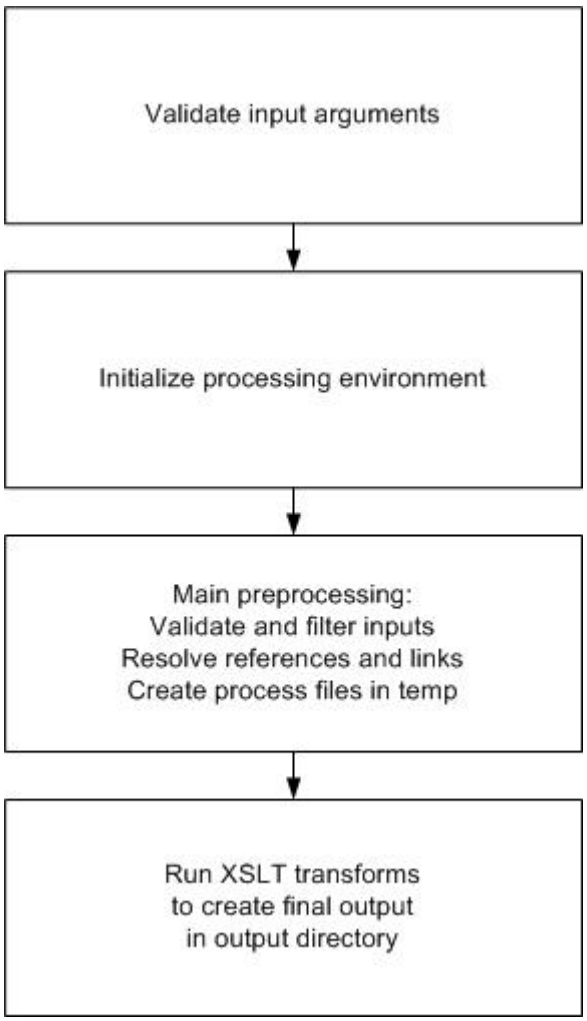
Processing (building) and publishing DITA documents

How to process (build) and publish DITA documents.
Overview of the processing components and task flow.
Overview information about Ant and Ant build scripts.
Information about Ant scripts.
Reference information about Ant processing parameters. Information in the parameter table includes parameter name, whether it is required, definition, usage, valid values, default value, and examples.
Information about the garage sample.
How to process (build) to XHTML output targets using the garage sample.
How to process (build) to HTML Help output targets using the garage sample.
How to process (build) to PDF2 output targets using the garage sample.
How to process (build) to DocBook output targets using the garage sample.
How to process (build) to Eclipse content output targets using the garage sample.
How to process (build) to Eclipse help output targets using the garage sample.
How to process (build) to Eclipse help targets using Eclipse.
How to process (build) to JavaHelp output targets using the garage sample.
How to process (build) to troff output targets using the garage sample.
How to process (build) to Word RTF output targets using the garage sample.
How to process (build) using the Java command line interface as an alternative to using Ant directly.
Production notes for the processing (building) section of this document.
Additional sources of information for the processing (building) section of this document.

Processing overview

Overview of the processing components and task flow.

The following diagram shows the major steps in processing to target output files using DITA Open Toolkit.



About Ant

Overview information about Ant and Ant build scripts.

Definition

Ant is a Java-based, open source tool provided by the Apache Foundation to automatically implement a sequence of build actions defined in an Ant build script. The Ant functionality is similar to the more well-known UNIX make and Windows nmake build tools; however, instead of using shell-based commands, like make, Ant uses Java classes. The configuration files are XML-based, calling out a target tree where various tasks get executed. Each task is run by an object that implements a particular task interface. Ant can be used for both software and document builds.

Usage

DITA Open Toolkit provides Java code and a set of XSLT transform scripts for producing different types of output, for example, XHTML, Eclipse help, JavaHelp, and PDF. Ant build scripts build DITA output by controlling the execution of the DITA Open Toolkit Java code and the XSLT transform scripts.

Ant must be installed in your DITA processing environment for DITA Open Toolkit to function, but it is not part of the Toolkit installation package.

About Ant scripts

Information about Ant scripts.

Definition

An XML build file, containing a single project and a single or multiple targets, each of which consists of a group of tasks that you want Ant to perform. A task is an XML element that Ant can execute to make something happen. Ant comes with a large number of built-in tasks; you can also add tasks of your own.

Usage

DITA Open Toolkit makes use of two kinds of Ant scripts:

System scripts	System-level scripts handle DITA source file processing and transformation into published output. They are an integral part of DITA Open Toolkit and should never be modified by users. The files are located in the `ditaot` root directory.
User scripts	User-level processing scripts are created and modified by users. They provide to the system scripts (which do the actual processing) information about the names and locations of the DITA source files, where to put the processed target files, and values for specific processing parameters. DITA Open Toolkit contains a number of sample user-level processing files that you can view to gain understanding of the build process, and modify for your own use.

System scripts in DITA Open Toolkit

Script	Description
conductor.xml	Controls the other files in the set.
build.xml	Builds demos and samples.
catalog-dita_template.xml and catalog-dita.xml	Contains information that directs the Toolkit to the names and locations of the DTD files. The template file creates the non-template file dynamically during every build.
ditatargets.xml	Runs XSLT transforms to create output.
integrator.xml	Adds plug-ins to the build.
pretargets.xml	During the first stage of processing, builds the temporary files used to create the output.

Creating user scripts in DITA Open Toolkit

Sample Ant scripts for all target publishing environment supported by DITA Open Toolkit are located in `ditaot/samples/garage/ant_scripts`. Most of these scripts process the garage sample source files with the topics displayed in a hierarchy. One processes the garage sample to XHTML with the topics displayed as a sequence. One filters out some of the topics using a ditaval file before publishing as XHTML in a hierarchical format.

The following section contains one of these sample scripts for XHTML targets. You would run this build script in Windows by opening the Command Prompt, navigating to the `ant_scripts directory`, and entering the command:

```
ant -f garage_hierarchy_xhtml.xml
```

For more information about processing (building) to XHTML targets, see *Processing to XHTML targets* on page 68

Sample user script

Here is an annotated script for publishing the garage sample to XHTML in a hierarchical format. The lines in bold are the actual script statements; the other lines are annotations.

```
<?xml version="1.0" encoding="UTF-8"?>
<!-- Copyright 2006 VR Communications, Inc. -->
<!-- All rights reserved. -->
<!-- SAMPLE: GARAGE -->
<!-- DITAMAP: HIERARCHY -->
<!-- TARGET: XHTML -->

<!-- SAMPLE ANT BUILD SCRIPT TO CREATE XHTML OUTPUT -->
<!-- from the provided sample ("garage"). -->

<!-- This is a "user script," meant to be -->
<!-- modified; however, be cautious in modifying the -->
<!-- environment initialization section. -->

<!-- -->
<!-- ENVIRONMENT INITIALIZATION SECTION -->
<!-- -->

<!-- Modify with caution. -->
<!-- garage_xhtml is an arbitrary name alluding to the -->
<!-- source and target trees. -->

<!-- default="all" means "build all the targets in the -->
<!-- 'depends' target list" (below) -->
<!-- (NOT all targets supported by DITA Open Toolkit) -->
<!-- basedir is the base directory for the Toolkit -->
<!-- executables (NOT the DITA source directory, -->
<!-- which is defined with projdir, below). -->
<!-- OK to modify. -->
<project name="garage_xhtml" default="all" basedir="c:/ditaot">


<!-- Location of DITA source files (projdir) and target -->
<!-- output files (outdir). -->
<!-- OK to modify. -->
<property name="projdir" value="c:/MY_DITA_SOURCE/samples/garage"/>
    <property name="outdir" value="c:/MY_DITA_OUTPUT/samples/garage"/>

<!-- Location of DITA Java classes. -->
<!-- DO NOT modify! -->
<path id="dost.class.path">
    <pathelement location="${basedir}/lib/dost.jar"/>
    </path>

<!-- Ant task to initialize the processing environment. -->
<!-- Defines a new Ant task called "integrate" that -->
<!-- executes the code defined in "classname". -->
<!-- DO NOT modify! -->
<taskdef name="integrate" classname="org.dita.dost.platform.IntegratorTask">
    <classpath refid="dost.class.path"/>
    </taskdef>

<!-- dita2xhtml is a somewhat arbitrary name that -->
<!-- alludes to the source and target. -->
<!-- It must match the target name in the instance -->
<!-- processing section below. -->
<!-- ${basedir} is the "basedir" defined above. -->
<!-- OK to modify. -->
<target name="all" depends="integrate, dita2xhtml"></target>
    <target name="integrate">
    <integrate ditadir="${basedir}"/>
    </target>

<!-- -->
```

```
<!-- INSTANCE PROCESSING SECTION -->
<!-- -->

<!-- Modify to process a particular source instance. -->
<!-- This sample builds only one target. -->
<!-- You could add other target sections -->
<!-- to build to other targets -->
<!-- (for example, PDF or HTML Help). -->
<!-- If you do that, you must also add appropriate names -->
<!-- (for example, dita2pdf or dita2htmlhelp) -->
<!-- to the "depends" list in the environment -->
<!-- initialization section above. -->

<!-- This section builds to a single target (xhtml). -->
<!-- Target name must match the target name in the -->
<!-- "depends" list in the environment initialization -->
<!-- section. -->
<target name="dita2xhtml">

<!-- The properties included below are input parameters. -->
<!-- They are listed and defined in the DITA OT User Guide -->
<!-- and Reference. -->
<ant antfile="${basedir}/conductor.xml" target="init">

<!-- projdir is defined in the environment initialization -->
<!-- section above. -->
<property name="args.input" value="${projdir}/hierarchy.ditamap"/>

<!-- outdir is defined in the environment initialization -->
<!-- section above. -->
<property name="output.dir" value="${outdir}/xhtml/hierarchy/unfiltered"/>

<!-- Name of the DITA temporary directory where files -->
<!-- are stored during processing. -->
<property name="dita.temp.dir" value="${outdir}/temp"/>

<!-- transformation type (target output type). -->
<property name="transtype" value="xhtml"/>

<!-- The system default extname is .xml. -->
<!-- The following statement changes -->
<!-- the default to .dita. -->
<!-- If you use other extensions -->
<!-- (including .ditamap and .xml, -->
<!-- but also extensions like .jpg and .gif), -->
<!-- you must specify the format attribute in -->
<!-- your source files (for example, format="xml"). -->
<property name="dita.extname" value=".dita"/>
    </ant>
    </target>
    </project>
```

Ant processing parameters

Reference information about Ant processing parameters. Information in the parameter table includes parameter name, whether it is required, definition, usage, valid values, default value, and examples.

The parameters are listed in alphabetical order. The names of required parameters are marked with an asterisk (*).

For examples of how these parameters are used in an Ant build script, see *About Ant scripts*.

Parameter (*Required), Target	Definition, Usage	Valid values, Default, Examples
`args.artlbl` These targets only: eclipsehelp, htmlhelp, javahelp, or xhtml	Adds annotation to images showing the filename of the image. Useful for pre-publishing editing.	Valid: yes or no Default: no
`args.copycss` These targets only: eclipsehelp, htmlhelp, javahelp, or xhtml	Whether to copy user-specified CSS file(s) to the directory specified `{args.outdir}${args.csspath}`.	Valid: yes or no Default: no
`args.css` These targets only: eclipsehelp, htmlhelp, javahelp, or xhtml	Name of user-specified CSS file. Local or remote (web) file. If `${args.csspath}` is a URL, `${args.css}` must be a filepath relative to the URL.	
`args.csspath` These targets only: eclipsehelp, htmlhelp, javahelp, or xhtml	Path to user-specified CSS file. Notes: • If `${args.csspath}` is a URL, it must start with `http://` or `https://`. • Local absolute paths are not supported for `args.csspath`. • Use "/" as the path separator, and do not append a "/" trailing separator (for example, use `css/mycssfiles` rather than `css/mycssfiles/`).	Default: no path Example: `http://www.ibm.com/css`
`args.cssroot` These targets only: eclipsehelp, htmlhelp, javahelp, or xhtml	Root directory of user-specified CSS file. If this parameter is set, `${args.css}` must be a filepath relative to `args.cssroot`.	
`args.dita.locale` These targets only: htmlhelp and javahelp	Locale used for sorting indexterms. If no locale is specified, the first occurrence of "xml-lang" is used as the default locale.	Default (If "xml-lang" is not specified): en-us
`args.draft` All targets	Include draft and required cleanup content (that is, items identified as left to do before publishing).	Valid: yes or no Default: no
`args.eclipsecontent.toc` Targets: eclipsecontent only	Root file name of the output Eclipse content `toc` file.	Default: name of the source ditamap file

Parameter (*Required), Target	Definition, Usage	Valid values, Default, Examples
`args.eclipsehelp.toc` Targets: eclipsehelp only	Root file name of the output Eclipse help `toc` file.	Default: name of the source ditamap file
`args.eclipse.provider` Targets: eclipsehelp only	Provider name of the Eclipse help output.	Default: DITA
`args.eclipse.version` Targets: eclipsehelp only	Version number of the Eclipse help output.	Default: 1.0
`args.fo.img.ext` Target: pdf only	Extension name of the image files in the PDF output. A given target set can contain only one or the other extension (not both). Image files with the non-specified extension will be renamed during the build process.	
`args.fo.output.rel.links` Target: pdf only	Whether links will appear in the output files.	Valid: yes or no Default: no
`args.fo.userconfig` Target: pdf only	Name of the configuration file for FOP processing.	Valid: yes or no Default: no
`args.ftr` These targets only: eclipsehelp, htmlhelp, javahelp, or xhtml	URI of the file containing XHTML to be placed in the body running-footer area of the output file. The file must be well-formed XML.	Example: `<property name="args.ftr" value="file:/c:/sandbox/myftr.xml"/>`
`args.hdf` These targets only: eclipsehelp, htmlhelp, javahelp, or xhtml	URI of the file containing XHTML to be placed in the header area of the output file. The file must be well-formed XML.	Example: `<property name="args.hdf" value="file:/c:/sandbox/myhdf.xml"/>`.
`args.hdr` These targets only: eclipsehelp, htmlhelp, javahelp, or xhtml	URI of the file containing XHTML to be placed in the body running-header area of the output file. The file must be well-formed XML.	Example: `<property name="args.hdr" value="file:/c:/sandbox/myhdr.xml"/>`
`args.htmlhelp.includefile` Target: htmlhelp only	File to be included in the output.	
`args.indexshow` These targets only: eclipsehelp, htmlhelp, javahelp, or xhtml	Whether indexterm entries should display in the output text. Makes is possible to see what has been indexed in a pre-publishing review.	Valid: yes or no Default: no

Parameter (*Required), Target	Definition, Usage	Valid values, Default, Examples
`*args.input` All targets	Path and name of the input file. Use the same case as the filename.	Example: `<property name="args.input" value="mastermap.ditamap"/>`
`args.javahelp.map` Target: javahelp only	Root file name of the output JavaHelp map file.	Default: name of the input ditamap file
`args.javahelp.toc` Target: javahelp only	Root file name of the output JavaHelp toc file.	Default: name of the input ditamap file
`args.outext` These targets only: eclipsehelp, htmlhelp, javahelp, or xhtml	Output file extension name for generated XHTML files. In most browser environments, either html or htm is acceptable.	Valid: html or htm Default: html

`args.logdir`
All targets
	Directory used to store generated Ant log files.
	If you generate several outputs in a single build, the following rules apply:
	• If you specified a common `logdir` for all transformations, it will be used as the log directory.
	• If you did not specify a common `logdir` for all transformations:
	  • If all individual transforms have the same output directory, it will be used as the log directory
	  • If all individual transforms do not have the same output directory, `basedir`it will be used as the log directory
		Default: output directory specified by `output.dir`

`args.xhtml.toc` Target: xhtml only	Root file name of the output XHTML toc file.	Default: index
`args.xsl` All targets except Eclipse content and troff	xsl transform file that will replace the default file: • For transtype="docbook", dita2docbook.xsl will be replaced. • For transtype="eclipsehelp" or transtype="xhtml": dita2xhtml.xsl. • For transtype="html" or transtype="javahelp": dita2html.xsl.	Example: `<property name="args.input" value="mastermap.ditamap"/>`

Parameter (*Required), Target	Definition, Usage	Valid values, Default, Examples
	• For transtype="pdf": dita2fo-shell.xsl. • For transtype="rtf": dita2rtfImpl.xsl.	
basedir All targets	Path of the working directory for transformations. Notes: • If `basedir` is a relative path, it will be set relative to the current directory. • For Ant scripts, the default is the path set in the Ant build file. • For the Java command line, the default is the current directory.	Example: `<project name="proj1" default="all" basedir="c:/ditaot"/>`
clean.temp All targets	Whether to clean the `temp` directory before each build.	Valid: yes or no Default: no
dita.dir All targets	Absolute path of the Toolkit's home directory.	
dita.extname All targets	File extension of the DITA source files. If you use extensions other than the default or the one you specify with this processing option (including .ditamap, but also extensions like .jpg and .gif) you must specify the format attribute (for example, format="pdf") in your source file references. If you don't, you will get an error message.	Default: .xml in release 1.2; .dita in release 1.3 Example: <property name="dita.extname" value=".dita"/>
dita.input.valfile All targets	Name of the ditaval file that contains filter/flagging/revision information.	
dita.temp.dir All targets	Directory for the temporary files generated during the build.	Default: temp
***output.dir** All targets	Path of the output directory.	Example: <property name="output.dir" value="${projdir}/out/xhtml"/>
***transtype** All targets	Type of output to be produced.	Valid: docbook, eclipsecontent, eclipsehelp, htmlhelp, javahelp, pdf, troff, wordrtf, or xhtml Example: <property name="transtype" value="htmlhelp">

About the garage sample

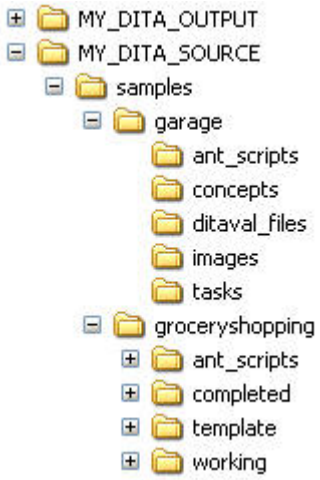
Information about the garage sample.

Definition

The garage sample, which is located in the `ditaot/samples` directory, is a set of DITA source files containing concepts and tasks related to organizing and doing tasks in a garage. The sample map files allow the topics to be published as either a hierarchy or a sequence. The sample also includes Ant scripts to allow you to publish to all supported target environments.

Usage

Before you begin to use the sample files (which includes both the garage sample and the grocery shopping sample), we recommend creating two directories in your root directory called `MY_DITA_SOURCE` and `MY_DITA_OUTPUT` (Windows examples would be `C:/MY_DITA_SOURCE` and `C:/MY_DITA_OUTPUT`) and then copying both the garage and grocery shopping sample files from the `ditaot/samples` directory to `MY_DITA_SOURCE`. Your directory structure should then look like this:



The garage sample includes Ant scripts that process to all supported target environments. A filtering (conditional processing) script is also included: `garage_filtering_xhtml.xml`. This script filters out (excludes) all files having to do with oil or snow, which are tagged with the "otherprops" attribute. Running this script produces a hierarchically organized output file with four of the topics excluded.

Processing to XHTML targets

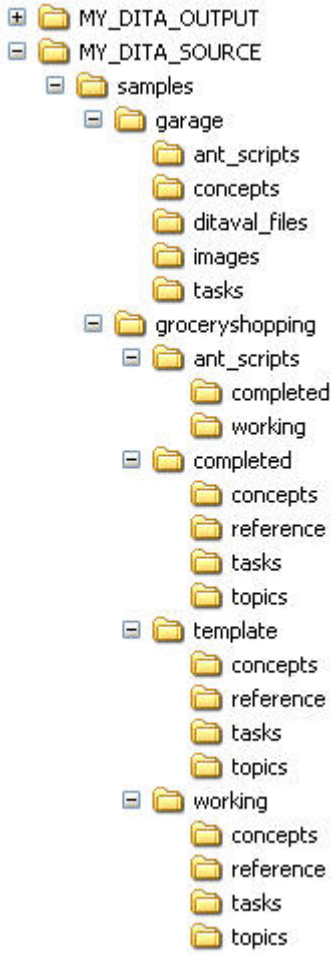
How to process (build) to XHTML output targets using the garage sample.

This topic assumes you have already installed DITA Open Toolkit and its prerequisite products, and have verified your installation, as described in the installation chapter of this document.

In general, the instructions in this topic assume the Windows environment; the procedure is very similar in other operating system environments.

1. If you have not already done so, create `MY_DITA_OUTPUT` and `MY_DITA_SOURCE` directories in the root directory of your `C:` drive (or your `/home` directory in Linux).
2. If you have not already done so, copy the garage sample files into the `MY_DITA_SOURCE` directory.

   You should have a directory structure that looks like this:



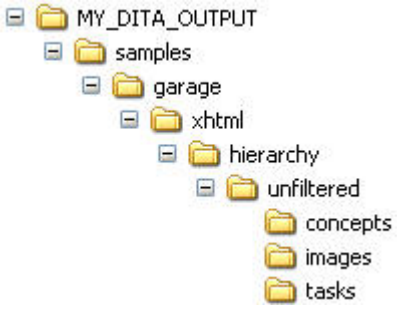
3. View and edit, if necessary for your specific working environment, `MY_DITA_SOURCE/ant_scripts/garage_hierarchy_xhtml.xml`.

   These are the significant Ant parameters and how they are set:

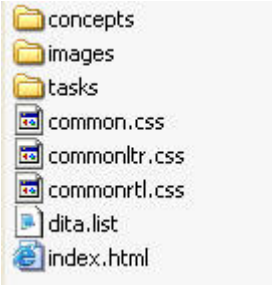
   - **args.outdir** is set to send the output to `MY_DITA_OUTPUT`.
   - **args.input** is set to use the hierarchy ditamap.
   - **transtype** is set to xhtml.

4. In the Command Prompt, move to `MY_DITA_SOURCE/samples/garage/ant_scripts` and invoke the above Ant script.
   For example: `ant -f garage_hierarchy_xhtml.xml`
5. After the XHTML file has processed successfully, go to the `MY_DITA_OUTPUT` directory.

   Your directory structure should look like this:



   The `unfiltered` subdirectory should contain these directories and files:



6. Open the file `index.html` in your browser to view the XHTML output.

   The browser window should look something like this:

Processing to HTML Help targets

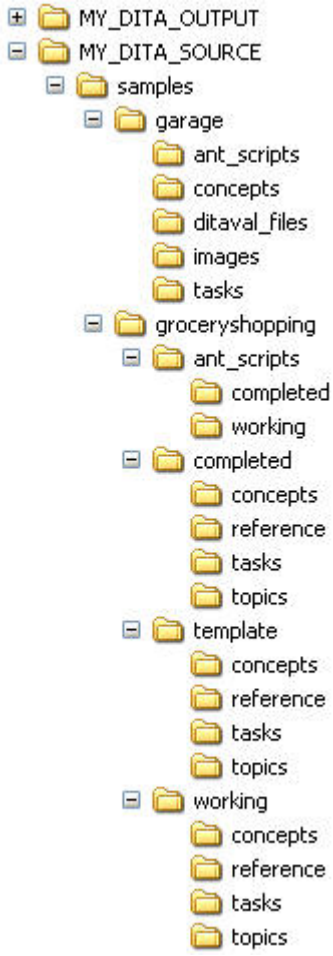
How to process (build) to HTML Help output targets using the garage sample.

This topic assumes you have already installed DITA Open Toolkit and its prerequisite products, and have verified your installation, as described in the installation chapter of this document.

In general, the instructions in this topic assume the Windows environment; the procedure is very similar in other operating system environments.

1. If you have not already done so, create `MY_DITAOUTPUT` and `MY_DITA_SOURCE` directories in the root directory of your `C:` drive (or your `/home` directory in Linux).
2. If you have not already done so, copy the sample files into the `MY_DITA_SOURCE` directory.

   You should have a directory structure that looks like this:



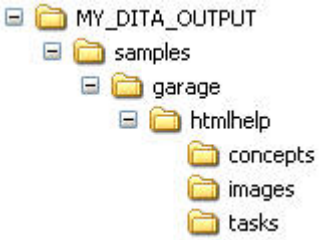
3. View and edit, if necessary for your specific working environment, `MY_DITA_SOURCE/ant_scripts/garage_hierarchy_htmlhelp.xml`.

   These are the significant Ant parameters and how they are set:

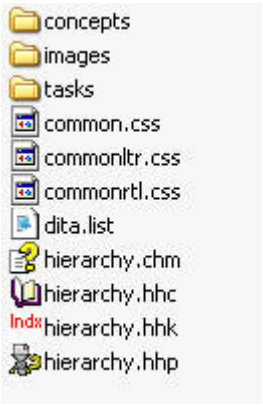
   1. **args.outdir** is set to send the output to `MY_DITA_OUTPUT`.
   2. **args.input** is set to use the hierarchy ditamap.
   3. **transtype** is set to htmlhelp.

4. In the Command Prompt, go to `MY_DITA_SOURCE/samples/garage/ant_scripts` and invoke the above Ant script.
   For example: `ant -f garage_hierarchy_htmlhelp.xml`
5. After the HTML Help file has processed successfully, move to the `MY_DITA_OUTPUT` directory.

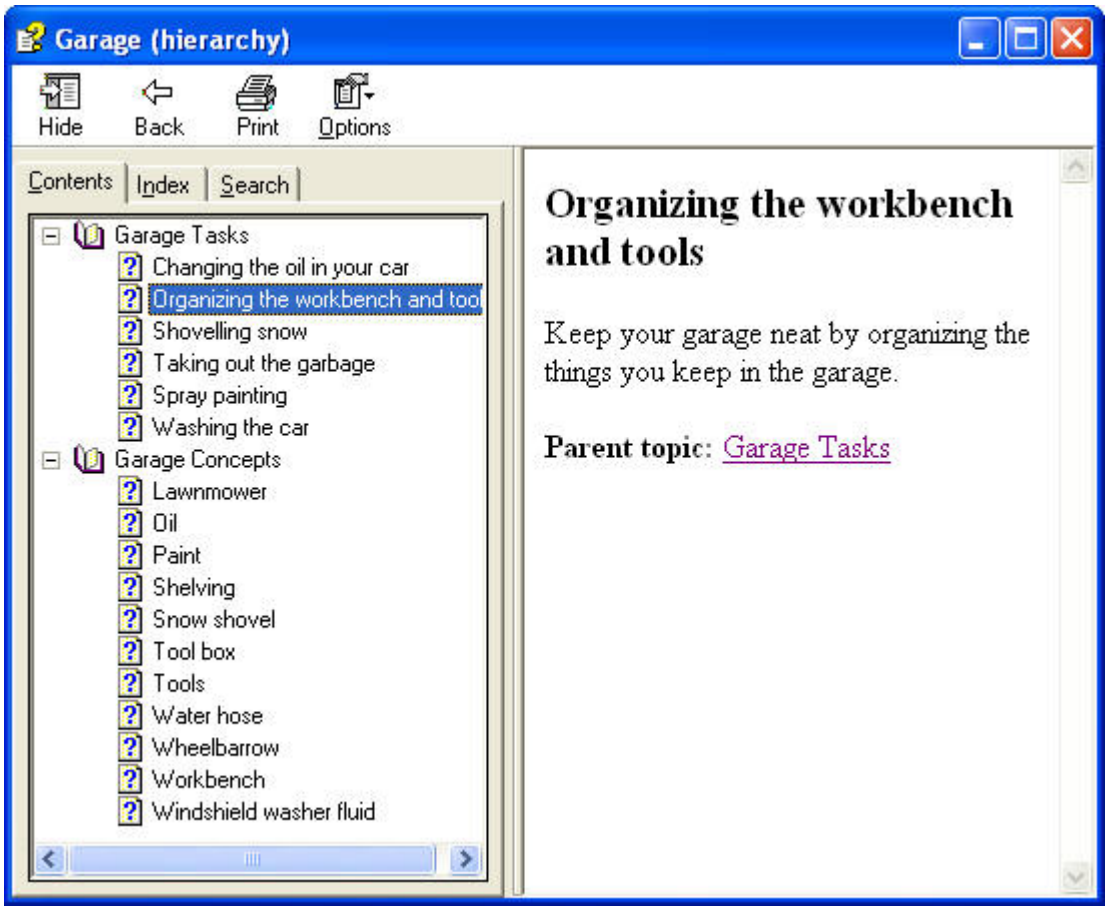
   Your directory structure should look like this:



   The `htmlhelp` directory should contain these directories and files:



6. Open the file `hierarchy.chm` in your browser to view the HTML Help output.
   The window should look something like this:



Processing to PDF2 targets

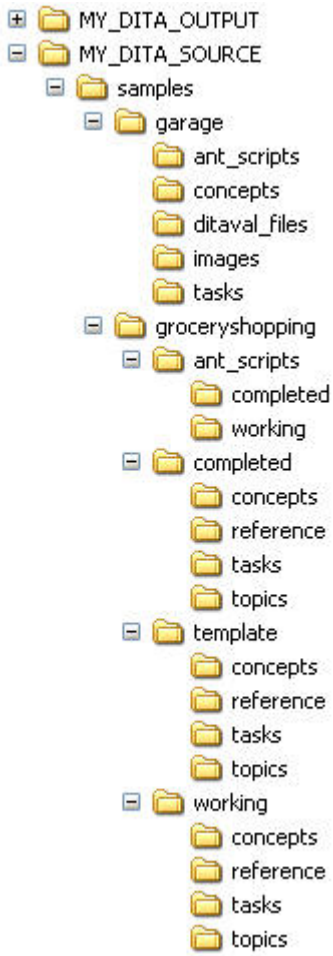
How to process (build) to PDF2 output targets using the garage sample.

This topic assumes you have already installed DITA Open Toolkit and its prerequisite products, and have verified your installation, as described in the installation chapter of this document. Before generating PDF2 output, you must have the Idiom FO plugin processor installed. See *Installing the Idiom FO plug-in* on page 124 for information on how to do this.

In general, the instructions in this topic assume the Windows environment; the procedure is very similar in other operating system environments.

1. If you have not already done so, create `MY_DITA_OUTPUT` and `MY_DITA_SOURCE` directories in the root directory of your `C:` drive (or your `/home` directory in Linux).
2. If you have not already done so, copy the garage sample files into the `MY_DITA_SOURCE` directory.

   You should have a directory structure that looks like this:



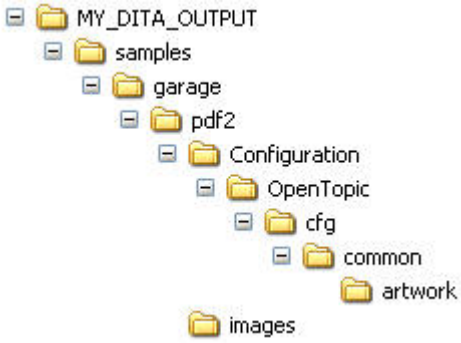
3. View and edit, if necessary for your specific working environment, `MY_DITA_SOURCE/ant_scripts/garage_hierarchy_pdf2.xml`.

   These are the significant Ant parameters and how they are set:

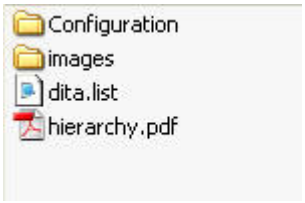
   - **args.outdir** is set to send the output to `MY_DITA_OUTPUT`.
   - **args.input** is set to use the hierarchy ditamap.
   - **transtype** is set to pdf2.

4. In the Command Prompt, move to `MY_DITA_SOURCE/samples/garage/ant_scripts` and invoke the above Ant script.
   For example: `ant -f garage_hierarchy_pdf2.xml`
5. After the PDF2 file has processed successfully, go to the `MY_DITA_OUTPUT` directory.

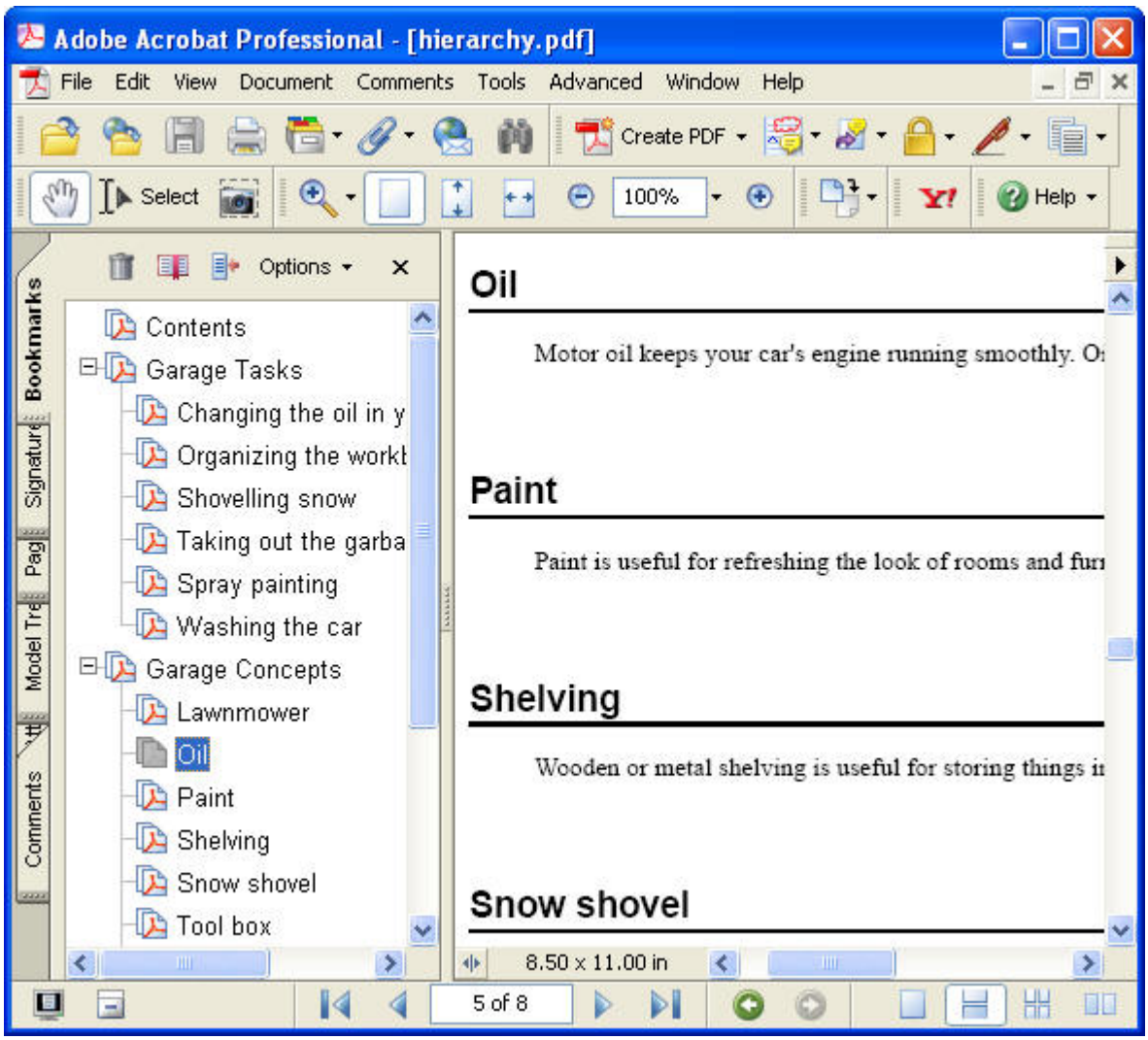
   Your directory structure should look like this:



The `pdf2` subdirectory should contain these directories and files:



6. Open the file `hierarchy.pdf` in a PDF reader to view the PDF2 output.
   The window should look something like this:



Processing to DocBook targets

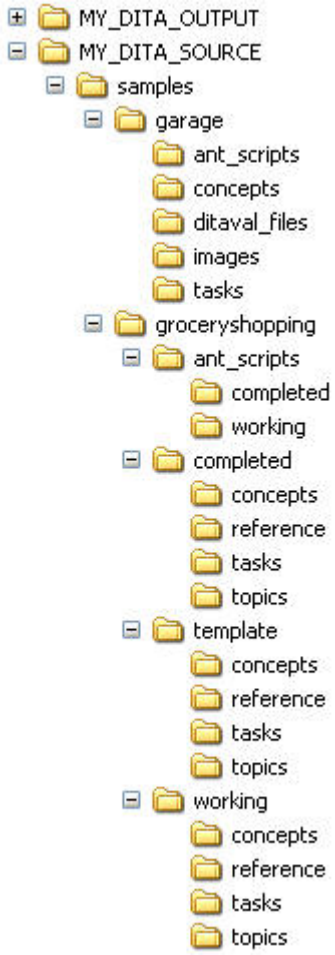
How to process (build) to DocBook output targets using the garage sample.

This topic assumes you have already installed DITA Open Toolkit and its prerequisite products, and have verified your installation, as described in the installation chapter of this document.

In general, the instructions in this topic assume the Windows environment; the procedure is very similar in other operating system environments..

1. If you have not already done so, create `MY_DITA_OUTPUT` and `MY_DITA_SOURCE` directories in the root directory of your `C:` drive (or your `/home` directory in Linux).
2. If you have not already done so, copy the garage sample files into the `MY_DITA_SOURCE` directory.

   You should have a directory structure that looks like this:

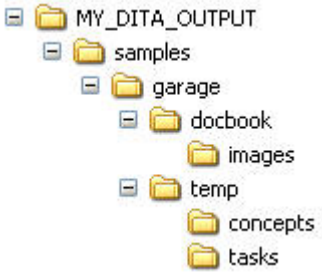


3. View and edit, if necessary for your specific working environment, `MY_DITA_SOURCE/ant_scripts/garage_hierarchy_docbook.xml`.

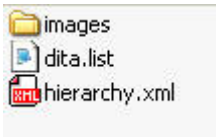
   These are the significant Ant parameters and how they are set:

   - **args.outdir** is set to send the output to `MY_DITA_OUTPUT`.
   - **args.input** is set to use the hierarchy ditamap.
   - **transtype** is set to docbook.

4. In the Command Prompt, move to `MY_DITA_SOURCE/samples/garage/ant_scripts` and invoke the above Ant script.
   For example: `ant -f garage_hierarchy_docbook.xml`
5. After the DocBook file has processed successfully, go to the `MY_DITA_OUTPUT` directory.
   Your directory structure should look like this:



   The `docbook` subdirectory should contain these directories and files:



6. Open the file `hierarchy.xml` to view the DocBook output.
   In Arbortext Editor, the file should look something like this:

```
 1: <?xml version="1.0" encoding="utf-8" standalone="no"?>
 2:
 3: <!DOCTYPE article
 4:   PUBLIC "-//OASIS//DTD DocBook XML V4.2//EN" "http://www.
 5: <article>
 6:    <title>Garage (hierarchy)</title>
 7:    <para/>
 8:    <section remap="concept" id="garagetaskoverview">
 9:       <sectioninfo id="prlgd1e8" remap="prolog">
10:          <author id="athrd1e10" remap="author">IBM</author
11:          <author id="athrd1e13" remap="author">Anna van Ra
12:          <publisher id="pblshrd1e16" remap="publisher">OAS
13:          <copyright id="cprghtd1e19" remap="copyright">
14:
15:
16:             <holder id="cprhldrd1e23" remap="copyrholder">
17:
18:          </copyright>
19:          <revhistory id="crtdtsd1e27" remap="critdates">
20:
21:             <revision>
22:                <revnumber/>
23:                <date/>
24:                <revremark>created</revremark>
25:             </revision>
26:
```

Processing to Eclipse content targets

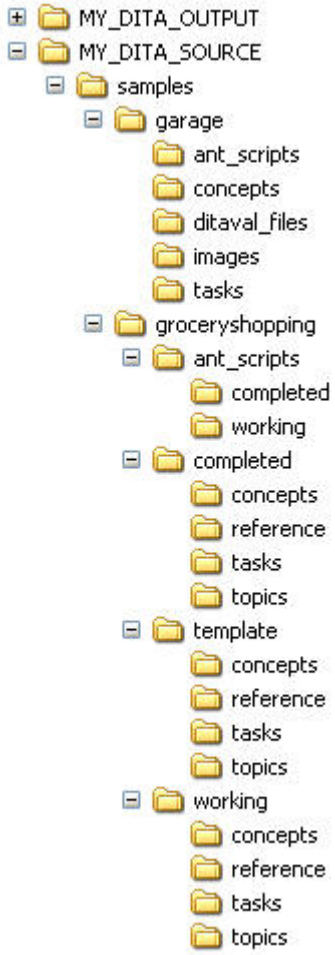
How to process (build) to Eclipse content output targets using the garage sample.

This topic assumes you have already installed DITA Open Toolkit and its prerequisite products, and have verified your installation, as described in the installation chapter of this document.

In general, the instructions in this topic assume the Windows environment; the procedure is very similar in other operating system environments.

1. If you have not already done so, create `MY_DITA_OUTPUT` and `MY_DITA_SOURCE` directories in the root directory of your `C:` drive (or your `/home` directory in Linux).
2. If you have not already done so, copy the garage sample files into the `MY_DITA_SOURCE` directory.

   You should have a directory structure that looks like this:



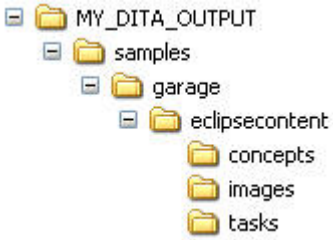
3. View and edit, if necessary for your specific working environment, `MY_DITA_SOURCE/ant_scripts/garage_hierarchy_eclipsecontent.xml`.

   These are the significant Ant parameters and how they are set:

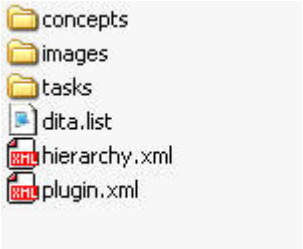
   - **args.outdir** is set to send the output to `MY_DITA_OUTPUT`.
   - **args.input** is set to use the hierarchy ditamap.
   - **transtype** is set to eclipsecontent.

4. In the Command Prompt, move to `MY_DITA_SOURCE/samples/garage/ant_scripts` and invoke the above Ant script.
   For example: `ant -f garage_hierarchy_eclipsecontent.xml`
5. After the Eclipse content file has processed successfully, go to the `MY_DITA_OUTPUT` directory.

   Your directory structure should look like this:



   The `eclipsecontent` subdirectory should contain these directories and files:



6. Open the file `hierarchy.xml` in Eclipse to view the Eclipse content output.

Processing to Eclipse help targets

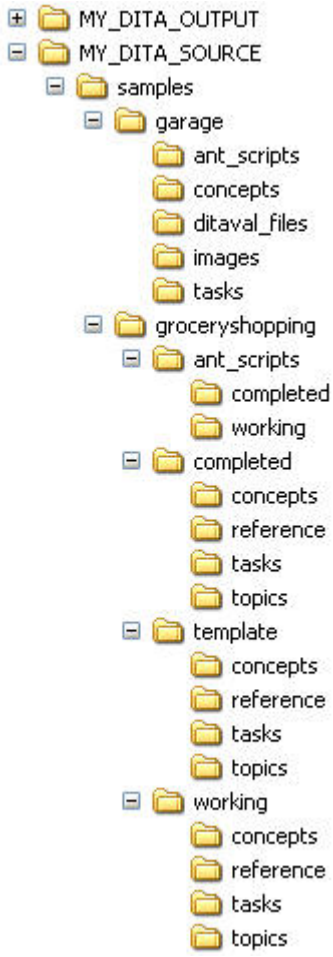
How to process (build) to Eclipse help output targets using the garage sample.

This topic assumes you have already installed DITA Open Toolkit and its prerequisite products, and have verified your installation, as described in the installation chapter of this document.

In general, the instructions in this topic assume the Windows environment; the procedure is very similar in other operating system environments.

1. If you have not already done so, create `MY_DITA_OUTPUT` and `MY_DITA_SOURCE` directories in the root directory of your `C:` drive (or your `/home` directory in Linux).
2. If you have not already done so, copy the garage sample files into the `MY_DITA_SOURCE` directory.

   You should have a directory structure that looks like this:



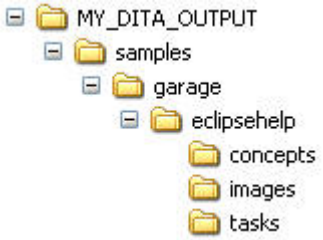
3. View and edit, if necessary for your specific working environment, `MY_DITA_SOURCE/ant_scripts/garage_hierarchy_eclipsehelp.xml`.

   These are the significant Ant parameters and how they are set:

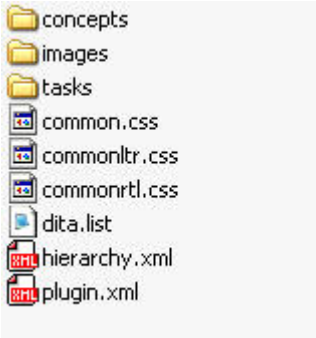
   - **args.outdir** is set to send the output to `MY_DITA_OUTPUT`.
   - **args.input** is set to use the hierarchy ditamap.
   - **transtype** is set to eclipsehelp.

4. In the Command Prompt, move to `MY_DITA_SOURCE/samples/garage/ant_scripts` and invoke the above Ant script.
   For example: `ant -f garage_hierarchy_eclipsehelp.xml`
5. After the Eclipse help file has processed successfully, go to the `MY_DITA_OUTPUT` directory.

   Your directory structure should look like this:



   The `htmlhelp` subdirectory should contain these directories and files:



6. Open the file `hierarchy.xml` in Eclipse to view the Eclipse help output.

Processing to Eclipse help targets using Eclipse

How to process (build) to Eclipse help targets using Eclipse.

This topic assumes you are already familiar with the Eclipse environment and know how to develop Eclipse plug-ins.

This topic assumes you want to author DITA topics making up an Eclipse help plug-in using Eclipse to both edit and build the content.

1. Start Eclipse and create a new Eclipse plug-in development project.
2. Apply the DITA template to the new project. This causes the template wizard to start.
3. In the wizard, set:
   - the source directory
   - the DITA map file
   - the output directory
   - the CSS directory
   - the name of any customized CSS file
   - the name of any ditaval file

   The main DITA map will be created in the source directory and `build.xml` will be created in the root directory.
4. Edit one or more DITA topic files in the source directory.
5. Update the DITA map file to include the topics created.
6. Select `build.xml` and run it with Ant.
   The DITA output should now be in the output directory.
7. Edit the plug-in description in the plug-in editor, referring to the TOC files generated in the output directory.
8. Update the build property file to include all the output files.
9. Export the output files to a document plug-in.

Processing to JavaHelp targets

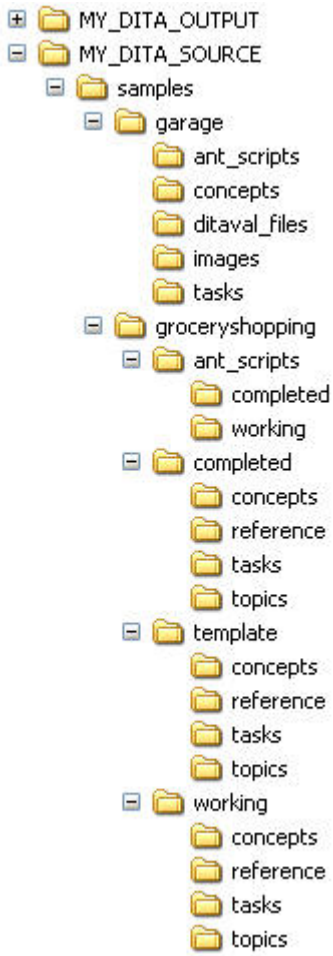
How to process (build) to JavaHelp output targets using the garage sample.

This topic assumes you have already installed DITA Open Toolkit and its prerequisite products, and have verified your installation, as described in the installation chapter of this document. Before generating JavaHelp output, you must have the JavaHelp processor installed. See *(Optional) Installing JavaHelp on Windows* on page 41 for information on how to do this.

In general, the instructions in this topic assume the Windows environment; the procedure is very similar in other operating system environments.

1. If you have not already done so, create `MY_DITA_OUTPUT` and `MY_DITA_SOURCE` directories in the root directory of your `C:` drive (or your `/home` directory in Linux).
2. If you have not already done so, copy the garage sample files into the `MY_DITA_SOURCE` directory.

   You should have a directory structure that looks like this:



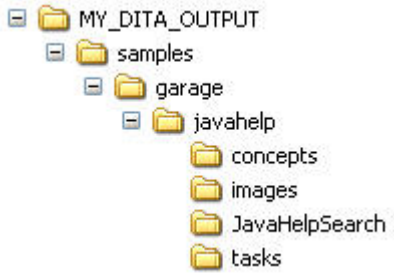
3. View and edit, if necessary for your specific working environment, `MY_DITA_SOURCE/ant_scripts/garage_hierarchy_javahelp.xml`.

   These are the significant Ant parameters and how they are set:

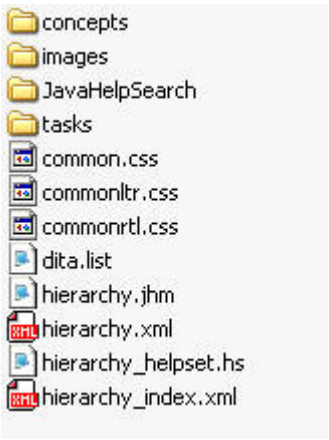
   - **args.outdir** is set to send the output to `MY_DITA_OUTPUT`.
   - **args.input** is set to use the hierarchy ditamap.
   - **transtype** is set to javahelp.

4. In the Command Prompt, move to `MY_DITA_SOURCE/samples/garage/ant_scripts` and invoke the above Ant script.
   For example: `ant -f garage_hierarchy_javahelp.xml`
5. After the JavaHelp file has processed successfully, go to the `MY_DITA_OUTPUT` directory.

   Your directory structure should look like this:

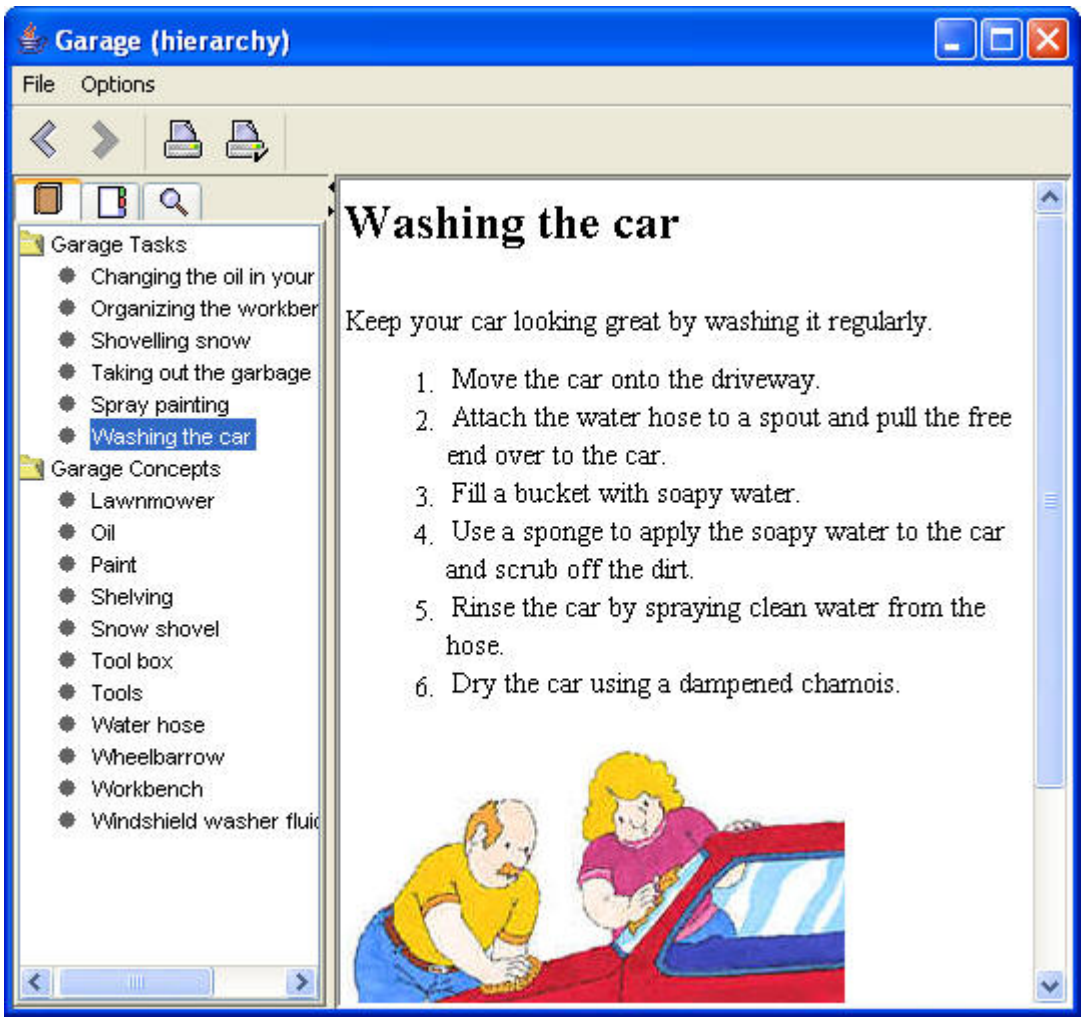


The `javahelp` subdirectory should contain these directories and files:



6. Using the JavaHelp Viewer, open the file `hierarchy_helpset.hs` to view the JavaHelp output. You can start the Viewer by entering the command `java -jar %JHHOME%\demos\bin\hsviewer.jar` from the command line.

   The window should look something like this:



Processing to troff targets

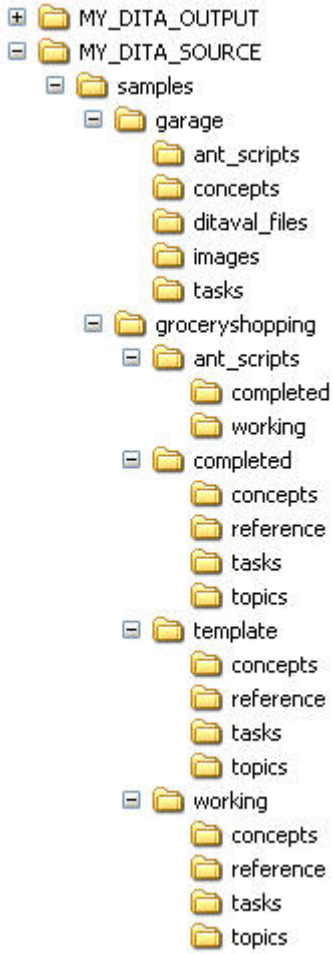
How to process (build) to troff output targets using the garage sample.

This topic assumes you have already installed DITA Open Toolkit and its prerequisite products, and have verified your installation, as described in the installation chapter of this document.

In general, the instructions in this topic assume the Windows environment; the procedure is very similar in other operating system environments.

1. If you have not already done so, create `MY_DITA_OUTPUT` and `MY_DITA_SOURCE` directories in the root directory of your `C:` drive (or your `/home` directory in Linux).
2. If you have not already done so, copy the garage sample files into the `MY_DITA_SOURCE` directory.

   You should have a directory structure that looks like this:



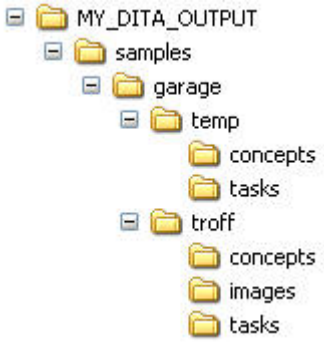
3. View and edit, if necessary for your specific working environment, `MY_DITA_SOURCE/ant_scripts/garage_hierarchy_troff.xml`.

   These are the significant Ant parameters and how they are set:

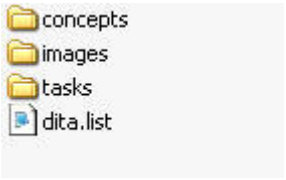
   - **args.outdir** is set to send the output to `MY_DITA_OUTPUT`.
   - **args.input** is set to use the hierarchy ditamap.
   - **transtype** is set to troff.

4. In the Command Prompt, move to `MY_DITA_SOURCE/samples/garage/ant_scripts` and invoke the above Ant script.
   For example: `ant -f garage_hierarchy_troff.xml`
5. After the troff file has processed successfully, go to the `MY_DITA_OUTPUT` directory.

   Your directory structure should look like this:



The `hierarchy` subdirectory should contain these directories and files:



6. Open the file `troff.xml` to view the troff output.

   The file should look something like this:

```
.ad l

.ll 72

.ce 1000
\fBGarage Concepts\fR
.ce 0

.sp 2
A well-stocked garage can be the envy of the neighborhood.
.sp 2
   Lawnmower
.br

.sp 2
   Oil
.br

.sp 2
   Paint
.br
```

Processing to Word RTF targets

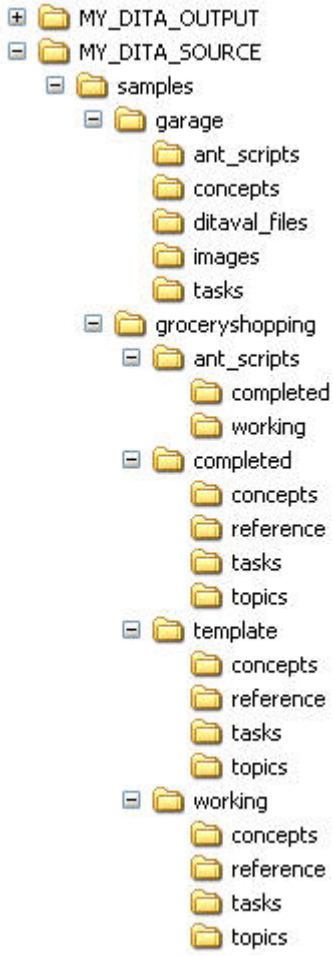
How to process (build) to Word RTF output targets using the garage sample.

This topic assumes you have already installed DITA Open Toolkit and its prerequisite products, and have verified your installation, as described in the installation chapter of this document.

In general, the instructions in this topic assume the Windows environment; the procedure is very similar in other operating system environments.

1. If you have not already done so, create `MY_DITA_OUTPUT` and `MY_DITA_SOURCE` directories in the root directory of your `C:` drive (or your `/home` directory in Linux).
2. If you have not already done so, copy the garage sample files into the `MY_DITA_SOURCE` directory.

   You should have a directory structure that looks like this:



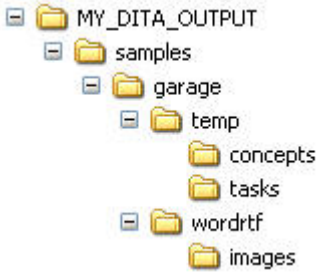
3. View and edit, if necessary for your specific working environment, `MY_DITA_SOURCE/ant_scripts/garage_hierarchy_wordrtf.xml`.

   These are the significant Ant parameters and how they are set:

   - **args.outdir** is set to send the output to `MY_DITA_OUTPUT`.
   - **args.input** is set to use the hierarchy ditamap.
   - **transtype** is set to wordrtf.

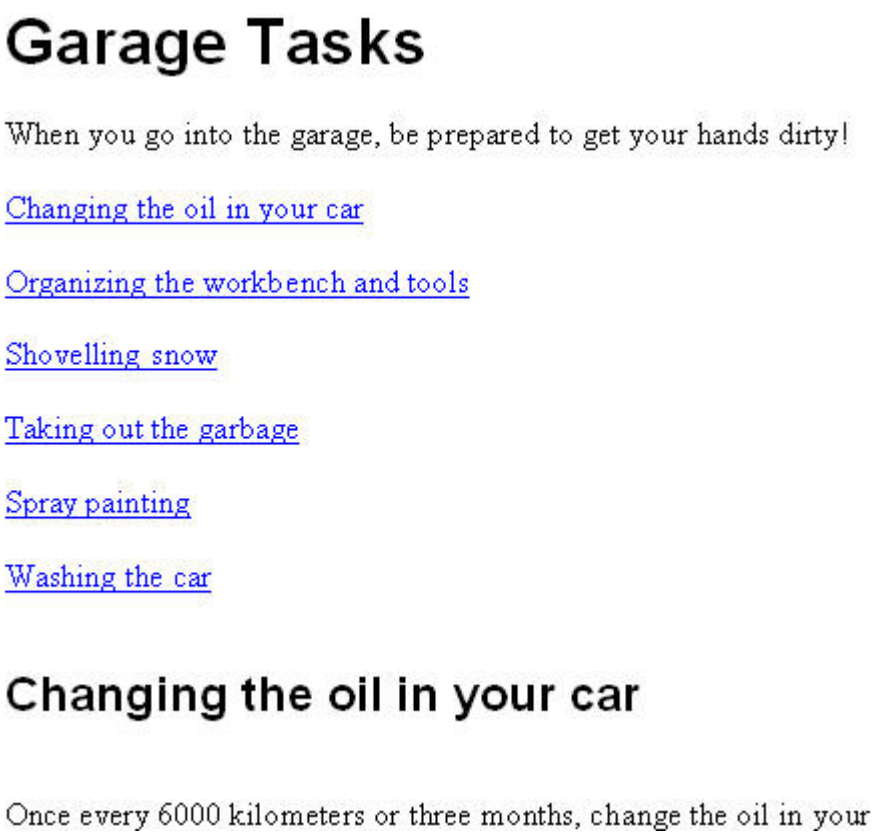
4. In the Command Prompt, move to `MY_DITA_SOURCE/samples/garage/ant_scripts` and invoke the above Ant script.
   For example: `ant -f garage_hierarchy_wordrtf.xml`
5. After the Word RTF file has processed successfully, go to the `MY_DITA_OUTPUT` directory.

   Your directory structure should look like this:



   The `wordrtf` subdirectory should contain these directories and files:

6. Open the file `hierarchy.rtf` in Microsoft Word to view the Word RTF output.
   The file should look something like this:



Processing from the Java command line

How to process (build) using the Java command line interface as an alternative to using Ant directly.

Under certain circumstances it may be desirable to run the Toolkit build code by invoking the Java JVM from the command line instead of by invoking Ant. The Toolkit provides a way to do this by supporting a set of command-line parameters. When invoking the Toolkit build code from the Java command line, the inputs to Ant are stored in a temporary file by the Toolkit Java code, and then Ant is invoked to carry out the build.

Note: When using the Java command line, you still must have Ant installed.

Running a Java command line example

1. Go to the DITA Open Toolkit installation directory.
2. On the command line, enter the following command:

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

This example creates a properties file, and then calls Ant using this properties file to build the garage sample `sequence.ditamap` file and produce XHTML output to the `out` directory.

Note:

- In this example, the character slash preceded by a space is the separator for each parameter.
- The internally generated properties file is saved in the `${args.logdir}` directory. The following command shows an example of using this properties file with Ant:

```
ant -f conductor.xml -propertyfile ${args.logdir}/property.temp
```

Supported parameters

Parameters supplied on the Java command line are equivalent to similar parameters used in Ant build scripts. The Ant build script parameters are described in *Ant processing parameters* on page 63. The following table lists the parameters you can provide on the Java command line and the equivalent parameter that can be supplied in an Ant build script.

Java parameter	Equivalent Ant script parameter
/artlbl	args.artlbl
/basedir	basedir
/cleantemp	clean.temp
/copycss	args.copycss
/css	args.css
/cssroot	args.cssroot
/csspath	args.csspath
/ditalocale	args.dita.locale
/draft	args.draft
/ditadir	dita.dir
/ditaext	dita.extname
/eclipsecontenttoc	args.eclipsecontent.toc
/eclipsehelptoc	args.eclipsehelp.toc
/filter	args.input.valfile
/fouserconfig	args.fo.userconfig
/foimgext	args.fo.img.ext
/fooutputrellinks	args.fo.output.rel.links
/ftr	args.ftr
/hdf	args.hdf
/hdr	args.hdr
/htmlhelpincludefile	args.htmlhelp.includefile
/i	args.input
/id	dita.input.dirname
/if	dita.input
/indexshow	args.indexshow

Java parameter	Equivalent Ant script parameter
/javahelpmap	args.javahelp.map
/javahelptoc	args.javahelp.toc
/logdir	args.logdir
/outdir	args.outdir
/outext	args.outext
/provider	args.eclipse.provider
/tempdir	dita.temp.dir
/transtype	transtype
/version	args.eclipse.version
/xhtmltoc	args.xhtml.toc
/xsl	args.xsl

Production notes (processing)

Production notes for the processing (building) section of this document.

Ant script used to build this document

To produce this document we used an Ant build script containing targets for building all transformation types (often called "transtypes" or "targets") supported by DITA Open Toolkit. The location of the Toolkit, the location of the source files, and the location of the output files are variables that can be changed. These lines at the beginning of the script show how this is done:

```
<?xml version="1.0" encoding="UTF-8" ?>
<!-- (c) Copyright IBM Corp. 2004, 2005 All Rights Reserved. -->
<project name="toolkitug" default="all" basedir="c:/ditaot">

 <!-- Location of project working files -->
 <property name="projdir" value="c:/DITAOT_UGRef_SOURCE"/>
 <property name="outdir" value="c:/DITAOT_UGRef_OUTPUT"/>
 <property name="args.logdir" value="${outdir}"/>
```

In the Windows operating environment we built to all transtypes to make sure they would build cleanly. On Linux, we tested XHTML output only.

We use a Windows batch file (`runbuild.bat`) to initiate the build. The batch file calls the DITA Ant logger that types a summary of build progress on the console (rather than a more verbose set of messages) and uses a log file to capture the details. Here is our batch file:

```
ant -f ant_scripts\DITAOT_UGRef_all.xml -logger org.dita.dost.log.DITAOTBuildLogger %1
```

This method gives us enough information on the console screen to tell whether or not the build was successful and whether any errors occurred that need immediate attention.

For more information (processing)

Additional sources of information for the processing (building) section of this document.

We found the O'Reilly Java series book, *Ant: The Definitive Guide*, by Steve Holzner, useful in helping us work through processing problems as we produced this document.

Troubleshooting the build process

How to troubleshoot the build process.
How to capture and use the log generated by DITA Open Toolkit to debug processing (build) problems.
Overview of how to identify and interpret error messages generated by DITA Open Toolkit.
Error messages generated by DITA Open Toolkit.
Error messages generated by one of the tools in the Java infrastructure.
Troubleshooting CLASSPATH and environment variable setup.
Information about tools and techniques you can use to debug your processing problems, get information about your source files, and generate DITA files automatically from XML-based source code.
How to use the debugging and reporting tools.
Production notes for the troubleshooting section of this document.
Additional sources of information for the troubleshooting section of this document.

Processing (building) a DITA document results in one of three possible outcomes:

- The build was successful. You got a BUILD SUCCESSFUL message from Ant.
- You got a BUILD SUCCESSFUL message from Ant, but errors messages were generated that you need to fix, or your output is not what you expect.
- The build failed. You got a BUILD FAILED message from Ant.

This section helps you deal with the second and third cases, where you need to debug processing problems. It describes tools and mechanisms available to you in the Toolkit itself, other tools available for the Ant/Java environment, and various strategies you can apply to find and fix processing errors quickly.

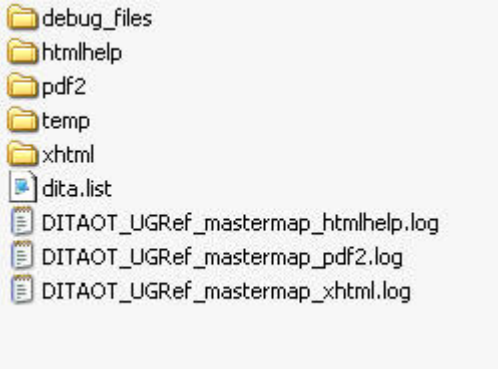
Capturing and using the log

How to capture and use the log generated by DITA Open Toolkit to debug processing (build) problems.

In order to troubleshoot a build problem, it is useful to capture the Ant build output in a log file and to control the type of output Ant puts in the log. Here is an example of invoking Ant and capturing the Ant output in the file `antoutput.log`. The `-quiet` Ant command-line option is specified to eliminate non-error messages from the log.

```
ant -f ant\sample_xhtml.xml -quiet -l antoutput.log
```

The current version of the log file for each output target is placed in the document's base output directory. The prior version of the log file is replaced with each new build. Here is a set of log files for HTML Help, PDF2, and XHTML builds of this document.



Here is the beginning of the xhtml log file.

```
  [echo] Building debugging cross-reference file ditadebug.txt
  [echo] Building URL check file ditalinks.txt
Processing started...
Init log directory and file name...
Validate and init input arguments...
  [echo] ********************************************************************
  [echo] * basedir = C:\ditaot
  [echo] * dita.dir = C:\ditaot
  [echo] * input = c:/DITAOT_UGRef_SOURCE/DITAOT_UGRef_mastermap.ditamap
  [echo] * transtype = xhtml
  [echo] * tempdir = c:/DITAOT_UGRef_OUTPUT/temp
  [echo] * outputdir = c:/DITAOT_UGRef_OUTPUT/xhtml
  [echo] * extname = .dita
  [echo] * clean.temp = ${clean.temp}
  [echo] * xslt.parser = SAXON
  [echo] ********************************************************************
Preprocessing started...
Clean temp directory...
  [delete] Deleting 299 files from C:\DITAOT_UGRef_OUTPUT\temp
  [delete] Deleted 25 directories from C:\DITAOT_UGRef_OUTPUT\temp
Generate file list...
Copy image files...
Copy html files...
Copy flag files...
Copy generated files...
  [copy] Copying 1 file to C:\DITAOT_UGRef_OUTPUT
Debug input files...
Debug and filter input files...
Debug and filter input files...
Move index entries...
Resolve conref in input files...
```

DITA Open Toolkit Error Messages Overview

Overview of how to identify and interpret error messages generated by DITA Open Toolkit.

For reference information about error messages generated by the Toolkit, see *Messages generated by the Toolkit* on page 93.

For reference information about other messages generated during Toolkit processing, see *Messages generated from other sources*

Messages in a DITA Toolkit log that begin with the DOT are produced by the Toolkit software. Messages produced by other tools (for example, Java JDK or XML parser) are also generated. The Toolkit messages are of three types:

1. Messages beginning with DOTA from the Ant build scripts, for example, DOTA001F.
2. Messages beginning with DOTJ from the Toolkit Java code `lib/dost.jar`, for example, DOTJ008F.
3. Messages beginning with DOTX from the Toolkit XSLT transforms in the `xsl` directory, for example, DOTX009W.

Messages are accompanied by one or more lines of text, with the message as the last line. Each message has a message number, a type (or severity), message text, and a suggested user action to correct the problem. Here is an example of a message:

```
BUILD FAILED
C:\sandbox\ant\messages_xhtml.xml:18: The following error occurred while executing this
line:
C:\sandbox\conductor.xml:101: The following error occurred while executing this line:
C:\sandbox\conductor.xml:113: [DOTA002F][FATAL] Invalid input. Provide valid args.input
and dita.input
```

In this case the message (number DOTA002F) indicates a fatal error (type FATAL) found in the Ant build scripts. The message text is "Invalid input" and the recommended action is "Provide valid ...". The traceback shows the error occurred in line 101 of conductor.xml, which was invoked by line 18 of `messages_xhtml.xml`.

Here is another sample message DOTX040I of type INFO from an XSLT transform:

```
[xslt] file:/C:/sandbox/xsl/common/output-message.xsl:57:16: Warning!
[xslt] (File = C:\sandbox\doc\ditaug\concepts\access.dita, Element = draft-comment:1)
[xslt] [DOTX040I][INFO]: Draft comment area found.
If the output is only used as a draft, you do not need to do anything.
If you are producing production-level output, you should not use the /DRAFT option.
```

The Meaning of Message Type

Each Toolkit error message includes a message type.

The message types indicate levels of severity of the problem found. This table shows what the types mean:

INFO	Information about processing, processing continues
WARN	A possible problem was noted, processing continues
ERROR	A problem was found, processing continues
FATAL	A problem was found, processing stops

Messages generated by the Toolkit

Error messages generated by DITA Open Toolkit.

Ant messages

This information was created by an XSLT stylesheet that parsed DITA Open Toolkit code and turned the message information into a DITA reference topic. For more information, see *Production notes (troubleshooting)* on page 103

Message number	Type	Message text	Action
DOTA001F	FATAL	`Invalid transformation type.`	Please provide the correct transormation types using Ant parameter 'transtype': xhtml, eclipsehelp, eclipsecontent, javahelp, htmlhelp, pdf, pdf2, troff, docbook, wordrtf.
DOTA002F	FATAL	`Invalid input.`	Please provide the correct input.
DOTA003F	FATAL	`Can't find the user specified stylesheet '%1'.`	Please provide the correct sytlesheet using Ant parameter 'args.xsl'.
DOTA004F	FATAL	`Invalid dita extensition '%1'.`	Please input the correct dita extension using Ant parameter 'dita.extname': dita, .dita, xml, .xml.
DOTA005W	WARN	`Input parameter 'dita.input' and 'dita.input.dirname' are deprecated.`	Please use 'args.input' instead.
DOTA006W	WARN	`Local absolute 'csspath' is not supported, use the default instead.`	Please use relative or URL like csspath.

Java messages

Message number	Type	Message text	Action
DOTJ001F	FATAL	`Input argument error: no ':' found in the parameter '%1'.`	Please add a colon character ':' between the name and value of the parameter '%1'. For detail information, please refer to User Guide.
DOTJ002F	FATAL	`Unsupported parameter '%1'.`	Please refer to User Guide for supported parameters.
DOTJ003F	FATAL	`Param value can't be null for the parameter '%1'.`	Please provide a value for the parameter '%1'.
DOTJ004F	FATAL	`Can't create temp directory '%1'.`	Please check if you have the right to create the directory '%1'.
DOTJ005F	FATAL	`Failed to create new instance for '%1'.`	Please ensure that '%1' exists and you have right to access it.
DOTJ006F	FATAL	`Invalid value '%1' for attribute 'extparam' of AntInvoker.`	Please use correct way to call AntInvoker, e.g. extparam="maplinks=XXXX;other=YYYY".
DOTJ007E	ERROR	`Duplicate condition in filter file for rule '%1'.`	Check to make sure that there is none duplicate rule specified.
DOTJ008E	ERROR	`MapIndexReader is not used in correct way. matchList is null.`	Please check the code to see whether method setMatch(String matchPattern) is called before read(String filename).
DOTJ009E	ERROR	`Cannot overwrite file '%1' with file '%2'. The modified result may not be consumed by the following steps.`	Check to see whether the file is locked by other application during the transformation process.
DOTJ010E	ERROR	`Can't find %1 in the extparam for index generation.`	Please specify %1 in the extparam.
DOTJ011E	ERROR	`Failed to load the input file '%1' for index generation due to below exception, and no index information generated.`	Please ensure '%1' exists and you have right to access it.
DOTJ012F	FATAL	`Failed to parse the input file '%1' due to below exception.`	Please correct the input base on the exception message.
DOTJ013E	ERROR	`Failed to parse the referenced file '%1' due to below exception.`	Please correct the reference base on the exception message.
DOTJ014W	WARN	`The indexterm element does not have any content. Setting the term to ***.`	Please add content to the indexterm.
DOTJ015F	FATAL	`Log directory can't be null.`	Please specify the correct log directory using ant parameter 'args.logdir'.
DOTJ016F	FATAL	`Failed to create log directory '%1'.`	Please specify the correct log directory using ant parameter 'args.logdir'.
DOTJ017F	FATAL	`Failed to init log filename with input file.`	Please specify input file using ant parameter 'args.input'.

Message number	Type	Message text	Action
DOTJ018I	INFO	`Log file '%1' was generated successfully at directory '%2'.`	You can find the detailed messages from the transformation process in this log file.
DOTJ019E	ERROR	`Failed to generated log file.`	Please correct the errors.
DOTJ020W	WARN	`Plugin '%1' is required by plugin '%2'. Plugin '%2' cannot be loaded because of missing plugin '%1'.`	Check and see whether all of the plugins required are installed in toolkit.
DOTJ021W	WARN	`File '%1' was excluded from the 'dita.list' file since it is invalid and all 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.
DOTJ022F	FATAL	`Failed to parse the input file '%1' due to all of its content has been filtered out.`	Please check the input file '%1' and the ditaval file, and ensure that the input is valid.
DOTJ023E	ERROR	`Failed to get the image file specified '%1' in RTF generation`	Check whether the image exists and copied to output directory before the final step of RTF generation.
DOTJ024W	WARN	`Extension name of picture file '%1' not supported.`	Please convert your picture to JPEG or GIF style.

XSLT messages

Message number	Type	Message text	Action
DOTX001W	WARN	`No string named '%1' was found for language '%2'. Use the default language '%3'.`	Add the mapping between default language and specific language for the string '%1'.
DOTX002W	WARN	`The title attribute in ditamap is required for Eclipse output.`	Add a title attribute to map element in ditamap file.
DOTX003I	INFO	`The anchorref attribute should either point to another dita map, or to an Eclipse XML file. The value '%1' does not point to either.`	Change the anchorref referring to ditamap or dita topic file.
DOTX004I	INFO	`Found a navref that does not point to anything, the navref element should either point to another dita map, or to an Eclipse XML file.`	Change the navref referring to ditamap or dita topic file.
DOTX005E	ERROR	`Unable to find navigation title, using href instead: '%1'. If the topic is not accessible at build time, provide the navigation title in the map, and set the format or scope attributes to indicate why it is not accessible.`	Provide the navigation title in the map or topic files.
DOTX006E	ERROR	`Unknown file extension in href: '%1'. If this is a link to a non-DITA`	Set the format attribute and specify the format of the file if href link doesn't point

Message number	Type	Message text	Action
		resource, set the format attribute to match the resource (for example, 'txt', 'pdf', or 'html'). If it's a link to a DITA resource, the file extension must be 'dita' or 'xml'.	to dita topic file. Otherwise, change the file extension name to 'dita' or 'xml'.
DOTX007I	INFO	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" attribute on your topicref.
DOTX008W	WARN	File '%1' does not exist.	Append the file '%1' into the source or change the href link to existing file.
DOTX009W	WARN	Could not retrieve a title from '%1'. Using '%2' instead.	Add a title in the target topic file.
DOTX010E	ERROR	Unable to find target for conref="%1". Check to make sure that the target element is available, and that it is a 'xxxx' element.	Check to make sure the target of conref is correct.
DOTX011W	WARN	There is more than one possible target for conref="%1". Only the first will be used. Remove the duplicate ID from one of the targets.	Remove the duplicated id in the conref target file.
DOTX012W	WARN	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.
DOTX013E	ERROR	A element with a conref attribute indirectly includes itself, which is not possible. Please fix the target of the conref attribute. The conref attribute points to '%1'	Resolve the circle conref.
DOTX014E	ERROR	The element must provide the id of the target topicref you want to reuse. For example, mymap.ditamap#mytopicrefid.	Put an id into the target position of the content which will be reused.
DOTX015E	ERROR	Incorrectly formed conref attribute: '%1', Make sure the syntax is correct and try again.	Change the conref attribute to conform the correct syntax.
DOTX016W	WARN	An href value appears to point to a DITA file, but the format attribute is inherited a value of "%1". If the target '%2'is a DITA file, set the format attribute to "dita". If it does not point to a DITA file, set the format attribute locally.	Directly set the format attribute to correct value instead of inheriting from ancestor.
DOTX017E	ERROR	Found a topic reference with an empty HREF attribute. The attribute should point to a file or other valid address.	Remove the empty href link or put in some content.

Message number	Type	Message text	Action
DOTX018I	INFO	`The type attribute on a topicref element does not match the target topic. The type attribute was set to '%1', but the topicref points to a more specific '%2' topic. This may cause your links to sort incorrectly in the output. Note that the type attribute is inherited in maps, so the value '%1' may come from an ancestor topicref.`	Check and make the type of topicref match with the actual type of topic.
DOTX019W	WARN	`The type attribute on a topicref element does not match the target topic. The type attribute was set to '%1', but the topicref points to a more specific '%2' topic. This may cause your links to sort incorrectly in the output. Note that the type attribute is inherited in maps, so the value '%1' may come from an ancestor topicref.`	Check and make the type of topicref match with the actual type of topic.
DOTX020E	ERROR	`Missing navtitle attribute for: '%1' When you set scope="peer" you must provide a local navigation title, since the target is not accessible at build time.`	Provide a local navigation title in ditamap.
DOTX021E	ERROR	`Missing navtitle attribute for: '%1' When you set format to a non-DITA resource type, you must provide a local navigation title, since the target is not accessible to DITA-aware transforms.`	Provide a local navigation title in ditamap.
DOTX022W	WARN	`Unable to retrieve navtitle from target: '%1'. Using linktext under topicmeta of this topicref instead of the navigation title.`	Make sure the topicref type matches the target, and that the file name and topic id are correct.
DOTX023W	WARN	`Unable to retrieve navtitle from target: '%1'.`	Make sure the topicref type matches the target, and that the file name and topic id are correct.
DOTX024E	ERROR	`Missing linktext and navtitle for: '%1' When you set scope="peer" you must use the navtitle attribute, since the target is not accessible at build time.`	Provide a navtitle attribute for topicref.
DOTX025E	ERROR	`Missing linktext and navtitle attribute for: '%1'. When you set format to a non-DITA resource type, you must provide a navtitle attribute, since the target is not accessible to DITA-aware transforms.`	Provide a navtitle attribute for topicref.
DOTX026W	WARN	`Unable to retrieve linktext from target: '%1'. Using navtitle instead of linktext under topicmeta.`	Make sure the topicref type matches the target, and that the file name and topic id are correct.

Message number	Type	Message text	Action
DOTX027W	WARN	`Unable to retrieve linktext from target: '%1'.`	Make sure the topicref type matches the target, and that the file name and topic id are correct.
DOTX028E	ERROR	`Link or Xref must contain an unempty href attribute.`	Add an unempty href attribute for link or xref element.
DOTX029I	INFO	`The type attribute on a %1 element does not match the target %2. The type attribute was set to %3, but the %1 points to a more specific %4 element. This may cause your links to sort incorrectly in the output, and link text may not be properly retrieved. Note that the type attribute is inherited in maps, so the value '%3' may come from an ancestor element.`	Check and make the type of element match with the actual type of target.
DOTX030W	WARN	`The type attribute on a %1 element does not match the target %2. The type attribute was set to %3, but the %1 points to a more specific %4 element. This may cause your links to sort incorrectly in the output, and link text may not be properly retrieved. Note that the type attribute is inherited in maps, so the value '%3' may come from an ancestor element.`	Check and make the type of element match with the actual type of target.
DOTX031E	ERROR	`The file %1 is not available to resolve link information. Either the file could not be found, or a DITAVAL file was used to remove the file's contents. Be aware that the path information above may not match the link in your topic.`	Check to make sure the file exists and DITAVAL file isn't used to remove the contents of the file.
DOTX032E	ERROR	`Unable to retrieve link text from target: '%1'.`	Make sure the link type matches the target, the ids for topic and element are correct, and that the target has a title. If the target is not accessible at build time, or does not have a title, give the link text as content of the xref element.
DOTX033E	ERROR	`Unable to find the target to determine the list item number.`	Make sure the link type matches the target, and that the ids for topic and element are correct.
DOTX034E	ERROR	`You are cross-referencing a list item in an unordered list. The process could not automatically generate cross-reference text, since the list item is not numbered.`	You need to provide cross-reference text within the xref element, or you need to change the target to something the process can support. Using the id of the target as cross-reference text for now.
DOTX035E	ERROR	`Unable to find the target to determine the footnote number.`	Make sure the link type matches the target, and that the ids for topic and element are correct.

Message number	Type	Message text	Action
DOTX036E	ERROR	`Unable to find the dlentry target to determine the dlterm text.`	Make sure the link type matches the target, and that the ids for topic and element are correct.
DOTX037W	WARN	`Topic contains no title; using "***".`	Add a title to your topic.
DOTX038I	INFO	`The LONGDESCREF attribute on tag '%1' will be ignored. Accessibility needs to be handled another way.`	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	WARN	`Required cleanup area found.`	If the output is only used as a draft, you do not need to do anything. If you are producing production-level output, you should not use the /DRAFT option.
DOTX040I	INFO	`Draft comment area found.`	If the output is only used as a draft, you do not need to do anything. If you are producing production-level output, you should not use the /DRAFT option.
DOTX041W	WARN	`More than one title element in a section. Using the first one for the section's title.`	Make sure that the title you wish to appear as a title is the first one. Then remove other title elements, or change them to a more appropriate element. As a last resort you could simply make them bold phrases.
DOTX042I	INFO	`Flagging attribute found on '%1' attribute. Inline phrases cannot be flagged.`	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 image, you may place an image directly into the document.
DOTX043I	INFO	`The link to '%1' may appear more than once in '%2'.`	If you do not want to occurrences of a link to the same href, remove one of the links or define the same attributes on both link elements. Note that links generated from a <reltable> in a DITA Map will have the role attribute set to friend.
DOTX044E	ERROR	`Area element has no cross-reference HREF attribute. The area requires a cross-reference with an HREF attribute.`	Add a href attribute to the xref element.
DOTX045W	WARN	`Area element contains a cross-reference that is missing link text. The area recommends a cross-reference that contains link text; either from the referenced topic's title, or from the content of the cross-reference. Because there was no cross-reference content; the HREF attribute value is being used.`	Add link text to the xref element.
DOTX046W	WARN	`Area shape should be: default, blank (no value), rect, circle, or poly. This value is not recognized: '%1'. It was`	Correct the shape value.

Message number	Type	Message text	Action
		`passed as-is through to the area element in the XHTML.`	
DOTX047W	WARN	`Area coordinates are blank. Coordinate points for the shape need to be specified.`	Correct the coords value.
DOTX048I	INFO	`In order to include '%1' in your help file, you will need to recompile the CHM file locally. The automatically compiled CHM file will only contain formatted DITA files, not files that are already in HTML.`	For local HTML files, you will need to recompile your help project after all of your files have been returned. For external web sites, you can set the scope attribute to "external" to avoid this message. If you are linking to an actual HTML file that will not be available, it cannot be included in the project. You should set the toc attribute to "no" on your topicref element.
DOTX049I	INFO	`Topicref to non-dita files will be ignored in PDF or Word transformation.`	If you want to include these files in PDF or Word output, you may need to change them to dita format.
DOTX050W	WARN	`Cannot find id attribute in map element.`	Default id "org.sample.help.doc" is used for plugin. If you want to use your own id, please specify it in id attribute of map.
DOTX051W	WARN	`The %1 to '%2' with @format='%3' can not be recognized, output it without creating a hyperlink.`	Set @format='dita' for %1 to DITA topic, set @format='html' for HTML files, other format is not supported.
DOTX052W	WARN	`No string named '%1' was found. Using original value.`	Add translation for the string '%1' in the default language, then add mapping between default language and other languages for it.

Messages generated from other sources

Error messages generated by one of the tools in the Java infrastructure.

Other Java messages

Message text	Action
`[xslt] : Warning! Failure reading file:... Cause: java.io.EOFException: no more input [xslt]`	May occur with Toolkit messages. Check for an invalid file path in the input.
`[pipeline] [Error] :13:39: Element type "..." must be declared.`	An error has occurred parsing a DTD.
`[pipeline] [Error] :14:13: The content of element type "..." must match "...".`	An error has occurred parsing a DTD.
`BUILD FAILED C:\sandbox\ant\dotug_xhtml.xml:24: The following error occurred while executing this line: C:\sandbox\conductor.xml:101: The following`	Java does not have enough memory allocated to run the build. Change ANT_OPTS to a larger value, for example, ANT_OPTS=-Xmx256M. (The default value is 16M.)

Message text	Action
`error occurred while executing this line: java.lang.OutOfMemoryError`	
`Unable to instantiate specified logger class org.dita.log.DITAOTBuildLogger ...`	Check that your CLASSPATH variable contains dost.jar.
`Can't find resource\messages.xml`	Check that your CLASSPATH variable contains dost.jar.

Troubleshooting CLASSPATH and environment variables setup

Troubleshooting CLASSPATH and environment variable setup.

If you see a "can't find resource\messages.xml" error message when you try to build using Ant, remove other items from your CLASSPATH variable one-by-one until you find the culprit. Your environment variable setup can be the source of the problem because sometimes other applications or jar files can override CLASSPATH settings. To assist in troubleshooting the CLASSPATH, create a simple `run.bat` file that contains only SAXON, Ant, and the DITA Open Toolkit `dost.jar` paths. For example:

```
set CLASSPATH=C:\saxon\saxon.jar;C:\ant\apache-ant-1.6.5;\lib\dost.jar;.

ant demo.faq.
```

Note: The dot at the end of the set CLASSPATH command ensures that your current directory is included in the CLASSPATH. By requesting a small build like "ant demo.faq" rather than "ant all" you can save time if the the build is successful.

By setting the classpath just for one session and running the batch file within the `ditaot` directory, you can pinpoint if the problem is your CLASSPATH. Once you get a BUILD SUCCESSFUL message, add in CLASSPATH entries one by one until you find the entry that conflicts with DITA Open Toolkit.

About the debugging, reporting, and file generation tools

Information about tools and techniques you can use to debug your processing problems, get information about your source files, and generate DITA files automatically from XML-based source code.

Because the authors of this document needed debugging, reporting, and automatic file generation support not available in DITA Open Toolkit, they produced several tools of their own. These tools are available as part of the Toolkit.

Message topic generator (ditamsg_generator.xsl)

An XSLT stylesheet (`ditamsg_generator.xsl`) was used to automate the creation of the Toolkit messages reference topic (*Messages generated by the Toolkit*). This stylesheet could be useful to other DITA users as an example of how to handle a similar task when documenting other software, especially when the product messages are stored in a valid XML file.

DITA debugging tools (ditadebug.php and ditalinks.php)

Two debugging tools were written to deal with the following kinds of problems that were encountered while writing this document.

Cross-referencing problems handled by ditadebug.php

- An error is generated during the build that indicates a file cannot be found or opened. The Toolkit message log tells you the name of the file it cannot find, but not which file is referring to it. This makes it difficult to find the source of the error.

- Some errors in the DITA source files do not produce any build error messages at all, but the output produced is incorrect. These kinds of problems are subtle and can be very difficult to troubleshoot.

Examples of the second case include the following:

- When running under Windows, a referenced filepath uses the wrong case of one of the elements, for example, "`../Dir1/fn.ft`" instead of "`../dir1/fn.ft.`".
- A cross-reference points to an ID in a file that does not exist.

The `ditadebug.php` tool also helps to answer the following kinds of questions:

- Which directories contain files used by a given ditamap?
- Which files in source directories are not used in a ditamap, and therefore could be erased?
- For a given file referenced in a ditamap, what type of file is it, who was its author, how big is it, when was it last changed, and what is it about?
- Which URLs are referenced in the files used in a ditamap?
- What are all the linked connections from one file to another used by a given ditamap?

URL checking problems handled by ditalinks.php

The `ditalinks.php` tool checks external URLs and verifies that they exist.

👉 **Note:** The only kind of URL this tool cannot handle is one requiring login to a website. The tool reports these with the message "URL may not exist". You will need to verify these manually.

DITA reporting tools (ditaauthors.php, ditaids.php, and ditakeys.php)

While writing this document we found it useful to have several types of reporting information derived from the source files:

- Who are the authors and copyright holders?
- Which IDs were defined in the source file and were any of them duplicates?
- Which keywords were used in the source file <prolog> elements?

The `ditaauthors.php`, `ditaids.php`, and `ditakeys.php` tools were written to provide answers to these questions.

For more information about these tools, see *Using the debugging and reporting tools* and *Production notes (troubleshooting)*.

Using the debugging and reporting tools

How to use the debugging and reporting tools.

List and descriptions of the debugging and reporting tools

These tools (introduced in *About the debugging, reporting, and file generation tools* on page 101) are written in the PHP programming language and are meant to be invoked either from a command line prompt or from an Ant build script. The tools all take a single argument, which is the name of a DITA map file. The tools process all files in the hierarchy below the level of the invoked DITA map.

Tool	Description
ditaauthors.php	Returns a set of unique author and copyright strings, with counts for each.
ditadebug.php	Produces several debugging and informational reports, most of them in a format that can be imported into a spreadsheet or a database. The reports include: • A list of any incorrect references found in the source files

Tool	Description
	• A list of directories containing files used by the map • For each file in the map, its name, type, author, size, date last modified, and title • The total number of files by type • A list of all references found
ditaids.php	Produces an alphabetical list of IDs for all files in the map, with duplicates marked with an asterisk.
ditakeys.php	Produces a list of all metadata keywords defined.
ditalinks.php	Tests all URLs referenced by files in the map for validity.

Software prequisites required

To run these tools you must have the PHP interpreter installed on your build machine. PHP is a free tool that can be downloaded from *http://www.php.net*.

Example of how to invoke the tools

You can include any of these tools as part of an Ant build script. The following example shows how to run the debugging tool and write the output to a file.

```
<!-- create the ditamap debug cross-reference -->
<target name="debug">
<echo>Building debugging file ditadebug.txt</echo>
<mkdir dir="${outdir}/debug_files"/>
<exec executable="${PHPdir}/php.exe" dir = "${projdir}"
output="${outdir}/debug_files/ditadebug.txt">
<arg value="${projdir}/project/tools/ditadebug.php"/>
<arg value="${MAP_file}"/>
</exec>
</target>
```

Production notes (troubleshooting)

Production notes for the troubleshooting section of this document.

Sections in this topic:

Cross-reference debugging tool (ditadebug.php)

Once we had large numbers of source files and directories to deal with, we ran into the following kinds of error situations that were difficult to resolve:

- We had problems finding out the root cause of error messages in the Ant build log.
- We lost track of which source files had references to other source files.
- We often didn't know which URLs were linked to in the source files.
- We wondered which source files were not actually being used.

Here is an example of an error message generated by the Toolkit that is caused by a bad href. Notice that the message tells you which file is referenced, but not the location of the original reference.

```
[pipeline] [DOTJ013E][ERROR] Failed to parse the referenced
```

```
file 'installing\nstalling_fo.dita' due to below exception.
Please correct the reference base on the exception message.
[pipeline] java.io.FileNotFoundException:
c:\DITAOT_UGRef_SOURCE\installing\nstalling_fo.dita
(The system cannot find the file specified)
```

Partly as a learning exercise, and partly to allow us to address these issues, we wrote a build tool that starts from a DITA map file and builds a set of cross-reference and error reports for the files used by the DITA map. This can be done because all the files that make up a DITA source tree have to be well-formed and valid XML files. Standard XML parsing libraries can be used to "walk" the set of source files included by the DITA map.

Our PHP script (`ditadebug.php`) uses the SimpleXML PHP library routines. We added an Ant target to our build script that allows us to run this tool every time we build the book. For the same error shown above, our tool produces the following error message:

```
Error, file C:\DITAOT_UGRef_SOURCE\processing\../installing/nstalling_fo.dita does not
exist!
Bad reference: C:\DITAOT_UGRef_SOURCE\processing\processing_pdf2.dita =>
../installing/nstalling_fo.dita
```

Now we know which file is missing and where the bad reference is! The PHP script is available as part of the DITA Open Toolkit documentation package.

Here is a subset of a ditadebug-generated report for this document that illustrates the types of information it generates.

```
Starting from ditamap DITAOT_UGRef_mastermap.ditamap
dir: .\ file: DITAOT_UGRef_mastermap.ditamap

6 unused files in directories used by this map:

C:\DITAOT_UGRef_SOURCE\images\dita_finch_logo.jpg , *No DOCTYPE*
...
C:\DITAOT_UGRef_SOURCE\ugxref.txt , *No DOCTYPE*

27 directories in this map:

C:\DITAOT_UGRef_SOURCE
C:\DITAOT_UGRef_SOURCE\accessing
...
C:\DITAOT_UGRef_SOURCE\troubleshooting

349 files and links in this map:

C:\DITAOT_UGRef_SOURCE\DITAOT_UGRef_bkinfo.dita , bkinfo
C:\DITAOT_UGRef_SOURCE\DITAOT_UGRef_mastermap.ditamap , bookmap
...
https://sourceforge.net/projects/dita-ot , *https*

493 references in this map:

DITAOT_UGRef_mastermap.ditamap , bkinfo ,
C:\DITAOT_UGRef_SOURCE\DITAOT_UGRef_bkinfo.dita
DITAOT_UGRef_mastermap.ditamap , chapter ,
C:\DITAOT_UGRef_SOURCE\release_current\relcurrent_map.ditamap
...
C:\DITAOT_UGRef_SOURCE\introduction\aboutdita.dita , conref ,
C:\DITAOT_UGRef_SOURCE\core_vocabulary\darwininfo_typingarch.dita
#darwininfo_typingarch/darwininfo_typingarch_term
C:\DITAOT_UGRef_SOURCE\core_vocabulary\ditaot.dita#ditaot/ditaot_term
...
C:\DITAOT_UGRef_SOURCE\core_vocabulary\xalan.dita , xref ,
C:\DITAOT_UGRef_SOURCE\release_current\sysreqs.dita
C:\DITAOT_UGRef_SOURCE\core_vocabulary\xalan.dita , xref ,
http://archive.apache.org/dist/xml/xalan-j/
```

Message topic generation tool (ditamsg_generator.xsl)

Below is a listing for the XSLT stylesheet used to read the DITA Open Toolkit message repository `resource/messages.xml` file and convert it to a DITA reference topic (*Messages generated by the Toolkit*). This reference topic has been generated multiple times during the production cycle of the *DITA Open Toolkit User Guide and Reference*, as the Toolkit moved to new point releases.

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<!-- Edited with XML Spy v4.2 -->
<xsl:stylesheet version="1.0"
xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
<xsl:output method="xml" encoding="ISO-8859-1" indent="yes"
doctype-public="-//OASIS//DTD DITA Reference//EN"
doctype-system="http://docs.oasis-open.org/dita/v1.0.1/dtd/reference.dtd"/>

<!-- Stylesheet to convert messages.xml to a DITA reference topic messages.dita -->
<!-- Author: Dick Johnson 05/27/2006 -->

<xsl:template match="//messages">


<reference id="messages">
<title>DITA Open Toolkit Messages</title>
<refbody>

<!-- put all the Ant messages in a simple table -->
<section id="ant">
<title>Ant messages</title>
<p></p>

<simpletable>
<sthead>
<stentry>Message number</stentry>
<stentry>Type</stentry>
<stentry>Message text</stentry>
<stentry>Action</stentry>
</sthead>

<xsl:apply-templates select="message[substring(@id,1,4)='DOTA']" />

</simpletable>
</section>

<!-- put all the Java messages in a simple table -->
<section id="java">
<title>Java messages</title>
<p></p>

<simpletable>
<sthead>
<stentry>Message number</stentry>
<stentry>Type</stentry>
<stentry>Message text</stentry>
<stentry>Action</stentry>
</sthead>

<xsl:apply-templates select="message[substring(@id,1,4)='DOTJ']" />

</simpletable>
</section>

<!-- put all the XSLT messages in a simple table -->
<section id="xslt">
<title>XSLT messages</title>
<p></p>

<simpletable>
<sthead>
<stentry>Message number</stentry>
```

```
<stentry>Type</stentry>
<stentry>Message text</stentry>
<stentry>Action</stentry>
</sthead>

<xsl:apply-templates select="message[substring(@id,1,4)='DOTX']" />

</simpletable>
</section>

</refbody>
</reference>

</xsl:template>

<!-- Reformat an individual message -->
<xsl:template match="message">

<strow>
<stentry>
<msgnum>
<xsl:apply-templates select="@id" /></msgnum>
</stentry>
<stentry>
<xsl:apply-templates select="@type" />
</stentry>
<stentry>
<msgph>
<xsl:apply-templates select="reason" /></msgph>
</stentry>
<stentry>
<xsl:apply-templates select="response" />
</stentry>

</strow>

</xsl:template>


<xsl:template match="description">
<p>
<td><xsl:value-of select="."/></td>
</p>
</xsl:template>

<xsl:template match="link">
<a>
<xsl:attribute name="href">
<xsl:value-of select="."/>
</xsl:attribute>
Item link</a>
</xsl:template>

</xsl:stylesheet>
```

For more information (troubleshooting)

Additional sources of information for the troubleshooting section of this document.

We found the O'Reilly Java series book, *Ant: The Definitive Guide*, by Steve Holzner, useful in helping us work through processing problems as we produced this document.

Creating DITA topics

How to create DITA topics (base topics, concepts, tasks, and reference topics).
Overview information about the grocery shopping sample.
Overview information about topics and the topic information type.
How to create the topic for the grocery shopping sample.
Overview information about concepts and the concept information type.
How to create the concept topics for the grocery shopping sample.
Overview information about tasks and the task information type.
How to create the tasks for the grocery shopping sample.
Overview information about reference information and the reference information type.
How to create the reference topics for the grocery shopping sample.
How to process (build) a single DITA topic.
Production notes for the topics section of this document.
Additional sources of information for the topics section of this document.

This chapter and the next one are a short tutorial; you should work through the topics chapter (this one) before the maps chapter. The key concepts and tasks in this chapter are meant to be read and performed in the order shown below.

About the grocery shopping sample

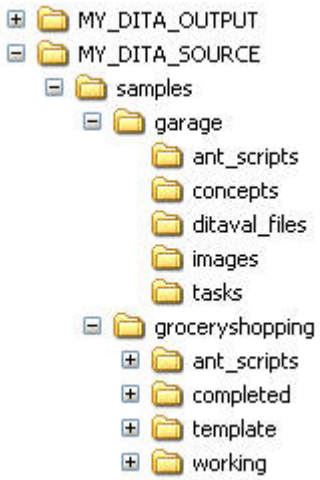
Overview information about the grocery shopping sample.

Definition

The grocery shopping sample, which is located in the `ditaot/samples` directory, is a simple DITA project that includes seven topics: an overview topic, two concepts, two tasks, and two reference topics. The project also includes a map that aggregates the files and links them meaningfully using a relationship table. Ant scripts that process to the XHTML, HTML Help, and PDF2 targets are also provided.

Usage

Before you begin to use the sample files (which includes both the garage sample and the grocery shopping sample), we recommend creating two directories in your root directory called `MY_DITA_SOURCE` and `MY_DITA_OUTPUT` (Windows examples would be `C:/MY_DITA_SOURCE` and `C:/MY_DITA_OUTPUT`) and then copying both the garage and grocery shopping sample files from the `ditaot/samples` directory to `MY_DITA_SOURCE`. Your directory structure should then look like this:

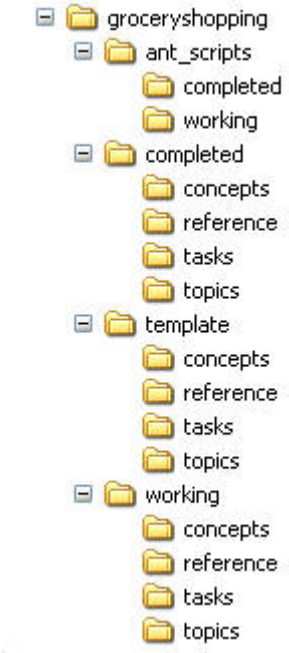


The grocery shopping sample assumes you are already familiar with the garage sample provided as both a project model as well as a tool to verify your DITA Open Toolkit installation, and that you have processed the garage sample as described in *Processing (building) and publishing DITA documents* on page 59.

Creating and processing the grocery shopping sample

You will be working in the MY_DITA_SOURCE/samples/groceryshopping directory, which contains a number of subdirectories.

Your directory structure should look like this:



Files in the `template` directory provide you with a starting point for each file in your grocery shopping project. The first step in each task in this chapter is to copy a file from the `template` directory to the `working` directory. Then edit the "working" version of the file, as instructed. If you need help along the way, you can use the files in the `completed` directory for reference.

The Ant scripts (in the `ant_scripts` directory) assume you will process (build) the "working" version of the files. If you want to build the "completed" file set, you will need to make appropriate modifications to the Ant scripts to point to the correct map.

If you follow the instructions in this chapter and the next ("Creating Maps") you will have your own working version of the sample, which you could modify to try and test other DITA features.

Files in the `template` directory provide you with a starting point for each file in your grocery shopping project. The first step in each task in this chapter is to copy a file from the `template` directory to the `working` directory. Then edit the "working" version of the file, as instructed. If you need help along the way, you can use the files in the `completed` directory for reference.

The Ant scripts (in the `ant_scripts` directory) assume you will process (build) the "working" version of the files. Ant scripts that build the "completed" files are also provided.

About topics

Overview information about topics and the topic information type.

Definition

The base DITA information type.

Creating topics

How to create the topic for the grocery shopping sample.

In this topic you will create a simple DITA topic based on a template already provided. You will be working in the `MY_DITA_SOURCE/samples/groceryshopping` directories. This topic assumes you are familiar with the information in *About the grocery shopping sample* on page 107.

1. Go to the `groceryshopping/template/topics` directory.
2. Copy the `groceryshopping.dita` file to the "working" directory (`working/topics`).
3. Using your authoring tool, edit the "working" version of the `groceryshopping.dita` file.
4. In the prolog section of the file, change the text of the author element text to your name.
5. Also in the prolog section, change the text of the copyrholder element to your company name.
6. Also in the prolog section, update the "revised" date of the critdates element.

   Your `groceryshopping.dita` file should now look something like this:

```
<topic id="groceryshopping" xml:lang="en-us">
<title>Shopping for groceries</title>
<shortdesc>Tips on buying groceries.</shortdesc>
<prolog>
<author type="creator">Tom McIntyre</author>
<copyright>
<copyryear year="2006"/>
<copyrholder>Acme Company</copyrholder>
</copyright>
<critdates>
<created date="2006-August-07"/>
<revised modified="2006-August-08"/>
</critdates>
<metadata>
<keywords>
<keyword>grocery shopping</keyword>
</keywords>
</metadata>
</prolog>
<body>
<!-- This is a container topic—it has no body content. -->
<!-- Do not type anything here. -->
<p/>
</body>
</topic>
```

7. Save the changed file.

About concepts

Overview information about concepts and the concept information type.

Definition

Information type that contains content of a conceptual nature.

Creating concepts

How to create the concept topics for the grocery shopping sample.

In this topic you will create two concept topics based on templates already provided. You will be working in the `MY_DITA_SOURCE/samples/groceryshopping` directories. This topic assumes you are familiar with the information in *About the grocery shopping sample* on page 107.

1. Go to the `groceryshopping/template/concepts` directory.
2. Copy the `about_cannedgoods.dita` file to the "working" directory (`working/concepts`).
3. Using your authoring tool, open the "working" version of `about_cannedgoods.dita`.
4. In the prolog section, change the text of the author element text to your name, the copyrholder element text to your company name, and the revised element text to the current date.
5. In the conbody section, add a paragraph element with some text about canned goods, and an unordered list with some reasons for buying canned goods.

   Here is a suggestion:

   ```
   <p>Canned goods are easy-to-use and easy-to-store staples in most kitchens.
   Common canned goods available in almost any grocery store are beans,
   canned vegetables, and canned fruits.</p>
   <p>You can save money on canned goods by:
   <ul>
   <li>buying from chain or discount grocery stores</li>
   <li>buying larger cans</li>
   </ul>
   </p>
   ```

6. Save the changed file.
7. If you have problems creating or validating your working file, compare it with the file by the same name in the `completed` directory.
8. Go back to the `groceryshopping/template/concepts` directory.
9. Copy the `about_produce.dita` file to the "working" directory (`working/concepts`).
10. Using your authoring tool, open the "working" version of `about_produce.dita`.
11. Edit the same prolog elements you did in the `about_cannedgoods.dita` file.
12. In the conbody section of `about_produce.dita`, add a paragraph element with some text about produce.

    Here is a suggestion:

    ```
    <p>One of the keys to good health is eating lots of produce.
    It pays to buy fresh fruits and vegetables and serve them often.</p>
    <p>You can save money by buying produce when it is in season.</p>
    ```

13. Save the changed file.
14. If you have problems creating or validating your working file, compare it with the file by the same name in the `completed` directory.

About tasks

Overview information about tasks and the task information type.

Definition

Information type for content that describes procedures or sets of steps a user follows in performing a task or using a product.

Creating tasks

How to create the tasks for the grocery shopping sample.

In this topic you will create two task topics based on templates already provided. You will be working in the `MY_DITA_SOURCE/samples/groceryshopping` directories. This topic assumes you are familiar with the information in *About the grocery shopping sample* on page 107.

1. Go to the `groceryshopping/template/tasks` directory.
2. Copy the `buying_cannedgoods.dita` file to the "working" directory (`working/tasks`).
3. Using your authoring tool, open the "working" version of `buying_cannedgoods.dita`.
4. In the prolog section, change the text of the author element text to your name, the copyrholder element text to your company name, and the revised element text to the current date.
5. In the taskbody section, add a series of steps to describe the process of buying a can of olives.

   Here is a suggestion:

```
<context>Canned goods are usually stored
on grocery store shelves by type of food—for example,
all canned vegetables in one aisle and all canned fruits in another.
Say you are looking for canned olives:</context>
<steps>
<step>
<cmd>Find the olive display by reading the directional signs
or asking a store clerk for help.</cmd>
</step>
<step>
<cmd>Locate the type of olives you want to buy:
green or black.</cmd>
<info>If you're looking for ingredients for a green salad,
green olives might be a better choice.
If you're making enchiladas,
look for cans of black olives.</info>
</step>
<step>
<cmd>Check the sizes and prices
to determine the best buy.</cmd>
<info>For example, if you're planning
to make enchiladas tonight and tacos on Friday,
a larger can would probably be a better buy.</info>
</step>
<step>
<cmd>Select a can and look it over carefully to be sure
it has no dents that would cause the seal to be broken.</cmd>
</step>
<step>
<cmd>Put the can in your cart, finish your shopping,
and check out.</cmd>
</step>
</steps>
```

6. Save the changed file.
7. If you have problems creating or validating your working file, compare it with the file by the same name in the `completed` directory.
8. Go back to the `groceryshopping/template/tasks` directory.
9. Using your authoring tool, open the "working" version of `buying_cannedgoods.dita`.

10. In the prolog section, change the text of the author element text to your name, the copyrholder element text to your company name, and the revised element text to the current date.
11. In the taskbody section, add a series of steps about how to choose and buy peaches.

    Here is a suggestion:

```
<prereq>Do your produce shopping <i>after</i>
you have bought your canned goods.
Otherwise, the cans might bruise
the fruits and vegetables!</prereq>
<context>Remember to look for local produce
in season.
The fruits and vegetables you buy will be
fresher and cheaper!
Say you're shopping in August
for peaches grown locally.
When you get to the produce section
of your grocery store:</context>
<steps>
<step>
<cmd>Get a plastic or paper bag
to hold the peaches.</cmd>
</step>
<step>
<cmd>Pick out the freshest peaches you can find,
and put them gently into your bag.</cmd>
<info>To avoid bruising,
don't put more than 6 peaches in each bag.</info>
</step>
<step>
<cmd>Put the bag gently into your grocery cart.</cmd>
</step>
</steps>
<postreq>When you check out, be sure the grocery clerk
also handles your peaches carefully.</postreq>
```

12. Save the changed file.
13. If you have problems creating or validating your working file, compare it with the file by the same name in the `completed` directory.

About reference information

Overview information about reference information and the reference information type.

Definition

Information type for content that focuses on properties and relationships among a number of similar items.

Usage

Content in a DITA reference information type is used to record and present (often in a tabular format) reference (as contrasted with narrative) information. The information is presented to users in a way that facilitates quick lookup.

Creating reference topics

How to create the reference topics for the grocery shopping sample.

In this topic you will create two reference topics based on templates already provided. You will be working in the `MY_DITA_SOURCE/samples/groceryshopping` directories. This topic assumes you are familiar with the information in *About the grocery shopping sample* on page 107.

1. Go to the `groceryshopping/template/reference` directory.
2. Copy the `cannedgoods.dita` file to the "working" directory (`working/reference`).
3. Using your authoring tool, open the "working" version of `cannedgoods.dita`.
4. In the prolog section, change the text of the author element text to your name, the copyrholder element text to your company name, and the revised element text to the current date.
5. In the refbody section, add a simple table showing product name, can size, and price for several canned goods products.

   Here is a suggestion:

```
<section>
<simpletable>
<sthead>
<stentry>Product</stentry>
<stentry>Can size</stentry>
<stentry>Price</stentry>
</sthead>
<strow>
<stentry>Large black olives</stentry>
<stentry>14 oz</stentry>
<stentry>$2.39</stentry>
</strow>
<strow>
<stentry>Small black olives</stentry>
<stentry>6 oz</stentry>
<stentry>$1.78</stentry>
</strow>
<strow>
<stentry>Large green stuffed olives</stentry>
<stentry>20 oz</stentry>
<stentry>$4.56</stentry>
</strow>
<strow>
<stentry>Small green plain olives</stentry>
<stentry>8 oz</stentry>
<stentry>$2.45</stentry>
</strow>
</simpletable>
</section>
```

6. Save the changed file.
7. If you have problems creating or validating your working file, compare it with the file by the same name in the `completed` directory.
8. Go back to the `groceryshopping/template/reference` directory.
9. Copy the `produce.dita` file to the "working" directory (`working/reference`).
10. Using your authoring tool, open the "working" version of `produce.dita`.
11. Edit the same prolog elements you did in the `cannedgoods.dita` file.
12. In the refbody section, add a simple table showing product name, can size, and price for several produce items.

    Here is a suggestion::

```
<section>
<simpletable>
<sthead>
<stentry>Item</stentry>
<stentry>Type</stentry>
<stentry>Price</stentry>
</sthead>
<strow>
<stentry>Apple</stentry>
<stentry>Fuji</stentry>
<stentry>$.88/lb</stentry>
</strow>
```

```
<strow>
<stentry>Apple</stentry>
<stentry>Granny Smith</stentry>
<stentry>$1.05/lb</stentry>
</strow>
<strow>
<stentry>Pear</stentry>
<stentry>Bartlett</stentry>
<stentry>$.74/lb</stentry>
</strow>
<strow>
<stentry>Orange</stentry>
<stentry>Valencia</stentry>
<stentry>$1.46/lb</stentry>
</strow>
</simpletable>
</section>
```

13. Save the changed file.
14. If you have problems creating or validating your working file, compare it with the file by the same name in the `completed` directory.

Processing (building) a single topic

How to process (build) a single DITA topic.

You can process (build) a single DITA topic by using its name in place of a ditamap's name in any of the Ant drivers.

👉 **Note:** If you want to try processing a single file, you can modify one of the Ant scripts in the `groceryshopping/ant_scripts` directory to build one of the topics you created in this chapter. If you don't feel confident doing that yet, work through the maps chapter (following this one) first, where you'll learn more about processing DITA files with Ant.

Production notes (topics)

Production notes for the topics section of this document.

We used *Introduction to DITA: A User Guide to the Darwin Information Typing Architecture* by Jennifer Linton and Kylene Bruski to teach ourselves some of the basics of DITA. We recommend this book to others looking for a comprehensive, scenario-based approach to learning about DITA. For more information about this book, go to *http://www.comtech-serv.com*.

For more information (topics)

Additional sources of information for the topics section of this document.

For a complete set of reference topics for DITA language elements, see the language reference document in the `ditaot/demo` directory.

Creating DITA maps

How to create DITA maps.
Overview information about maps.
How to create the map for the grocery shopping sample.
How to process (build) the grocery shopping sample.
Production notes for the maps section of this document.
Additional sources of information for the maps section of this document.

This chapter and the previous one are a short tutorial; you should work through the topics chapter before the maps chapter (this one). The key concepts and tasks in this chapter are meant to be read and performed in the order shown below.

About maps

Overview information about maps.

Definition

Aggregation of the topics in a DITA document, with the topics arranged as a list or a hierarchy.

Usage

DITA documents can have multiple maps or sets of maps for a given document. For example, a software product available for both Windows and Linux might have two maps, each specifying the topics to include in that document version. As another example, a large, complex document might have a master map that included multiple submaps, specifying the topics to include in various "chapters" and "sections."

Example

```
<?xml version="1.0" encoding="utf-8"?>
<!-- (c) Copyright 2006 by VR Communications, Inc. All rights reserved. -->
<!DOCTYPE map PUBLIC "-//OASIS//DTD DITA Map//EN"  "../dtd/map.dtd">
<map id="customizing_map" title="Customizing your published output">
<topicref href="customizing.dita">
<topicref href="css.dita"/>
<topicref href="customizing_production_notes.dita"/>
<topicref href="customizing_formoreinfo.dita"/>
</topicref>
</map>
```

Creating maps

How to create the map for the grocery shopping sample.

In this topic you will create a map to aggregate the topics you created in the previous chapter. The map is based on a template already provided. The map file includes topicrefs to the topics you want to aggregate, process, and publish, and also a relationship table to link the included topics in a meaningful way. You will be working in the `MY_DITA_SOURCE/samples/groceryshopping` directories. This topic assumes you are familiar with the information in *About the grocery shopping sample* on page 107, and that you have created the topics according to the instructions in *Creating DITA topics* on page 107.

1. Go to the `groceryshopping/template` directory.
2. Copy the `groceryshopping_map.ditamap` file to the `working` directory .

3. Using your authoring tool, open the "working" version of `groceryshopping_map.ditamap`.

   Your working map file initially looks like this:

```
<?xml version="1.0" encoding="utf-8"?>
<!DOCTYPE map PUBLIC "-//OASIS//DTD DITA Map//EN" "../dtd/map.dtd">
<!-- This is a template file -->
<!-- The "groceryshopping" topic page is a mini-toc for
the concept, task, and reference pages,
which are displayed sequentially.
You could display those pages in any order. -->
<map title="Grocery shopping">
<topicref href="topics/groceryshopping.dita" type="topic">
<!-- The concept, task, and reference topicrefs go here -->
</topicref>
<!-- The relationship table goes below -->
<!-- The related concept, task,
nd reference files point to each other -->
</map>
```

4. Add nested topicrefs for your concept, reference and task files.

   The topicref section of your file should look like this:

```
<topicref href="topics/groceryshopping.dita" type="topic">
<topicref href="concepts/about_produce.dita" type="concept"/>
<topicref href="concepts/about_cannedgoods.dita" type="concept"/>
<topicref href="tasks/choosing_produce.dita" type="task"/>
<topicref href="tasks/buying_cannedgoods.dita" type="task"/>
<topicref href="reference/produce.dita" type="reference"/>
<topicref href="reference/cannedgoods.dita" type="reference"/>
</topicref>
```

   The concepts, tasks, and reference topics will all be nested within the groceryshopping topic. Notice how nesting is accomplished: the closing topicref tag for the groceryshopping topic appears below the topicref for cannedgoods.

5. Below the relationship table comment lines, add a relationship table linking your produce and canned goods topics together.

   The relationship table section of your file should look like this:

```
<!-- Relationship table -->
<!-- The related concept, task, and reference files point to each other -->
<reltable>
<relheader>
<relcolspec type="concept"/>
<relcolspec type="task"/>
<relcolspec type="reference"/>
</relheader>
<relrow>
<relcell>
<topicref href="concepts/about_produce.dita"/>
</relcell>
<relcell>
<topicref href="tasks/choosing_produce.dita"/>
</relcell>
<relcell>
<topicref href="reference/produce.dita"/>
</relcell>
</relrow>
<relrow>
<relcell>
<topicref href="concepts/about_cannedgoods.dita"/>
</relcell>
<relcell>
<topicref href="tasks/buying_cannedgoods.dita"/>
</relcell>
<relcell>
```

```
<topicref href="reference/cannedgoods.dita"/>
</relcell>
</relrow>
</reltable>
```

Because we have concept, task, and reference information for each "topic" (the topics would be "canned goods" and "produce") in our document, we have chosen a three-column table that links all the topics about canned goods, and also links all the topics about produce. There are other ways to design a relationship table.

6. Save the changed file.
7. If you have problems creating or validating your working file, compare it with the file by the same name in the `completed` directory.

Processing (building) the grocery shopping sample

How to process (build) the grocery shopping sample.

In this topic you will process (build) the map you created in *Creating maps*. You will be working in the `MY_DITA_SOURCE/samples/groceryshopping/ant_scripts` directory. This topic assumes you will be building with the Ant scripts in the `working` subdirectory, but you can also build the completed files by using the Ant scripts in the `completed` subdirectory. This topic also assumes you are familiar with the information in *About the grocery shopping sample* on page 107, and that you have created the topics according to the instructions in *Creating DITA topics* on page 107. If you need more information about Ant or Ant scripts, see *About Ant* on page 60 or *About Ant scripts* on page 61.

1. Go to the `groceryshopping/ant_scripts/working` directory.
2. Using your DITA authoring tool or a plain text editor, open the version of the Ant script you want to run. You can process to one of three target environments: XHTML, HTML Help, and PDF2.
3. Make sure the Ant script is set up correctly for your environment.
4. In the Command Prompt, navigate to the `ant_scripts/working` directory.
5. Do one of the following:

   To build XHTML output for the grocery shopping sample, enter the command `ant -f grocery_xhtml.xml`.

   To build HTML Help output for the grocery shopping sample, enter the command `ant -f grocery_htmlhelp.xml`.

   To build PDF2 output for the grocery shopping sample, enter the command `ant -f grocery_pdf2.xml`.
6. Check the output directory to be sure the output files are correct.

Production notes (maps)

Production notes for the maps section of this document.

We used *Introduction to DITA: A User Guide to the Darwin Information Typing Architecture* by Jennifer Linton and Kylene Bruski to teach ourselves some of the basics of DITA. We recommend this book to others looking for a comprehensive, scenario-based approach to learning about DITA. For more information about this book, go to *http://www.comtech-serv.com*.

For more information (maps)

Additional sources of information for the maps section of this document.

For a complete set of reference topics for DITA language elements, see the language reference document in the `ditaot/demo` directory.

Linking content

How to link content using cross-references (xrefs), related links, and relationship tables.
Overview information about linking DITA topics.
Examples of how to link DITA topics using cross-references (xrefs).
How to link DITA topics using related links.
How to link DITA topics using relationship tables.
Production notes for the linking section of this document.
Additional sources of information for the linking section of this document.

About linking

Overview information about linking DITA topics.

Definition

Various methods that connect topics to each other or to external references.

Usage

In DITA linking can be implemented through various elements, such as <xref> and <related-links>, and through *relationship tables*.

Linking using cross-references (xrefs)

Examples of how to link DITA topics using cross-references (xrefs).

The following example from this document links a simple table entry in the "Document contents" section of the "About this document" file to the landing page of the "Current release" section.

```
<strow>
<stentry>
<xref href="../release_current/release_current.dita">Release 1.3 information</xref>
</stentry>
<stentry>Information about release 1.3
of DITA Open Toolkit: system requirements,
supported applications, new and enhanced features,
upgrade impacts, and known problems.</stentry>
</strow>
```

The following example from this document uses xrefs to create a page table of contents for the "About this document" file.

```
<p>Sections in this topic:
<sl>
<sli>
<xref href="#aboutditaotugref/contents">
Document contents</xref>
</sli>
<sli>
<xref href="#aboutditaotugref/audience">
Audience</xref>
</sli>
<sli>
<xref href="#aboutditaotugref/prerequisites">
Prerequisites</xref>
```

```
</sli>
<sli>
<xref href="#aboutditaotugref/howproduced">
How this document was produced</xref>
</sli>
</sl>
</p>
```

The following example from this document uses an xref to reference an external website.

```
<dl>
<dlentry>
<dt>Ant</dt>
<dd>Ant 1.6.5. You can download Ant from
<xref href="http://ant.apache.org/bindownload.cgi"
format="html" scope="external"/>.</dd>
</dlentry>
</dl>
```

Linking using related links

How to link DITA topics using related links.

The following example from the garage sample links the "Spray painting" task with the "paint" concept.

```
</taskbody>
<related-links>
<link href="../concepts/paint.dita" format="dita" type="concept">
<linktext>Paint</linktext>
</link>
</related-links>
</task>
```

Linking using relationship tables

How to link DITA topics using relationship tables.

The following example shows a section of the two-column relationship table for this document.

```
<map id="reltables_map" title="Relationship tables">
<!-- Relationship table -->
<reltable>
<relrow>
<relcell>
<topicgroup collection-type="family">
<topicref href="../release_current/sysreqs.dita"/>
<topicref href="../installing/aboutinstalling.dita"/>
</topicgroup>
</relcell>
<relcell/>
</relrow>
<relrow>
<relcell>
<topicref href="../introduction/aboutditaot.dita"/>
</relcell>
<relcell>
<topicref href="../core_vocabulary/docbook.dita" linking="targetonly"/>
</relcell>
</relrow>
```

```
<relrow>
<relcell>
<topicref href="../introduction/aboutditaot.dita"/>
</relcell>
<relcell>
<topicref href="../core_vocabulary/eclipse_content.dita" linking="targetonly"/>
</relcell>
</relrow>
```

The following example shows the three-column relationship table for the grocery shopping sample.

```
<!-- Relationship table -->
<!-- The related concept, task, and reference files point to each other -->
<reltable>
<relheader>
<relcolspec type="concept"/>
<relcolspec type="task"/>
<relcolspec type="reference"/>
</relheader>
<relrow>
<relcell>
<topicref href="concepts/about_produce.dita"/>
</relcell>
<relcell>
<topicref href="tasks/choosing_produce.dita"/>
</relcell>
<relcell>
<topicref href="reference/produce.dita"/>
</relcell>
</relrow>
<relrow>
<relcell>
<topicref href="concepts/about_cannedgoods.dita"/>
</relcell>
<relcell>
<topicref href="tasks/buying_cannedgoods.dita"/>
</relcell>
<relcell>
<topicref href="reference/cannedgoods.dita"/>
</relcell>
</relrow>
</reltable>
```

Production notes (linking)

Production notes for the linking section of this document.

How we decided what kind of linking to use

Some experienced DITA users employ only relationship tables (located in the master map or in a separate map file). The advantage of this approach is mostly for the producing organization: the links, which are recorded in only one place, can easily be searched and changed if updates to the project require a new linking paradigm. The disadvantage is mostly to the content users, who are given no information about why or under what circumstances they might want to consult the information in the related links.

We have chosen an approach that uses both cross-references (xrefs) and relationship tables: where contextual information would seem to be helpful to the user ("I'll tell you *why* might might you want to click this link") we have used xrefs embedded in the content, and where the linked information is more along the lines of "I'll give you a few related topics you might want to consult if the titles sound interesting to you" we have used a single relationship table pointed to from the master map.

To help ensure that our links continue to be accurate throughout the document production process, we run a a set of debugging and link-checking tools we produced ourselves approximately once a day. The tools check both internal and external (URL) links.

For more information (linking)

Additional sources of information for the linking section of this document.

For a complete set of reference topics for DITA language elements (including the various linking elements), see the language reference document in the `ditaot/demo` directory.

DITA Open Toolkit plug-ins

Information about plug-ins available for use with DITA Open Toolkit.
Information about plug-ins that work with DITA Open Toolkit.
How to install plug-ins that work with DITA Open Toolkit.
Generic instructions on how to install plug-ins that work with DITA Open Toolkit.
How to install the Idiom FO plug-in.
Production notes for the plug-ins section of this document.
Additional sources of information for the plug-ins section of this document.

About DITA Open Toolkit plug-ins

Information about plug-ins that work with DITA Open Toolkit.

Usage

You can extend or enhance the product capabilities provided by DITA Open Toolkit by installing Toolkit plug-ins. Once installed, a plug-in becomes part of the Toolkit environment and can be used to add new specializations or to define new targets for output processing.

Download sites for Toolkit plug-ins

You can download DITA Open Toolkit plug-ins from the following websites:

- Yahoo! dita-users group site: *http://groups.yahoo.com/group/dita-users/files/Demos/*
- SourceForge DITA Open Toolkit site: *http://sourceforge.net/project/showfiles.php?group_id=132728*

Plug-ins you can install

Key plug-ins are listed in the following table.

Plug-in	Description
apiref0.8	The API reference specialization provides a general-purpose basis for documenting callable programming libraries.
FrameMaker Adapter 0.8	The FrameMaker Adapter (sometimes called the Mekon FrameMaker Adapter or Moldflow FrameMaker Adapter) adds the fmxml output target that allows you to take an existing DITA project and produce a file that can be used as input to FrameMaker 7.x. You can then apply an unstructured FrameMaker template to this content and publish it using FrameMaker functionality. You cannot, however, use FrameMaker functionality to make further changes to the DITA project. The adapter was not designed to be used for authoring DITA content.  **Note:** This is not the Adobe FrameMaker Application Pack for DITA.
Idiom FO 1.1	The Idiom FO plug-in uses the RenderX XEP processor (in place of the base-level Apache FOP processor) to enhance Toolkit support for PDF processing. The target name is pdf2 (the base-level target name is pdf.) For specific installation instructions, see *Installing the Idiom FO plug-in* on page 124.
indextermlist-plugin.zip	The index term list plug-in extracts index terms from a map.
javaapiref0.8	The Java API reference specialization provides a basis for documenting Java class libraries.

Plug-in	Description
Thesaurus0.8.1	The Thesaurus (also called Taxonomy) specialization defines formal subjects and the relationships between them, so you can classify your content. This specialization conforms closely to the SKOS standard and generates RDF.
tocjs-plugin-0.9.zip	The TOC Javascript plug-in builds a table of contents for DITA XHTML output.

Installing plug-ins

How to install plug-ins that work with DITA Open Toolkit.
Generic instructions on how to install plug-ins that work with DITA Open Toolkit.
How to install the Idiom FO plug-in.
Production notes for the plug-ins section of this document.
Additional sources of information for the plug-ins section of this document.

Generic installation instructions for plug-ins

Generic instructions on how to install plug-ins that work with DITA Open Toolkit.

Follow these general steps to install a plug-in to work with DITA Open Toolkit.

1. Download the plug-in `.zip` file from one of the websites described in *Plug-ins overview*.
2. Unzip the `.zip` file and read the installation documentation it contains.
3. Copy the plug-in files to a subdirectory in either the `demo` or `plugins` subdirectory in the `ditaot` root directory.
4. Run the command `ant -f integrator.xml` to add the plug-in to the Toolkit.

Installing the Idiom FO plug-in

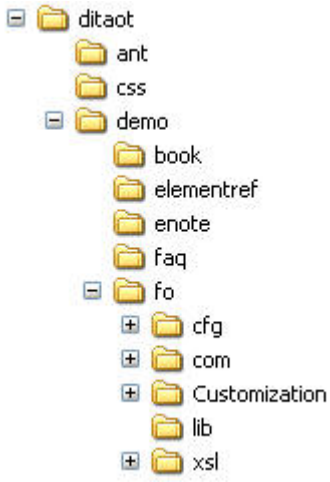
How to install the Idiom FO plug-in.

Before installing the Idiom FO plug-in, you need to acquire and install several other software packages it depends on.

SAXON XSLT parser	See *Installing SAXON on Windows* on page 40 or *Installing SAXON on Linux* on page 45 for installation instructions.
`IBM icu4j.jar` package	This package includes various forms of globalization support. You can download the ICU4J 3.4.4 package at *http://www-306.ibm.com/software/globalization/icu/downloads.jsp*.
RenderX XEP Engine	You can use either the free XEP 4 Personal Edition or the XEP Engine product. For information on XEP, see *http://www.renderx.com*.

Follow these steps to install the Idiom FO plug-in.

1. Download the plug-in from the web.
2. Unzip the plug-in files to the Toolkit `demo/fo` directory. Your directory structure should then look like this:



3. Copy icu4j_3_3_4.jar to the demo/fo/lib directory and then rename icu4j_3_3_4.jar to icu4j.jar.
4. Edit the file `demo/fo/build.xml` and set the path information for `saxon.jar` and XEP.

   That section of the file will look similar to the following:

```
<path id="project.class.path">
<pathelement location="c:/saxon6_5_3/saxon.jar"/>
<pathelement location="${fo.lib.dir}/xml-apis.jar"/>
<pathelement location="${fo.lib.dir}/xercesImpl.jar"/>
<pathelement location="${fo.lib.dir}/resolver.jar"/>
<pathelement location="${fo.lib.dir}/icu4j.jar"/>
<pathelement location="${fo.lib.dir}/fo.jar"/>
</path>

<path id="xep.class.path">
<fileset dir="c:/xep/lib" includes="**/*.jar"/>
<pathelement location="${fo.lib.dir}/fo.jar"/>
</path>
```

5. Move to the root directory of the DITA Open Toolkit and issue the following command to install the plug-in:
   `ant -f integrator.xml`

At this point, the plug-in is integrated into the Toolkit processing pipeline and can be used by specifying the pdf2 transtype. For information about transtypes in Ant scripts, see *About Ant scripts* on page 61. For processing instructions for the pdf2 transtype, see *Processing to PDF2 targets* on page 72.

Production notes (plug-ins)

Production notes for the plug-ins section of this document.

We used the Idiom FO plug-in to produce the PDF output for this document.

For more information (plug-ins)

Additional sources of information for the plug-ins section of this document.

You can download DITA Open Toolkit plug-ins from the following websites:

- Yahoo! dita-users group site: *http://groups.yahoo.com/group/dita-users/files/Demos/*
- SourceForge DITA Open Toolkit site: *http://sourceforge.net/project/showfiles.php?group_id=132728*

Managing your content

Information about how to manage your DITA content.
Strategies for backing up your DITA source files.
Information about storing your DITA source files in a library or source control system.
Overview of using content management system to manage your DITA projects.
Production notes for the managing your content section of this document.
Additional sources of information about managing your content.

Backing up your source files

Strategies for backing up your DITA source files.

Why it is important to back up your files

All the work you do editing and debugging the files in your DITA project ends up being stored as files on disk. If something happens to one or more of those disk files, you work may need to be re-created. Disk files can be lost for several reasons, including:

- You accidentally erase them. Because DITA projects may have hundreds or thousands of files, if may be relatively easy to do this when you don't have a library system or content management system.
- The hard drive in your computer fails. Hard drives are mechanical devices and will fail after a finite amount of time.
- The file system on your disk drive becomes corrupted.

Strategies for preserving your data

The basic strategy for preserving your data is to make sure it is stored on more than one hard drive. How you do this depends on your work environment:

- If you have a standalone desktop or laptop computer, you should make frequent backups to an external disk drive or USB device.
- If you are using a library or source control system, make sure your work gets checked in frequently. The source control system can serve as your backup system.
- If you are using a content management system, use it as your backup system.

It is easier to back up your DITA projects if they contain all your relevant project files (including your Ant scripts) and are located in a directory separate from your `ditaot` build directory.

Using a library or source control system

Information about storing your DITA source files in a library or source control system.

Storing DITA files in library (source control) systems

DITA source files are stored on disk as ASCII text files, just as are source code files for software projects. Because of this, source control, or library, systems used to store and manage software source code can also be used for DITA source files. A source control system stores and tracks changes to source files. Multiple versions of source files are kept, and most systems have built-in capabilities to display differences between different versions of the same file.

Some library (source control) systems you can use

The following table shows just a few of the many source control systems that can be used for storing DITA files.

System name	Description
CVS (Concurrent Versions System)	Open source project. For more information, see *http://www.cvsnt.org/wiki/*.
Perforce	Commercial software configuration management system. You can download a free version for small projects. For more information, see *http://www.perforce.com/*.
Subversion	Open source project that is meant as a newer replacement for CVS. For more information, see *http://subversion.tigris.org/*.

Using a a content management system

Overview of using content management system to manage your DITA projects.

Why a CMS can be useful to manage DITA files

If your DITA project involves large numbers of topics, many authors, or geographically distributed authoring and production teams, you may benefit from the features provided by a CMS, which can include:

- Workflow support
- Validation of topic links
- Support for the Semantic Web
- Localization (translation) support

In addition most CMSs provide basic library (source control) functionality.

How you can find a CMS that matches your needs, environment, and budget

The DITA focus area web site (dita.xml.org) has a list of DITA-related products, including products that provide content management functionality. See *http://dita.xml.org/products-services* to access the DITA product listings.

How to find general content management information

There are many web sites with information about content management. A good place to start is with CM Professionals at *http://www.cmprofessionals.org*.

Production notes (managing your content)

Production notes for the managing your content section of this document.

In producing this document we processed and backed up our files daily or sometimes even more than once a day.

In producing this document we did not use a library (source control) system or content management system, but now that the project has grown to 300+ files, we are investigating systems that will meet our needs with future editions of this document and other DITA projects.

For more information (managing content)

Additional sources of information about managing your content.

Name, description	Location
CM Professionals, the international content management community of practice, is a membership organization that fosters the sharing of content management information, practices, and strategies. CM Pros members are content management practitioners, both inside and outside organizations, who want to develop their expertise and share it with others.	*http://www.cmprofessionals.org/*
CMS Review provides resources to help you choose a content management solution.	*http://www.cmsreview.com/*
CMS Watch™ provides independent evaluations of content management, records management, enterprise search, and portal solutions.	*http://www.cmswatch.com/*
Managing Enterprise Content: A Unified Content Strategy (book) by Ann Rockley.	*http://www.rockley.com/*
Content Management for Dynamic Web Delivery by JoAnn T. Hackos.	*http://www.comtech-serv.com/*
The international association for **Open Source Content Management**, is an association connecting users and developers of open source content management solutions.	*http://www.oscom.org/*

Reuse concepts and techniques

How to reuse content, information design (using specializations), and processing code.
Overview information about the three kinds of DITA reuse: content, information design (specialization), and processing mechanisms.
Overview information about creating a specialization
How to reuse and override existing XSLT processing stylesheets.
Production notes for the reuse section of this document.
Additional sources of information about reuse.

About reuse

Overview information about the three kinds of DITA reuse: content, information design (specialization), and processing mechanisms.

Definition

DITA and DITA Open Toolkit support three kinds of reuse:

- **Content reuse**, in which a source topic or part of a topic is written once and used in multiple locations. For example, you might reference the same concept topic (processing DITA files) in both the processing and the troubleshooting maps. Another example might be to use the DITA content reference (conref) mechanism to reuse content once (say, using the text of a controlled vocabulary topic in an "about" file) or many times (say, repeating a short warning statement about the proper use of a hardware unit).
- **Information design reuse (specialization)**, in which you extend the definition of an existing DITA element to be used in a special way. Specialization makes use of the fact that DITA is based on the principle of inheritance.
- **Processing reuse**, in which you override stylesheet processing to customize your output.

The following topics discuss processing reuse in greater detail, and the production notes topic for this section provides examples of how conrefs have been used in this document.

Specialization overview

Overview information about creating a specialization

About specialization

Definition

An extension of a base DITA information type into one required for special purposes.

Usage

One of the key characteristics of DITA specialization is inheritance, which allows you to create new information types from existing ones. With inheritance you can use a class attribute to map an existing parent element to the specialized element you want to create.

Example

For example, you could specialize the base set of definition list tags (<dl>, <dlentry>, <dt>, and <dd>) into a set of glossary tags (<glosslist>, <glossentry>, and so forth) by defining only those characteristics specific to the glossary tags; they would inherit all other characteristics from the base definition list.

Creating a specialization

When choosing an element to specialize, look for a base element that:

- Has a more general meaning that also applies to your content
- Can accommodate the substructure of your content

Within the Toolkit `dtd` directory, create a DTD module in which the DTD elements derive from the elements of an existing DTD module.

Processing a specialization

If you do not modify the Toolkit processing, the Toolkit built-in generalization process automatically promotes your specialized element to the base element from which it derives, and processes it the same way it processes the base element.

If you want to modify the default processing, create a new XSLT script in the Toolkit `xsl` directory that imports the base XSLT script and provides special formatting for your specialized element.

In your Ant build script, add an "args.xsl" parameter to cause your new XSLT script to be used instead of the default.

Implementing processing reuse

How to reuse and override existing XSLT processing stylesheets.

Processing reuse overview

Usage

In the final stage of processing, the Toolkit runs XSLT stylesheet transforms to produce the output. In certain cases, it is possible to override stylesheet processing to customize the output.

The following XSLT stylesheets in the `ditaot/xsl` directory perform output transformation for various types of output (specified by setting the transtype). For those stylesheets marked with an asterisk (*) in the following table, you can override the default stylesheet with one you create.

Transtype (*can be overridden)	XSLT stylesheet(s)
*docbook	map2docbook.xsl, dita2docbook.xsl
eclipsecontent	map2eclipse.xsl, map2plugin-cp.xsl
eclipsehelp	map2eclipse.xsl
htmlhelp	map2hhc.xsl, map2hhp.xsl
*javahelp	dita2html.xsl
*pdf	dita2fo-shell.xsl
troff	dita2troff-step1-shell.xsl, dita2troff-step2-shell
*wordrtf	dita2rtf.xsl
*xhtml	dita2xhtml.xsl

How to override an XSLT stylesheet (generic instructions)

Follow these steps to override XSLT processing in a build:

1. In the `ditaot/xsl` directory, make a copy of the stylesheet you want to override and save it with its own unique name (don't replace the stylesheet that was originally included with the Toolkit).

Note: It is also possible to create a new stylesheet and use <xsl:import> to import the existing default stylesheet, and then make any changes you want to the existing targets.

2. In your new stylesheet, make any changes you want to the existing stylesheet code, and save it.
3. In your Ant build script, specify the "args.xsl" property with name of your new stylesheet.
4. Run your Ant build script.

How to override an XSLT stylesheet (specific example)

Follow these steps to modify the processing for a PDF target to remove the author list from the title page of the `.pdf` file. (The default XSLT stylesheet for PDF will add one author line to the title page for every <author> element in the <prolog> section of each file in the source tree.)

1. In the `xsl` directory of the Toolkit, make a copy of the file `dita2fo-shell.xsl` and save it as `xdita2fo-shell.xsl`".
2. Delete the following text in the file near line 134:

```
<fo:block font-size="11pt" font-weight="bold" line-height="1.5">
<xsl:text>[vertical list of authors]</xsl:text>
</fo:block>
<xsl:for-each select="//author">
<fo:block font-size="11pt" font-weight="bold" line-height="1.5">
[<xsl:value-of select="."></xsl:value-of>] </fo:block>
</xsl:for-each>
```

3. Add the following line to the Ant target in your build script:

```
<property name="args.xsl" value="${basedir}/xsl/xdita2fo-shell.xsl"/>
```

4. Run your Ant script again and verify that the `.pdf` output file does not have an author list on the first page.

Production notes (reuse concepts and techniques)

Production notes for the reuse section of this document.

How we reused content

The DITA core vocabulary, which is a key feature of this document, has provided the authors many opportunities for content reuse. Most of the "about" topics in the book are "conref'ed" from the core vocabulary topic of the same name. For example, here is the core vocabulary content for the Ant topic:

```
<conbody>
<section id="ant_term">
<p>
<b>Definition</b>
</p>
<p>A Java-based, open source tool provided by the Apache Foundation
to automatically implement a sequence of build actions defined in an Ant build script.
The Ant functionality is similar to the more well-known UNIX make
and Windows nmake build toolsâ€”however, instead of using shell-based commands,
like make, Ant uses Java classes. The configuration files are XML-based,
calling out a target tree where various tasks get executed. Each task is run
by an object that implements a particular task interface. Ant can be used
for both software and document builds.</p>
<p>
<b>Usage</b>
```

```
</p>
<p>DITA Open Toolkit provides Java code and a set of
XSLT transform scripts for producing different types of output,
for example, XHTML, Eclipse help, JavaHelp, and PDF.
Ant build scripts build DITA output by controlling the execution
of the DITA Open Toolkit Java code and the XSLT transform scripts.</p>
<p>Ant must be installed in your DITA processing environment
for DITA Open Toolkit to function, but it is not part
of the Toolkit installation package.</p>
<p>
<b>For more information</b>
</p>
<p>For information about the Ant version required by the Toolkit,
see <xref href="../release_current/sysreqs.dita"
format="dita">System requirements and supported applications</xref>.</p>
<p>
<b>To obtain</b>
</p>
<p>You can download Ant from <
xref href="http://ant.apache.org/bindownload.cgi"
format="html" scope="external"/>.</p>
</section>
</conbody>
```

Here is the conref in the About Ant topic:

```
<conbody>
<section conref="../core_vocabulary/ant.dita#ant/ant_term">
</section>
```

For more information (reuse)

Additional sources of information about reuse.

For more detailed discussions on content reuse and specialization, see *Introduction to DITA: Introduction to the Darwin Information Typing Architecture* by Jennifer Linton and Kylene Bruski. For information about the book, see *http://www.comtech-serv.com*.

Expanding and customizing access to your information

How to expand access to your information through indexing, the use of metadata, and filtering (conditional processing).
Overview information about indexing.
Overview information about creating and using metadata.
Overview information about RDF and the DITA Open Toolkit.
Overview information about filtering (conditional processing).
Production notes for the accessing your information section of this document.
Additional sources of information for the accessing section of this document.

About indexing

Overview information about indexing.

Usage

Indexing in DITA is accomplished with the <indexterm> tag, which can be nested.

Example

```
<indexterm>processing
<indexterm>to PDF targets</indexterm>
</indexterm>
```

The code produces the following two-level index entry:

```
processing
  to PDF targets
```

About metadata

Overview information about creating and using metadata.

Definition

Semantic information about the information in a DITA document, for example, the name of the document's author, the date the document was created, the name of the product the information is describing, the target audience, and copyright information.

Usage

In DITA you can specify metadata at the topic or map level, with map-level metadata overriding topic entries.

Example

```
<metadata>
<keywords>
<keyword>Ant script</keyword>
<indexterm>Ant scripts
<indexterm>definition</indexterm>
<indexterm>usage</indexterm>
</indexterm>
</keywords>
<prodinfo>
```

```
<prodname>DITA Open Toolkit</prodname>
<vrmlist>
<vrm version="1.2.2"/>
</vrmlist>
</prodinfo>
</metadata>
```

Providing metadata in DITA source files

The <prolog> section of a DITA source file can contain metadata about the source file. including the author(s), date created, and keywords describing what the file is about. For instance, the source for this DITA topic contains the following metadata:

```
<prolog>
<author type="creator">Anna van Raaphorst</author>
<author type="contributor">Richard Johnson</author>
<publisher>OASIS (Organization for the Advancement of Structured Information
Standards)</publisher>
<copyright>
<copyryear year="2006"></copyryear>
<copyrholder>VR Communications, Inc.</copyrholder>
</copyright>
<critdates>
<created date="2006-June-10"/>
<revised modified="2006-July-23"/>
</critdates>
<metadata>
<keywords>
<keyword>Darwin Information Typing Architecture</keyword>
<keyword>DITA</keyword>
<keyword>DITA Open Toolkit</keyword>
<keyword>managing content</keyword>
<keyword>metadata</keyword>
</keywords>
<prodinfo>
<prodname>DITA Open Toolkit</prodname>
<vrmlist>
<vrm version="1.2.2"></vrm>
</vrmlist>
</prodinfo>
</metadata>
</prolog>
```

How the Toolkit processes metadata

In some cases, the output produced by a Toolkit build will contain content based on the metadata that was in the source file. For instance, when this source file is processed to XHTML, the output files will contain metadata in the Dublin Core format. Here is the metadata in the XHTML source for the source file above:

```
<meta http-equiv="Content-Type" content="text/html; charset=utf-8"/>
<meta name="security" content="public"/>
<meta name="Robots" content="index,follow"/>
<meta http-equiv="PICS-Label" content='(PICS-1.1 "http://www.icra.org/ratingsv02.html" l
 gen true r (cz 1 lz 1 nz 1 oz 1 vz 1) "http://www.rsac.org/ratingsv01.html" l gen true
r (n 0 s 0 v 0 l 0) "http://www.classify.org/safesurf/" l gen true r (SS~~000 1))' />
<meta name="DC.Type" content="concept"/>
<meta name="DC.Title" content="About metadata"/>
<meta name="abstract" content="Overview information about creating and using metadata."/>
<meta name="description" content="Overview information about creating and using metadata."/>
<meta name="DC.subject" content="Darwin Information Typing Architecture, DITA, DITA Open
 Toolkit, managing content, metadata"/>
<meta name="keywords" content="Darwin Information Typing Architecture, DITA, DITA Open
Toolkit, managing content, metadata"/>
<meta name="DC.Relation" scheme="URI" content="../managing/managing.html"/>
<meta name="DC.Creator" content="Anna van Raaphorst"/>
```

```
<meta name="DC.Contributor" content="Richard Johnson"/>
<meta name="DC.Publisher" content="OASIS (Organization for the Advancement of Structured
 Information Standards)"/>
<meta name="copyright" content="VR Communications, Inc. 2006" type="primary"/>
<meta name="DC.Rights.Owner" content="VR Communications, Inc. 2006" type="primary"/>
<meta name="DC.Date.Created" content="2006-June-10"/>
<meta name="DC.Date.Modified" content="2006-June-10"/>
<meta name="DC.Format" content="XHTML"/>
<meta name="DC.Identifier" content="aboutmetadata"/>
```

About RDF and the DITA Open Toolkit

Overview information about RDF and the DITA Open Toolkit.

Usage

While it does not directly contain support for generating external or embedded RDF, the Toolkit does have some function that can be used to create RDF.

Dublin Core

The Dublin Core is a standard for metadata that is used to describe online information. The XHTML output produced by the DITA Open Toolkit contains Dublin Core metatags generated from the various elements contained within the prolog, title, amd short description elements in the DITA source files. Further processing of the XHTML output can create RDF triples using these meta tags. (Functionality for that processing is not contained in the Toolkit today.)

For example a <title> element might produce the following output in the generated XHTML:

```
<meta name="DC.Title" content="About metadata"/>
```

SKOS

The Thesaurus plug-in can be installed with DITA Open Toolkit to provide a DITA specialization that can be used to identify and process content based on what the information is about. See *About DITA Open Toolkit plug-ins* on page 123 for more information about this plug-in.

About filtering (conditional processing)

Overview information about filtering (conditional processing).

Definition

Selective processing of content in a DITA document.

Usage

Say you have a need for two versions of your installation instructions, one for Windows and one for Linux. You can create a topic file with both sets of instructions (with each set properly labeled as either Windows or Linux), and then use a ditaval file to specify your processing rules (for example, whether to produce a Windows or Linux version of the document, or whether to produce a single output file with the content flagged appropriately with Windows and Linux icons).

Production notes (accessing)

Production notes for the accessing your information section of this document.

Garage sample files that illustrate filtering

One of the Ant scripts for the garage sample uses filtering to exclude topics having to do with oil and snow. Here is the section of the script that references the ditaval file:

```
<!-- Specify the file to be used for filtering. -->
<property name="dita.input.valfile"
value="${projdir}/ditaval_files/garage_filtering.ditaval"/>
```

Here is the map file that uses the <otherprops> element to identify topics having to do with oil and snow:

```
<map title="Garage (hierarchy)">
<topicref href="concepts/garagetasks.dita" format="dita">
<topicref href="tasks/changingtheoil.dita" otherprops="oil" format="dita"/>
<topicref href="tasks/organizing.dita" format="dita"/>
<topicref href="tasks/shovellingsnow.dita" otherprops="snow" format="dita"/>
<topicref href="tasks/takinggarbage.dita" format="dita"/>
<topicref href="tasks/spraypainting.dita" format="dita"/>
<topicref href="tasks/washingthecar.dita" format="dita"/>
</topicref>
<topicref href="concepts/garageconcepts.dita" format="dita">
<topicref href="concepts/lawnmower.dita" format="dita"/>
<topicref href="concepts/oil.dita" otherprops="oil" format="dita"/>
<topicref href="concepts/paint.dita" format="dita"/>
<topicref href="concepts/shelving.dita" format="dita"/>
<topicref href="concepts/snowshovel.dita" otherprops="snow" format="dita"/>
<topicref href="concepts/toolbox.dita" format="dita"/>
<topicref href="concepts/tools.dita" format="dita"/>
<topicref href="concepts/waterhose.dita" format="dita"/>
<topicref href="concepts/wheelbarrow.dita" format="dita"/>
<topicref href="concepts/workbench.dita" format="dita"/>
<topicref href="concepts/wwfluid.dita" format="dita"/>
</topicref>
</map>
```

Here is the ditaval file, referenced in the Ant script, that excludes topics tagged as having to do with oil or snow:

```
<?xml version="1.0" encoding="utf-8"?>
<!-- Filters out topics about "oil" and "snow" from the garage sample. -->
<val>
<prop att="otherprops" val="oil" action="exclude"></prop>
<prop att="otherprops" val="snow" action="exclude"></prop>
</val>
```

For more information (accessing)

Additional sources of information for the accessing section of this document.

The garage sample has coding to do filtering (conditional processing). See *About the garage sample* on page 68 for more information.

Customizing your published output

How to customize your published output.
Information about using your own CSS to modify XHTML output.
How to add header, footer and head text to XHTML output.
Production notes for the customizing section of this document.
Additional sources of information about customizing your published output.

Using your own CSS (cascading style sheet)

Information about using your own CSS to modify XHTML output.

Default CSS behavior for XHTML processing

The Toolkit CSS stylesheet file `resource/commonltr.css` is copied to the output directory when you process to a target that creates XHTML output. All the generated XHTML output files all include a link like the following that references the default CSS file:

```
<link rel="stylesheet" type="text/css" href="../commonltr.css">
```

The generated XHTML pages reference classes defined in the default CSS file to control the styling of the XHTML page in a Web browser.

Overriding the default CSS for a single DITA element

DITA provides an "outputclass" common attribute that can be used to to explicitly set CSS classes for elements in the XHTML output. For example, if you want an entire section to be rendered as bold, you would code :

```
<section outputclass="caution" />
```

How to create your own CSS to override the default behavior

If you want to change the appearance of all the generated Web pages, you can create you own CSS file that overrides part or all of the default CSS file. Your CSS will be included after the default CSS in all the generated pages.

For your override CSS to be used, you must set property values for the three Ant parameters in the following table:

Parameter	**Description**
args.copycss	Whether to copy your CSS to the output directory.
args.css	Path to your CSS file.
args.csspath	Location of your CSS file in the output directory.

CSS override example

In this example we will make the background of all the generated Web pages for the garage sample be the color aqua. We start by creating a new file `garage.css`. The file looks like this:

```
/* garage CSS stylesheet */
body {
font-family: verdana, arial, helvetica, sans-serif;
font-size: 12px;
background: Aqua;
```

```
}
```

Next we add some property definitions to our Ant build script as follows:

```
<!-- Properties to add a custom CSS -->
<property name="args.css" value="${projdir}/garage.css"/>
<property name="args.csspath" value="CSS"/>
<property name="args.copycss" value="yes"/>
```

When the Ant script is run our CSS will be copied to the `CSS` subdirectory in the output directory. In addition, the generated Web pages will all contain the following lines:

```
<link rel="stylesheet" type="text/css" href="../CSS/commonltr.css"/>
<link rel="stylesheet" type="text/css" href="../CSS/garage.css"/>
```

This will cause all the Web pages to have an aqua background color.

Tailoring XHTML output

How to add header, footer and head text to XHTML output.

XHTML tailoring overview

The Toolkit supports several <property> settings that can be used to customize the appearance of XHTML output. XHTML is generated when the "transtype" property has the value "xhtml". The following table shows which properties you can set that affect the appearance of your XHTML output:

Parameter	Definition, Usage	Examples
args.ftr	URI of the file containing XHTML to be placed in the body running-footer area of the output file. The file must be well-formed XML.	Example: <property name="args.ftr" value="file:/c:/sandbox/myftr.xml"/>
args.hdf	URI of the file containing XHTML to be placed in the head area of the output file. The file must be well-formed XML.	Example: <property name="args.hdf" value="file:/c:/sandbox/myhdf.xml"/>
args.hdr	URI of the file containing XHTML to be placed in the running-header area of the output file. The file must be well-formed XML.	Example: <property name="args.hdr" value="file:/c:/sandbox/myhdr.xml"/>

Instructions for tailoring XHTML ouput (specific example)

Assume DITA source files are stored in `C:/sandbox`. In the `sandbox` directory are files `myhdr.xml` and `myftr.xml`. The files must be well-formed XML, so `myftr.xml` might look like this:

```
<p>DRAFT</p>
```

In the Ant script that builds the XHTML target, add properties for `args.hdr` and `args.ftr`. The target in the Ant script would look like this:

```
<target name="tk2xhtml">
<ant antfile="${basedir}${file.separator}conductor.xml" target="init">
<property name="args.input" value="doc/toolkit.ditamap"/>
<property name="output.dir" value="out/toolkit/xhtml"/>
<property name="transtype" value="xhtml"/>
<property name="dita.extname" value=".dita"/>
```

```
<property name="args.hdr" value="file:/C:/sandbox/myhdr.xml"/>
<property name="args.ftr" value="file:/C:/sandbox/myftr.xml"/>
</ant>
</target>
```

Production notes

Production notes for the customizing section of this document.

Our experience with default CSS behavior

In the Ant scripts used to build the *DITA Open Toolkit User Guide and Reference*, we used only the default CSS stylesheet so that you can see what output that produces. However, using the default does not always produce the best results. For example, one problem we would like to address is that the default CSS for XHTML does not have any <filepath> class defined, so all <filepath> elements are unstyled.

For more information (customizing)

Additional sources of information about customizing your published output.

For more information about Ant parameters, see *Ant processing parameters* on page 63.

Localizing (translating) your DITA content

Information about localizing (translating) the content in your DITA projects.
Overview information about localizing (translating) DITA content.
Production notes for the localizing (translating) section of this document.
Additional sources of information about localizing (translating) the content in DITA projects.

About localizing (translating)

Overview information about localizing (translating) DITA content.

Two of the key reasons organizations cite for using DITA are:

- To contain localization (translation) costs
- To respond quickly to customers who need product documentation translated into the primary language spoken in their country or region

Supported languages

DITA and DITA Open Toolkit support the languages listed in the following table.

Language	**xml:lang value**
Arabic	ar-eg
Bulgarian	bg-bg
Catalan	ca-es
Chinese (Simplified)	zh-cn
Chinese (Traditional)	zh-tw
Croatian	hr-hr
Czech	cs-cz
Danish	da-dk
Dutch	nl-nl
Dutch (Belgian)	nl-be
English (Canadian)	en-ca
English (UK)	en-gb
English (US)	en-us
Estonian	et-ee
Finnish	fi-fi
French	fr-fr
French (Belgian)	fr-be
French (Canadian)	fr-ca
French (Swiss)	fr-ch

Language	xml:lang value
German	de-de
German (Swiss)	de-ch
Greek	el-gr
Hebrew	he-il
Hungarian	hu-hu
Icelandic	is-is
Italian	it-it
Italian (Swiss)	it-ch
Japanese	ja-jp
Korean	ko-lr
Latvian	lv-lv
Lithuanian	lt-lt
Macedonian	mk-mk
Norwegian	no-no
Polish	pl-pl
Portuguese	pt-pt
Portuguese (Brazilian)	pt-br
Romanian	ro-ro
Russian	ru-ru
Serbian	sr-sp
Slovak	sk-sk
Slovenian	sl-si
Spanish	es-es
Swedish	sv-se
Thai	th-th
Turkish	tr-tr

Production notes (localizing)

Production notes for the localizing (translating) section of this document.

Using DITA to become "localization-ready"

Currently there are no plans to translate this document into languages other than US English. However, it would be well positioned to do so for the following key reasons:

- The document was written using DITA, an XML vocabulary that supports 9 output formats and over 40 languages
- The core vocabulary set could provide a translation center with basic information about the Toolkit and related products.

- Most of the "about" topics have been "conref'ed" from the core vocabulary, to that content needs to be translated only once.

For more information (localizing)

Additional sources of information about localizing (translating) the content in DITA projects.

Name, description	Location
The Localization Industry Standards Association (LISA) is an international forum for organizations doing business globally. It has published a set of localization best practices that list the right and wrong ways to support international customers, products, and services.	*http://www.lisa.org/*
Globalization and Localization Association (GALA) is a non-profit international industry association for the translation, internationalization, localization, and globalization industry. The association gives members a common forum to discuss issues, create innovative solutions, promote the industry, and present a joint voice within the industry and to the outside community.	*http://www.gala-global.org/*
ATA (American Translators Association) is a professional association founded to advance the translation and interpreting professions and foster the professional development of individual translators and interpreters. Its members include translators, interpreters, teachers, project managers, web and software developers, language company owners, hospitals, universities, and government agencies.	*http://www.atanet.org/*
W3C internationalization activity	*http://www.w3c.org/International/*

Distributing your published content

How to distribute your published content.
Overview information about distributing your published content.
Overview information about distributing published DITA content as RSS.
Information by distributing published DITA content on a web server.
Production notes for the distributing your published content section of this document.
Additional sources of information for the distributing section of this document.

About distributing content

Overview information about distributing your published content.

Definition

Making your published DITA content available to your customers, potential customers, and other interested users.

Distributing information about published DITA content as RSS

Overview information about distributing published DITA content as RSS.

Definition

A family of web feed formats written in XML and used in content syndication by enabling applications like RSS readers to find out when new information is available on a website.

Usage

Since creation of output from DITA source files is automated by using Ant, it is possible to create or update RSS information about the output at the same time the output is produced. The RSS file can then be uploaded along with the output so its availability can be known to those subscribed to the RSS feed.

For example, the build could create a file like this to announce the availability of a new version of the output:

```
<?xml version='1.0'?>
<rss version='2.0'>
<channel>

<title>DITA OT User Guide</title>
<copyright>Copyright (c) 2006 Anna van Raaphorst. All rights reserved.</copyright>
<link>http://www.mysite.com/ditaug.html</link>
<description>DITA Open Toolkit User Guide 1.3</description>
<language>en-us</language>
<lastBuildDate> Wed, 15 Aug 2006 15:14:30 PST</lastBuildDate>
<item>
<title>DITA OT User Guide 1.3</title>
<link>http://www.mysite.com/ditaug.pdf</link>
<pubDate>Wed, 15 Aug 2006 15:14:30 PST</pubDate>
<description>
Get the latest version of DITA OT User Guide.
</description>
</item>

</channel>
</rss>
```

Distributing information by publishing DITA content on a web server

Information by distributing published DITA content on a web server.

Running on a web server in future DITA Open Toolkit releases

All the application code required for building XHTML output from DITA source is written in the Java programming language. Starting with release 1.3, DITA Open Toolkit will support incremental builds, which means a build will only need to process changed files to produce output. Some DITA users are already talking about running the DITA build on a web server so they can dynamically create web pages from DITA source files.

Production notes (distributing)

Production notes for the distributing your published content section of this document.

Would users benefit by subscribing to updates to documents like this one?

We have thought of using RSS to notify interested users about updates to this document. Would you be interested?

Would your users be interested in taking advantage of that capability for DITA documents you publish?

For more information (distributing)

Additional sources of information for the distributing section of this document.

For an easy-to-understand tutorial on RSS, see *http://www.mnot.net/rss/tutorial/*.

Migrating legacy content to DITA

How to migrate legacy content to DITA.
Overview information about migrating legacy content to DITA.
Production notes for the migrating legacy content section of this document.
Additional sources of information about migrating legacy content to DITA.

Content migration overview

Overview information about migrating legacy content to DITA.

Adobe has announced FrameMaker DITA Application Pack, a free plug-in for FrameMaker 7.2. The Application Pack is targeted to be released August 2006.

Note: This is a plug-in for FrameMaker, not DITA Open Toolkit.

Production notes (migrating content)

Production notes for the migrating legacy content section of this document.

This document is about 90% new material. The small amount of legacy content was migrated manually.

For more information (migrating content)

Additional sources of information about migrating legacy content to DITA.

Description	Location
Adobe white paper on **migrating from unstructured to structured FrameMaker**	*http://www.adobe.com/products/framemaker/pdfs/migrationguide.pdf*

Sample files

Information about the DITA sample source files that come with DITA Open Toolkit.

The following sample files (garage and grocery shopping) are included in their DITA source form for your reference. Ant scripts are also included. Both samples are in the `samples` directory.

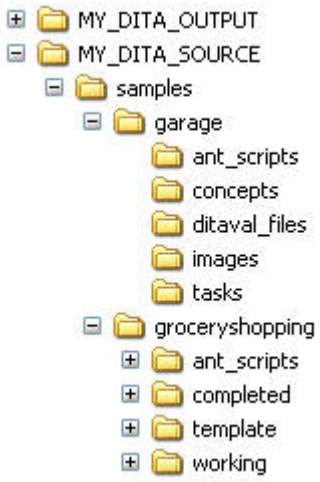
Garage sample

Definition

The garage sample, which is located in the `ditaot/samples` directory, is a set of DITA source files containing concepts and tasks related to organizing and doing tasks in a garage. The sample map files allow the topics to be published as either a hierarchy or a sequence. The sample also includes Ant scripts to allow you to publish to all supported target environments.

Usage

Before you begin to use the sample files (which includes both the garage sample and the grocery shopping sample), we recommend creating two directories in your root directory called `MY_DITA_SOURCE` and `MY_DITA_OUTPUT` (Windows examples would be `C:/MY_DITA_SOURCE` and `C:/MY_DITA_OUTPUT`) and then copying both the garage and grocery shopping sample files from the `ditaot/samples` directory to `MY_DITA_SOURCE`. Your directory structure should then look like this:



The garage sample includes Ant scripts that process to all supported target environments. A filtering (conditional processing) script is also included: `garage_filtering_xhtml.xml`. This script filters out (excludes) all files having to do with oil or snow, which are tagged with the "otherprops" attribute. Running this script produces a hierarchically organized output file with four of the topics excluded.

Grocery shopping sample

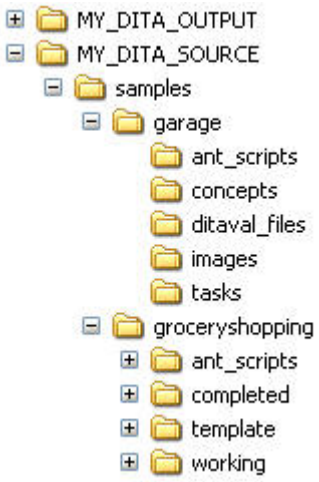
Definition

The grocery shopping sample, which is located in the `ditaot/samples` directory, is a simple DITA project that includes seven topics: an overview topic, two concepts, two tasks, and two reference topics. The project also includes a map that aggregates the files and links them meaningfully using a relationship table. Ant scripts that process to the XHTML, HTML Help, and PDF2 targets are also provided.

Usage

Before you begin to use the sample files (which includes both the garage sample and the grocery shopping sample), we recommend creating two directories in your root directory called `MY_DITA_SOURCE` and `MY_DITA_OUTPUT` (Windows

examples would be `C:/MY_DITA_SOURCE` and `C:/MY_DITA_OUTPUT`) and then copying both the garage and grocery shopping sample files from the `ditaot/samples` directory to `MY_DITA_SOURCE`. Your directory structure should then look like this:



The grocery shopping sample assumes you are already familiar with the garage sample provided as both a project model as well as a tool to verify your DITA Open Toolkit installation, and that you have processed the garage sample as described in *Processing (building) and publishing DITA documents* on page 59.

Frequently asked questions (FAQs)

Frequently asked questions about DITA and DITA Open Toolkit (OT).
IBM's answer to the question.
IBM's answer to the question.
Deborah Pickett's answer to the question.
IBM's answer to the question.

What is "Darwin" in the name of the DITA architecture and DITA Open Toolkit?

IBM's answer to the question.

Contributing author: IBM

Date: August 8, 2006

The Darwin Information Typing Architecture name has the following meaning and significance:

- **Darwin** because it uses the principles of specialization and inheritance.
- **Information Typing** because it capitalizes on the semantics of topics (concept, task, and reference) and of content (messages, typed phrases, and semantic tables).
- **Architecture** because it provides vertical headroom (new applications) and edgewise extension (specialization into new types) for information.

The DITA architecture supports the proper construction of specialized DTDs from any higher-level DTD or schema. The base DTD is ditabase, which contains an archetype topic structure and three additional peer topics that are typed specializations from the base topic: concept, task, and reference. The principles of specialization and inheritance resemble the principle of variation in species proposed by Charles Darwin, so the name reminds us of the key extensibility mechanism inherent in the architecture.

What is the ideal length for a DITA topic?

IBM's answer to the question.

Contributing author: IBM

Date: May 1, 2006

Topics should be short enough to be easily readable, but long enough to make sense on their own.

Do I need to know XML to use DITA?

Deborah Pickett's answer to the question.

Contributing author: Deborah Pickett

Date: June 9, 2006

XML's a funny beast—people imagine that it has all kinds of mystical powers, but it's little more than a set of rules for how to structure data. I'll try to work in a reference to the emperor's new clothes here.

If all you plan to do is write topics in DITA, then you need to know very little about XML. If you're going to use a newfangled WYSIWYM editor to hide the structure from you, then you might be able to get by knowing nothing at all about XML. If you stay in plaintext-land, then I'd list the following XML ideas as essential:

- Elements and attributes
- Angle brackets (< and >), ampersand (&), slashes, and quotation marks
- Content models (the idea that elements contain other elements)

These would be nice, too:

- Doctypes
- Well-formedness vs. validity

Don't let anyone try to talk you into studying these in the short term:

- DTDs and Schemas
- XSLT
- Namespaces

After that, it's probably just a matter of brushing up on DITA's ideas of content models.

The above doesn't hold if you are planning to write your own specializations or transformations.

If you want to understand the internals of the DITA Open Toolkit, then you are in for a bumpier ride, because you'll need to become acquainted with Ant, Java, XSLT, and how they all talk to each other.

How does DITA differ from DocBook?

IBM's answer to the question.

Contributing author: IBM

Date: August 8, 2006

DocBook and DITA take fundamentally different approaches.

DocBook was originally designed for a single, continuous technical narrative, where the narrative might be an article, book, or multi-volume length. Through transforms, DocBook can "chunk" this information into topics to provide support for websites and other information sets. Because the goal of the DocBook DTD is to handle all standard requirements for technical documentation, the usage model encourages customization to exclude elements that aren't local requirements. The usage model supports but discourages local extensions because of the potential for unknown new elements to break tool support and interoperability.

By contrast, DITA was designed for discrete technical topics. DITA collects topics into information sets, potentially using filtering criteria. The core DITA information types are not intended to cover all requirements, but rather to provide a base for meeting new requirements through extension. Extension is encouraged, but new elements must be recognizable as specializations of existing elements. Through generalization, DITA provides for tool reuse and interoperability.

Each approach has its strengths. DocBook would be the likely choice for a technical narrative. DITA would be the likely choice for large, complex collections of topics or for applications that require both extensibility and interoperability. Technical communications groups might want to experiment with both packages to determine which approach is better suited for their processes and outputs.

DITA core vocabulary

Information about the DITA core vocabulary, a list of the terms in the vocabulary, and links to related terms and other information.
Overview of the DITA core vocabulary.

About the DITA core vocabulary

Overview of the DITA core vocabulary.

The DITA core vocabulary is a set of terms related to Darwin Information Typing Architecture (DITA) and DITA Open Toolkit. It is intended to be used as a controlled or specialized metadata vocabulary for describing and documenting DITA, DITA Open Toolkit, and other resources related to DITA or the Toolkit.

Inspiration for this effort is the Dublin Core Metadata Initiative (DCMI), an organization dedicated to promoting the widespread adoption of interoperable metadata standards and developing specialized metadata vocabularies for describing resources that enable intelligent information discovery systems. The mission for the DCMI is to provide simple standards to facilitate the finding, sharing and management of information.

In the spirit of the DCMI effort, the key goals (and potential benefits) of the DITA core vocabulary are to:

- Facilitate the finding, sharing and management of information about DITA, DITA Open Toolkit, and related technologies
- Promote understand and widespread usage of DITA and the Toolkit
- Make the terms accessible and "reusable" by the greater DITA community by creating the vocabulary as a set of DITA topics and publishing them in the *DITA Open Toolkit User Guide and Reference*
- As much as possible, use DCMI metadata in documenting DITA core vocabulary topics

Without a common understanding of "what we are talking about" and how our dialog relates to resources and information that are part of DITA and the Toolkit, these goals are much more difficult to achieve. We invite the DITA community to participate in the effort to create, promote, and use the DITA core vocabulary.

Administrator or manager audience category

Definition

Person responsible for the administration and management of DITA projects.

Usage

Target audience category for this document. Includes application administrators, staff managers, and project and workflow managers.

Ant

Definition

Ant is a Java-based, open source tool provided by the Apache Foundation to automatically implement a sequence of build actions defined in an Ant build script. The Ant functionality is similar to the more well-known UNIX make and Windows nmake build tools; however, instead of using shell-based commands, like make, Ant uses Java classes. The

configuration files are XML-based, calling out a target tree where various tasks get executed. Each task is run by an object that implements a particular task interface. Ant can be used for both software and document builds.

Usage

DITA Open Toolkit provides Java code and a set of XSLT transform scripts for producing different types of output, for example, XHTML, Eclipse help, JavaHelp, and PDF. Ant build scripts build DITA output by controlling the execution of the DITA Open Toolkit Java code and the XSLT transform scripts.

Ant must be installed in your DITA processing environment for DITA Open Toolkit to function, but it is not part of the Toolkit installation package.

Ant scripts

Definition

An XML build file, containing a single project and a single or multiple targets, each of which consists of a group of tasks that you want Ant to perform. A task is an XML element that Ant can execute to make something happen. Ant comes with a large number of built-in tasks; you can also add tasks of your own.

Usage

DITA Open Toolkit makes use of two kinds of Ant scripts:

System scripts	System-level scripts handle DITA source file processing and transformation into published output. They are an integral part of DITA Open Toolkit and should never be modified by users. The files are located in the `ditaot` root directory.
User scripts	User-level processing scripts are created and modified by users. They provide to the system scripts (which do the actual processing) information about the names and locations of the DITA source files, where to put the processed target files, and values for specific processing parameters. DITA Open Toolkit contains a number of sample user-level processing files that you can view to gain understanding of the build process, and modify for your own use.

Audience

Navigation title: Audience

Definition

A target group of users.

Usage

This document was written for both beginning and advanced users currently using or planning to use DITA and DITA Open Toolkit to produce structured XML documents to be published through any of the supported channels.

Target audience categories and types for this document are:

Content specialists (for example, information architect; content creator and editor; and graphic, interface, print-document, and website designer)

Technical specialists (for example, application designer and developer, content manager, and database and system administrator)

Administrators and managers (for example, application designer and developer, content manager, and database and system administrator)

Best practices

Definition

Guidelines that apply to many similar cases, cross organizational boundaries, and are agreed to by recognized experts in the relevant field.

Block element

Definition

Defines the structure of a block of text.

Usage

Many block elements in DITA have the same names as HTML tags.

Example(s)

<p>, <sl>, and <example>.

Body element (<body>)

Definition

A container for the main content of a DITA topic.

Build file

Definition

An Ant file that connects the source files and production processes for one or more target publishing environments (for example, XHTML, Eclipse help, or HTML Help

Cascading stylesheet (CSS)

Definition

A file that specifies the look and feel of HTML and XHTML documents. DITA Open Toolkit provides default stylesheets; you can override the defaults by including a CSS file of your own in the build.

Choice table

Definition

In a task step, a choice table (<choicetable>) presents the user with two or more options (choices) to complete the step.

Example

```
<choicetable frame="none">
<chhead>
<choptionhd>If this prompt displays, </choptionhd>
<chdeschd>type the following command</chdeschd>
</chhead>
<chrow>
<choption>D:\</choption>
<chdesc>
<codeblock>C:</codeblock>
</chdesc>
</chrow>
<chrow>
<choption>H:\</choption>
<chdesc>
<codeblock>C:</codeblock>
</chdesc>
</chrow>
<chrow>
<choption>C:\My Documents\...</choption>
<chdesc>
<codeblock>cd \</codeblock>
</chdesc>
</chrow>
</choicetable>
```

To see how this table displays, go to *Verifying the installation on Windows* on page 43.

Collection-type attribute

Definition

One of a group of attributes used to create relationships among "sibling" topics that share a common parent.

Usage

To specify a collection-type attribute for a group of topics that do not have a common parent (for example, topics listed in the same cell of a *relationship table*, use the topic group container element.

Example

```
<reltable>
<relrow>
<relcell>
<topicgroup collection-type="family">
<topicref href="../release_current/sysreqs.dita"/>
<topicref href="../installing/installing_overview.dita"/>
</topicgroup>
</relcell>
```

Command element (<cmd>)

Definition

In a task step, a command element (<cmd>) describes the action the user needs to take.

Example

```
<taskbody>
<context>
<p>Once every 6000 kilometers or three months,
change the oil in your car.
This will help keep the engine in good condition.</p>
<p>To change the oil:</p>
</context>
<steps>
<step>
<cmd>Remove the old oil filter.</cmd>
</step>
<step>
<cmd>Drain the old oil.</cmd>
</step>
```

Concept

Definition

(1) Conceptual, background, or descriptive information. (2) A DITA core information type, which is used to document information of a conceptual nature.

Concept analysis

Definition

Analysis of the concepts required in a DITA document or group of documents.

Concept information type

Definition

Information type that contains content of a conceptual nature.

Conditional processing

See

Filtering (conditional processing) on page 167.

Content

Definition

Information (for example, the text and graphics that make up a news story appearing on a website) in a DITA file that will be published and delivered to an end user.

Content inventory

Definition

Inventory of documents (DITA and non-DITA) in an existing document set.

Usage

>The inventory is input to a documentation plan involving changes to the existing documents, new use of related documents, or the creation of new documents.

Content reference attribute

Definition

When a topic references a complete topic or smaller piece of content with the <conref> attribute, the referenced content gets dynamically copied into the referencing topic. If the referenced topic is changed and the document containing the referencing topic is rebuilt, the new version of the referenced topic is automatically replaced.

Content reuse

Definition

The use of a single piece of content in multiple location in a single document, or in multiple, related documents.

Content specialist audience category

Definition

Person primarily responsible for the content of a DITA project.

Usage

Target audience category for this document. Includes information architects; content creators and editors; and graphic, interface, print-document, and website designers.

Content reference attribute

Definition

When a topic references a complete topic or smaller piece of content with the <conref> attribute, the referenced content gets dynamically copied into the referencing topic. If the referenced topic is changed and the document containing the referencing topic is rebuilt, the new version of the referenced topic is automatically replaced.

Context element (<context>)

Definition

Contains information that helps users understand the background and purpose of a task.

Example

```
<taskbody>
<context>In this topic you will create a map
to aggregate the topics you created
in the previous chapter.
The map is based on a template already provided.
The map file includes topicrefs to the topics
you want to aggregate, process, and publish,
and also a relationship table to link the included topics
a meaningful way.
You will be working in the
<filepath>MY_DITA_SOURCE/samples/groceryshopping</filepath> directories.
This topic assumes you are familiar with the information in
<xref href="../topics/aboutgroceryshopping_sample.dita" scope="local">
About the grocery shopping sample</xref>,
and that you have created the topics according to the instructions
in <xref href="../topics/topics.dita" scope="local">Topics</xref>.</context>
<steps>
<step>
<cmd>Go to the <filepath>groceryshopping/template</filepath> directory.</cmd>
</step>
```

Controlled vocabulary

Definition

Specified list of topic names, or metadata elements and attributes, to be included in a DITA document.

Cross-reference element (<xref>)

Definition

Identifies a term or phrase you want to cross reference to another piece of information. The element's hyperlink (<href>) attribute specifies the path and target file.

Example

```
<step>
<cmd>Set the <varname>CLASSPATH </varname>
<xref href="linux_settingenvvariables.dita" scope="local">environment
variable</xref> for <codeph>dost.jar</codeph>
</cmd>
</step>
```

Darwin Information Typing Architecture (DITA)

Definition

An XML-based, end-to-end architecture for authoring, producing, and delivering information (often called *content*) as discrete, typed topics. Typical information delivered using the DITA architecture is technical or scientific in nature and published as online help, through product support portals, or as print-ready PDF files.

The unofficial logo for DITA is the Woodpecker Finch of the Galapagos Islands, which is an example of a specialization that is also tool-using.

Usage

The DITA architecture, along with appropriate tools, is used to:

- Create, manage, and publish XML-based, structured information in a wide variety of environments and platforms
- Facilitate information sharing and reuse, and collaborative writing projects
- Reduce writing, publishing, and translation costs

DITA originated and is extensively used in the IBM Corporation; in 2005 it was adopted as an Organization for the Advancement of Structured Information Standards (OASIS) standard. DITA is currently used in many organizations world-wide, and is supported by an ever-growing list of commercial and open-source tools. DITA is actively being extended and enhanced under the direction of the OASIS DITA Technical Committee (TC).

Definition list

Definition

Structure for listing terms, products, components, and so forth, along with their definitions.

Usage

Glossary and product feature list.

Example

```
<section id="knownproblems_info">
<p>You can get current information about bugs,
patches, and change requests in the following locations:</p>
<dl>
<dlentry>
<dt>Bug tracker</dt>
<dd>
<xref href="http://sourceforge.net/tracker/?group_id=132728&atid=725074" scope="external"/>
</dd>
</dlentry>
<dlentry>
```

```
<dt>Patch tracker</dt>
<dd>
<xref href=" http://sourceforge.net/tracker/?group_id=132728&atid=725076" scope="external"/>
</dd>
</dlentry>
<dlentry>
<dt>RFE tracker</dt>
<dd>
<xref href="http://sourceforge.net/tracker/?group_id=132728&atid=725077" scope="external"/>
</dd>
</dlentry>
</dl>
</section>
```

Distributing your published content

Definition

Making your published DITA content available to your customers, potential customers, and other interested users.

DITA

See

Darwin Information Typing Architecture (DITA) on page 162

DITA Open Toolkit (OT)

Definition

DITA Open Toolkit is an implementation of the OASIS DITA Technical Committee's specification for DITA DTDs and schemas. The Toolkit, which can be used in the Windows, Linux, and Mac OS operating environments, transforms DITA content (maps and topics) into deliverable formats.

Usage

DITA Open Toolkit supports the following publishing environments:

- DocBook
- Eclipse content
- Eclipse help
- HTML Help
- JavaHelp
- PDF
- troff
- Word RTF
- XHTML

DITA Open Toolkit User Guide and Reference

Definition

DITA Open Toolkit User Guide and Reference (this document) is the definitive source of information about DITA Open Toolkit (OT), It is also a product of the architecture and the recommended best practices, having been written entirely in DITA XML and produced using the principles and procedures described in the document.

DocBook

Definition

DocBook is a markup language for technical documentation, available in both SGML and XML forms, and publishable to a variety of formats. DocBook began in 1991 as a joint project between HaL Computer Systems and O'Reilly & Associates. In 1998 it moved to the SGML Open consortium, which subsequently became OASIS.

Usage

DocBook is one of the DITA target outputs.

DOCTYPE declaration

Definition

A Document Type Declaration, or DOCTYPE, associates a particular SGML or XML document with a Document Type Definition (DTD).

Example

```
<!DOCTYPE concept PUBLIC "-//OASIS//DTD DITA Concept//EN"
"../dtd/concept.dtd">
```

Document type definition (DTD)

Definition

Usage

The DITA DTDs are (base) topic, concept, task, reference, map, and bookmap.

Example (concept DTD)

```
<!-- ============================================================= -->
<!--                    HEADER                                     -->
<!-- ============================================================= -->
<!--  MODULE:    DITA Concept DTD                                  -->
<!--  VERSION:   1.0.1                                             -->
<!--  DATE:      November 2005                                     -->
<!--                                                               -->
<!-- ============================================================= -->
```

```
<!-- ============================================================= -->
<!--                    PUBLIC DOCUMENT TYPE DEFINITION            -->
<!--                    TYPICAL INVOCATION                         -->
<!--                                                               -->
<!--  Refer to this file by the following public identifier or an
      appropriate system identifier
PUBLIC "-//OASIS//DTD DITA Concept//EN"
      Delivered as file "concept.dtd"                              -->

<!-- ============================================================= -->
<!-- SYSTEM:     Darwin Information Typing Architecture (DITA)     -->
<!--                                                               -->
<!-- PURPOSE:    DTD to describe DITA concepts                     -->
<!--                                                               -->
<!-- ORIGINAL CREATION DATE:                                       -->
<!--             March 2001                                        -->
<!--                                                               -->
<!--             (C) Copyright OASIS Open 2005.                    -->
<!--             (C) Copyright IBM Corporation 2001, 2004.         -->
<!--             All Rights Reserved.                              -->
<!-- ============================================================= -->


<!-- ============================================================= -->
<!--                    DOMAIN ENTITY DECLARATIONS                 -->
<!-- ============================================================= -->


<!ENTITY % ui-d-dec     PUBLIC
"-//OASIS//ENTITIES DITA User Interface Domain//EN"
"uiDomain.ent"                                                     >
%ui-d-dec;
```

Domain element

Definition

Element associated with a particular subject area, for example bioengineering, financial services, or software programming.

Usage

Code block element used to define programming syntax or give examples of programming-specific information.

Eclipse content

Definition

Eclipse is a open-source platform-independent software framework for delivering "rich-client applications," as opposed to "thin-client" browser-based applications. Originally developed by IBM, Eclipse is now managed by the Eclipse Foundation, an independent not-for-profit consortium of software industry vendors. Eclipse content is one of the documentation sytem options available in the framework.

Usage

Eclipse content is one of the DITA target outputs.

Eclipse help

Definition

Eclipse is a open-source platform-independent software framework for delivering "rich-client applications," as opposed to "thin-client" browser-based applications. Originally developed by IBM, Eclipse is now managed by the Eclipse Foundation, an independent not-for-profit consortium of software industry vendors. Eclipse help is one of the documentation sytem options available in the framework.

Usage

Eclipse help is one of the DITA Open Toolkit target outputs.

Editor

Definition (1)

Person responsible for creating guidelines for writing and publishing DITA documents, and editing DITA documents to ensure conformance to the guidelines.

Usage (1)

One of the target audience types for this document, in the content specialist category.

Definition (2)

Authoring tool used to create DITA source content.

Environment variable

Definition

Variable you must set for DITA Open Toolkit to function. In Windows you set the variables in the Control Panel. In Linux you set the variables in the shell profile.

Usage

In Windows you set the variables in the Control Panel. In Linux you set the variables in the shell profile. Variables you need to set are PATH, CLASSPATH, ANT_HOME, ANT_OPTS, JAVA_HOME, and JHHOME.

Example element (<example>)

Definition

Describes or illustrates the expected or sample outcome of performing a task.

Usage

Used only in tasks.

Family linking

See

Collection-type attribute on page 158

Figure element (<fig>)

Definition

Container that allows you to include an image and its caption as content in a DITA file.

Filtering (conditional processing)

Definition

Selective processing of content in a DITA document.

Usage

Say you have a need for two versions of your installation instructions, one for Windows and one for Linux. You can create a topic file with both sets of instructions (with each set properly labeled as either Windows or Linux), and then use a ditaval file to specify your processing rules (for example, whether to produce a Windows or Linux version of the document, or whether to produce a single output file with the content flagged appropriately with Windows and Linux icons).

FOP processor

Definition

An Apache tool that aggregates style and information during the DITA build process for PDF output.

Usage

The FOP processor must be installed in your DITA processing environment for DITA Open Toolkit to generate PDF output, but it is not part of the Toolkit installation package.

For more information

For information about the Apache FOP processor version required to interoperate with the Toolkit, see *System requirements and supported applications* on page 11.

To obtain

You can download the Apache FOP compiler from *the Apache website*.

Format attribute

Definition

File type of a referenced file or other information source.

Usage

The default value for the format attribute is "dita." Other common formats for DITA files are "xml" and "ditamap." You can also reference other formats like "pdf" or "html."

```
<conbody>
<p>Motor oil keeps your car's engine smoothly.
Oil should be changed every 6000 kilometers.
</p>
</conbody>
<related-links>
<link href="../tasks/changingtheoil.dita" format="dita" type="task">
<linktext>Changing the oil</linktext>
</link>
</related-links>
```

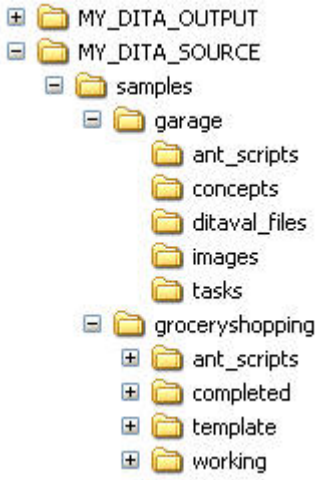
Garage sample

Definition

The garage sample, which is located in the `ditaot/samples` directory, is a set of DITA source files containing concepts and tasks related to organizing and doing tasks in a garage. The sample map files allow the topics to be published as either a hierarchy or a sequence. The sample also includes Ant scripts to allow you to publish to all supported target environments.

Usage

Before you begin to use the sample files (which includes both the garage sample and the grocery shopping sample), we recommend creating two directories in your root directory called `MY_DITA_SOURCE` and `MY_DITA_OUTPUT` (Windows examples would be `C:/MY_DITA_SOURCE` and `C:/MY_DITA_OUTPUT`) and then copying both the garage and grocery shopping sample files from the `ditaot/samples` directory to `MY_DITA_SOURCE`. Your directory structure should then look like this:



The garage sample includes Ant scripts that process to all supported target environments. A filtering (conditional processing) script is also included: `garage_filtering_xhtml.xml`. This script filters out (excludes) all files having to do with oil or snow, which are tagged with the "otherprops" attribute. Running this script produces a hierarchically organized output file with four of the topics excluded.

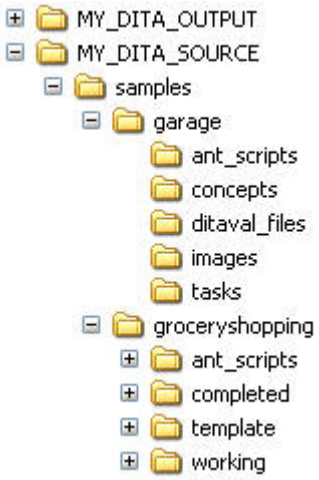
Grocery shopping sample

Definition

The grocery shopping sample, which is located in the `ditaot/samples` directory, is a simple DITA project that includes seven topics: an overview topic, two concepts, two tasks, and two reference topics. The project also includes a map that aggregates the files and links them meaningfully using a relationship table. Ant scripts that process to the XHTML, HTML Help, and PDF2 targets are also provided.

Usage

Before you begin to use the sample files (which includes both the garage sample and the grocery shopping sample), we recommend creating two directories in your root directory called `MY_DITA_SOURCE` and `MY_DITA_OUTPUT` (Windows examples would be `C:/MY_DITA_SOURCE` and `C:/MY_DITA_OUTPUT`) and then copying both the garage and grocery shopping sample files from the `ditaot/samples` directory to `MY_DITA_SOURCE`. Your directory structure should then look like this:



The grocery shopping sample assumes you are already familiar with the garage sample provided as both a project model as well as a tool to verify your DITA Open Toolkit installation, and that you have processed the garage sample as described in *Processing (building) and publishing DITA documents* on page 59.

Graphic designer

Definition

Person responsible for designing and creating the graphics in DITA documents.

Usage

One of the target audience types for this document, in the content specialist category.

Guidelines

Definition

Recommendations about how to perform a task or set of tasks.

Usage

Guidelines generally reflect an organization's policies or "groundrules," or they explain how "best results" (in a technology sense or for consistency of results) can be obtained.

Hover help

Definition

Hover help is a form of context-sensitive help. Similar to What's This? help and balloon help, hover help displays a small pop-up window when the mouse pointer is over an element of the interface. A brief description of the interface element is displayed in the pop-up window.

HTML Help

Definition

A compiled help system.

Usage

HTML Help is one of the DITA Open Toolkit target outputs. If you plan to publish HTML Help, the HTML Help processor must be installed in your DITA processing environment.

HTML Help compiler

Definition

A Microsoft product that generates (X)HTML Help files during the DITA build process. HTML Help is a compiled help system.

Usage

HTML Help is one of the DITA Open Toolkit target outputs. The HTML Help compiler must be installed in your DITA processing environment for DITA Open Toolkit to function, but it is not part of the Toolkit installation package.

ID attribute

Definition

An identifier unique within a given topic that can be used to reference the topic.

Usage

IDs can contain letters, numbers, and underscores.

Examples

```
<concept id="framework">
<title>The DITA authoring/production framework</title>
```

```
<conbody>
<section id="javahelp_term">
```

Indexing content

Usage

Indexing in DITA is accomplished with the <indexterm> tag, which can be nested.

Example

```
<indexterm>processing
<indexterm>to PDF targets</indexterm>
</indexterm>
```

The code produces the following two-level index entry:

```
processing
  to PDF targets
```

Information analysis

Definition

Task that is performed in the early stages of planning a structured documentation set.

Usage

An information analysis should include user, concept, task, and reference analyses. Output from the information analysis is a planning document listing planned concept, task, and reference topics organized by key topic.

Information architect

Definition

Person responsible for designing DITA documents, planning for content reuse, and creating DITA maps.

Usage

One of the target audience types for this document, in the content specialist category.

Information developer

See

Writer on page 187

Information element (<info>)

Definition

In a task step, describes additional information required to complete the step beyond the instruction in the command element.

Example

```
<step>
<cmd>Save and extract the package file
into a Linux home directory. </cmd>
<info>
<note>You can extract all package files
and toolkits either to your private home directory
for exclusive usage or to the
<filepath>/usr/local/share/</filepath>
directory for sharing. </note>
</info>
```

Information type

Definition

A topic type designed to contain a given type of information.

Usage

The core information types in DITA are concept, task, and reference.

Inheritance

Definition

In object-oriented programming, a way to form new classes using classes that have already been defined. DITA and DITA Open Toolkit are structured around the principle of inheritance.

Usage

In DITA, child topics or elements inherit attributes from their parents. For example, metadata applied to a section of a DITA file will automatically be applied to topics contained in the section. Inheritance also plays an important role in DITA specialization, which allows you to extend a base topic to match your specific requirements by defining only the differences between it and its base topic; the bulk of the specialized definition is inherited.

Java Development Kit (JDK)

Definition

A Sun Microsystems product used by developers to write, compile, debug, and run Java applets and applications.

Usage

The JDK must be installed in your DITA processing environment for DITA Open Toolkit to function, but it is not part of the Toolkit installation package.

JavaHelp

Definition

Java-based files that can be incorporated in applications, components, operating systems, applets, and devices.

Usage

JavaHelp is one of the DITA Open Toolkit target outputs. The JavaHelp processor must be installed in your DITA processing environment for DITA Open Toolkit to function, but it is not part of the Toolkit installation package.

JavaHelp processor

Definition

A Sun Microsystems product used to generate JavaHelp files, which can be incorporated in applications, components, operating systems, applets, and devices.

Usage

JavaHelp is one of the DITA Open Toolkit target outputs. The JavaHelp processor must be installed in your DITA processing environment for DITA Open Toolkit to function, but it is not part of the Toolkit installation package.

Keyword element (<keyword>)

Definition

Identifies a term or phrase in an abstract, title, subject heading, or general text that may be used in a special context, such as a glossary or search engine.

Example

```
<metadata>
<keywords>
<keyword>Ant script</keyword>
<indexterm>Ant scripts
<indexterm>definition</indexterm>
<indexterm>usage</indexterm>
</indexterm>
</keywords>
```

Linking attribute

Definition

Controls the direction of links between topic references and whether a topic can be linked to or from.

Usage

For example, if a topic has a linking attribute of "targetonly," it cannot link to other topics, but other topics can link to it. A "sourceonly" link allows a topic to link to other topics not the other way around.

Linking content

Definition

Various methods that connect topics to each other or to external references.

Usage

In DITA linking can be implemented through various elements, such as <xref> and <related-links>, and through *relationship tables*.

Map

Definition

Aggregation of the topics in a DITA document, with the topics arranged as a list or a hierarchy.

Usage

DITA documents can have multiple maps or sets of maps for a given document. For example, a software product available for both Windows and Linux might have two maps, each specifying the topics to include in that document version. As another example, a large, complex document might have a master map that included multiple submaps, specifying the topics to include in various "chapters" and "sections."

Example

```
<?xml version="1.0" encoding="utf-8"?>
<!-- (c) Copyright 2006 by VR Communications, Inc. All rights reserved. -->
<!DOCTYPE map PUBLIC "-//OASIS//DTD DITA Map//EN"  "../dtd/map.dtd">
<map id="customizing_map" title="Customizing your published output">
<topicref href="customizing.dita">
<topicref href="css.dita"/>
<topicref href="customizing_production_notes.dita"/>
<topicref href="customizing_formoreinfo.dita"/>
</topicref>
</map>
```

Metadata

Definition

Semantic information about the information in a DITA document, for example, the name of the document's author, the date the document was created, the name of the product the information is describing, the target audience, and copyright information.

Usage

In DITA you can specify metadata at the topic or map level, with map-level metadata overriding topic entries.

Example

```
<metadata>
<keywords>
<keyword>Ant script</keyword>
<indexterm>Ant scripts
<indexterm>definition</indexterm>
<indexterm>usage</indexterm>
</indexterm>
</keywords>
<prodinfo>
<prodname>DITA Open Toolkit</prodname>
<vrmlist>
<vrm version="1.2.2"/>
</vrmlist>
</prodinfo>
</metadata>
```

Migrating legacy content to DITA

Adobe has announced FrameMaker DITA Application Pack, a free plug-in for FrameMaker 7.2. The Application Pack is targeted to be released August 2006.

👉 **Note:** This is a plug-in for FrameMaker, not DITA Open Toolkit.

Navigation title (<navtitle>)

Definition

An alternative title for a topic, specified as an attribute on a topicref element.

Usage

Navigation titles are usually shorter than the full title, or they could be set, as in the following example, to allow the use of 'scope="peer"' in related links (see *Related links*).

Example

```
<concept id="audience">
<title>Audience</title>
<titlealts><navtitle>Audience</navtitle></titlealts>
<shortdesc/>
<prolog>
```

OASIS (Organization for the Advancement of Structured Information Standards)

Definition

A not-for-profit, global consortium that drives the development, convergence, and adoption of e-business standards.

Usage

DITA is an OASIS standard.

Ordered list

Definition

List (typically numbered) in which the order of list items is significant.

Usage

For example, steps in a procedure.

Example

```
<conbody>
<p>A good wheelbarrow will save your back
from extensive trauma when you garden.
are most often used to haul (in order of importance):</p>
<ol>
<li>garden dirt</li>
<li>tools</li>
<li>trash</li>
</ol>
</conbody>
```

PDF (Portable Document Format)

Definition

An open standard file format, proprietary to Adobe Systems, for representing two-dimensional documents in a device-independent and resolution-independent format. PDF files encode the exact look of a document in a device-independent way.

Usage

PDF is one of the DITA Open Toolkit target outputs.

Phrase elements

Definition

Set of elements used to describe words or phrases within a block or structure element.

Usage

Phrases include semantic elements used inline to mark items like user interface controls, keywords, index terms, and cross references. Phrases also include domain elements (associated with a particular subject area) and typographic elements (tags to mark words or phrases to be displayed in italic, bold, underscore, and so forth).

Plug-in

Usage

You can extend or enhance the product capabilities provided by DITA Open Toolkit by installing Toolkit plug-ins. Once installed, a plug-in becomes part of the Toolkit environment and can be used to add new specializations or to define new targets for output processing.

Post-requirement element (<postreq>)

Definition

In a task, specifies something a user needs to do after completing the task.

Example

```
<step>
<cmd>Follow the steps in the HTML Help install guide
wizard to complete the installation.</cmd>
</step>
</steps>
<postreq>If you install the Help compiler to a drive
other than the C drive, you may need to customize
the <property> value for "hhc.dir" in some of the
build <filepath>.xml</filepath> scripts
in the Toolkit root directory.
The Toolkit assumes the compiler
is installed on your C drive.
</postreq>
</taskbody>
```

Prerequisite element (<prereq>)

Definition

In a task, specifies something a user needs to know or do before beginning the task.

Print-document designer

Definition

Person responsible for designing DITA print documents.

Definition

One of the target audience types for this document, in the content specialist category.

Processing (building)

Definition

Producing output files from a set of DITA source files.

Usage

DITA Open Toolkit, working with other tools like the Java Development Kit (JDK) and Ant, provides a method to process DITA documents.

Processing attribute

Definition

Controls inclusion of topics in the table of contents (toc attribute) and the print version of the published document (print attribute), if one is specified.

Processing reuse

Usage

In the final stage of processing, the Toolkit runs XSLT stylesheet transforms to produce the output. In certain cases, it is possible to override stylesheet processing to customize the output.

Project manager

Definition

Person responsible for designing overall processes and procedures, and setting schedules for DITA projects.

Usage

One of the target audience types for this document, in the administrators and managers category.

Prolog element (<prolog>)

Definition

Element containing metadata for a topic.

Usage

For example, author, creation date, and modification date.

Example

```
<prolog>
<author type="creator">Anna van Raaphorst</author>
<copyright>
<copyryear year="2006"/>
<copyrholder>VR Communications, Inc.</copyrholder>
</copyright>
<critdates>
<created date="2006-August-07"/>
<revised modified="2006-August-07"/>
</critdates>
<metadata>
<keywords>
<keyword>grocery shopping</keyword>
<keyword>canned goods</keyword>
</keywords>
</metadata>
</prolog>
```

RDF/OWL

Usage

While it does not directly contain support for generating external or embedded RDF, the Toolkit does have some function that can be used to create RDF.

Dublin Core

The Dublin Core is a standard for metadata that is used to describe online information. The XHTML output produced by the DITA Open Toolkit contains Dublin Core metatags generated from the various elements contained within the prolog, title, amd short description elements in the DITA source files. Further processing of the XHTML output can create RDF triples using these meta tags. (Functionality for that processing is not contained in the Toolkit today.)

For example a <title> element might produce the following output in the generated XHTML:

```
<meta name="DC.Title" content="About metadata"/>
```

SKOS

The Thesaurus plug-in can be installed with DITA Open Toolkit to provide a DITA specialization that can be used to identify and process content based on what the information is about. See *About DITA Open Toolkit plug-ins* on page 123 for more information about this plug-in.

Reference analysis

Definition

An analysis of the reference information required in a DITA document or group of DITA documents.

Reference information type

Definition

Information type for content that focuses on properties and relationships among a number of similar items.

Usage

Content in a DITA reference information type is used to record and present (often in a tabular format) reference (as contrasted with narrative) information. The information is presented to users in a way that facilitates quick lookup.

Related links element (<related-links>)

Definition

Container for linking related topics to a given topic.

Example

```
<related-links>
<link href="audience.dita" scope="peer"/>
<link href="../evaluating/framework.dita" scope="local"/>
</related-links>
```

👉 **Note:** For 'scope="peer"' to work in the example, you must set a navtitle in the target (`audience.dita`).

Relationship table

Definition

In a DITA map, a systematic structure for creating and maintaining relationships among DITA topics.

Usage

The relationships are displayed in a tabular format. Each row of the table represents a relationship, which is usually rendered as a link. Each cell lists one or more participants in the relationship. No relationships exist between the rows of the table.

result element (<result>)

Definition

In a task, provides the user with information about what completing a task should have accomplished.

Reuse concepts and techniques

Definition

DITA and DITA Open Toolkit support three kinds of reuse:

- **Content reuse**, in which a source topic or part of a topic is written once and used in multiple locations. For example, you might reference the same concept topic (processing DITA files) in both the processing and the troubleshooting maps. Another example might be to use the DITA content reference (conref) mechanism to reuse content once (say,

using the text of a controlled vocabulary topic in an "about" file) or many times (say, repeating a short warning statement about the proper use of a hardware unit).
- **Information design reuse (specialization)**, in which you extend the definition of an existing DITA element to be used in a special way. Specialization makes use of the fact that DITA is based on the principle of inheritance.
- **Processing reuse**, in which you override stylesheet processing to customize your output.

SAXON XSLT processor

Definition

Transforms DITA source files into rendered output using the DITA XSLT stylesheets.

Usage

You need to install either the SAXON XSLT processor or the Xalan XSLT processor in your DITA processing environment for DITA Open Toolkit to function, but neither processor is part of the Toolkit installation package.

Schema

Definition

Shared vocabulary that allows machines to carry out rules made by people.

Usage

Schemas provide a means for defining the structure, content, and semantics of XML documents.

Scope attribute

Definition

Indicates the location of source topics relative to a DITA map.

Usage

Values are "local" (for references to topics in the same directory as the map), "peer" (for references not local but in the same document area), and "external" (for topics outside the document set).

Example

```
<p>Before you use DITA Open Toolkit,
be sure your operating environment meets the system requirements
described in <xref href="../release_current/sysreqs.dita" scope="local">
System requirements and supported applications</xref>.</p>
</section>
<section id="howproduced">
<title>How and why this document was produced</title>
<p>This document was produced as a collaborative effort
by the two principals of VR Communications, Inc.
(<xref href="http://www.vrcommunications.com" format="html" scope="external">
www.vrcommunications.com</xref>)
```

Search title element (<searchtitle>)

Definition

An alternative title used in search result summaries.

Short description

Definition

Text that briefly introduces and describes a topic. In DITA, tagged with the short description element (<shortdesc>).

```
<concept id="debuggingtools_overview">
<title>About the debugging, reporting,
and file generation tools</title>
<shortdesc>Information about tools and techniques
you can use to debug your processing problems,
get information about your source files,
and generate DITA files automatically from XML-based source code.</shortdesc>
```

Simple list

Definition

List in which the order of list items is not significant. Similar to unordered list, but in a simple list the items are not marked with a bullet or other symbol.

The following simple list functions as a topic table of contents.

```
<section>
<p>Sections in this topic:
<sl>
<sli>
<xref href="#aboutditaotugref/contents">Document contents</xref>
</sli>
<sli>
<xref href="#aboutditaotugref/target_audience">Audience</xref>
</sli>
<sli>
<xref href="#aboutditaotugref/prerequisites">Prerequisites</xref>
</sli>
<sli>
<xref href="#aboutditaotugref/howproduced">How this document was produced</xref>
</sli>
</sl>
</p>
</section>
```

Simple table element

Definition

Used to describe tabular information that does not require control over the display properties and layout.

Example

```
<simpletable>
<sthead>
<stentry>Name, description</stentry>
<stentry>Location</stentry>
</sthead>
<strow>
<stentry>
<p>
<b>The Localization Industry Standards Association (LISA)</b>
is an  international forum for organizations doing business globally.
It has published a set of localization best practices that list the right
and wrong ways to support international customers, products,
and services.</p>
</stentry>
<stentry>
<xref href="http://www.lisa.org/" format="html" scope="external"/>
</stentry>
</strow>
```

SourceForge website

Definition

Download location for DITA Open Toolkit and other DITA-related processing tools: *http://sourceforge.net/projects/dita-ot/*

Specialization (information design reuse)

Definition

An extension of a base DITA information type into one required for special purposes.

Usage

One of the key characteristics of DITA specialization is inheritance, which allows you to create new information types from existing ones. With inheritance you can use a class attribute to map an existing parent element to the specialized element you want to create.

Example

For example, you could specialize the base set of definition list tags (<dl>, <dlentry>, <dt>, and <dd>) into a set of glossary tags (<glosslist>, <glossentry>, and so forth) by defining only those characteristics specific to the glossary tags; they would inherit all other characteristics from the base definition list.

Step element

Definition

A micro-task that a user needs to perform to complete a more high-level task. For example, three of the steps in making a peanut butter sandwich might be finding the peanut butter jar, opening it, and spreading the peanut butter on a piece of bread with a knife.

Example

```
<taskbody>
<context>If you are new to DITA and DITA Open Toolkit,
we recommend that you follow these steps to get started.</context>
<steps>
<step>
<cmd>Read the topics in
<xref href="../evaluating/evaluating.dita" scope="local">
Evaluating DITA and DITA Open Toolkit</xref>
for suggestions on how to evaluate for use in your environment,
and how to choose your initial pilot project.</cmd>
</step>
<step>
<cmd>Be sure your system environment meets the requirements in
<xref href="../release_current/sysreqs.dita" scope="local">
System requirements and supported applications</xref>.</cmd>
</step>
```

Structure element

Definition

Base element that you can use with every DITA information type.

Example(s)

Topic, title, short description, and body.

Stylesheet

Definition

A mechanism for adding style (for example, fonts, colors and spacing) to web documents.

Staff manager

Definition

Person responsible for managing DITA projects and the personnel involved in project planning and implementation.

Usage

One of the target audience types for this document, in the administrators and managers category.

Table element (<table>)

Definition

Container element to define display properties and layout of tabular items.

Technology specialist audience category

Definition

Persons responsible for the technology of DITA projects.

Usage

Target audience category for this document. Includes application designers and developers, content managers, and database and system administrators.

Task analysis

Definition

An analysis of the the user tasks required in a DITA document or group of DITA documents.

Task information type

Definition

Information type for content that describes procedures or sets of steps a user follows in performing a task or using a product.

Task Modeler

Definition

An IBM-produced, Eclipse-based software tool for modeling human activity as a hierarchy of task and related elements.

Usage

An information architect can use it to design DITA maps. A usability practitioner can produce either classic HTA (Hierarchical Task Analysis) diagrams or RAG (Roles and Goals) diagrams.

For more information

For more information about the Task Modeler, see *http://www.alphaworks.ibm.com/tech/taskmodeler*.

Topic information type

Definition

The base DITA information type.

troff

Definition

A document processing system developed by AT&T for the UNIX operating system. troff is the default format for UNIX documentation. Various macro packages handle different document styles, including macros for formatting research papers, man macros for creating UNIX man pages, and the ms macros for books, technical documentation, and reports.

Usage

troff is one of the DITA Open Toolkit target outputs.

Typographic element

Definition

Element to mark words or phrases to display in bold, italic, underlined, as a subscript or superscript, and in teletype (monospace, usually Courier) font.

Example

```
<p>
<b>Definition</b>
</p>
```

Unordered list (<ul>)

Definition

List in which the order of list items is not signlficant.

Usage

Items are usually marked with a bullet or other similar symbol.

Example

```
<p>Once we had large numbers of source files
and directories to deal with, we ran into the following kinds
of error situations that were difficult to resolve:</p>
<ul>
<li>We had problems finding out the root cause
of error messages in the Ant build log.</li>
<li>We lost track of which source files had references
to other source files.</li>
<li>We often didn't know which URLs were linked to
in the source files.</li>
<li>We wondered which source files were not
actually being used.</li>
</ul>
```

Website designer

Definition

Person responsible for the overall design and development of the websites and webpages on which DITA HTML-based documents are published.

Usage

One of the target audience types for this document, in the content specialist category.

Word RTF (Rich Text Format)

Definition

RTF (Rich Text Format) is a proprietary document file format developed and owned by Microsoft since 1987 for cross-platform document interchange. Most word processors are able to read and write RTF documents.

Usage

Word RTF is one of the DITA Open Toolkit target outputs.

Writer

Definition

Person responsible for creating DITA topics and implementing effective topic reuse.

Usage

One of the target audience types for this document, in the content specialist category.

Xalan XSLT processor

Definition

Tool that transforms DITA source files into rendered output using the DITA XSLT stylesheets.

Usage

You need to install either the Xalan XSLT compiler or the SAXON XSLT processor in your DITA processing environment for DITA Open Toolkit to function, but neither processor is part of the Toolkit installation package.

XHTML

Definition

XHTML (Extensible HyperText Markup Language), is a markup language that has the same expressive possibilities as HTML, but a stricter syntax. XHTML is an application of XML.

Usage

XHTML is one of the DITA Open Toolkit target outputs.

XML declaration

Definition

A processing instruction that identifies a document as XML.

Usage

DITA documents must begin with an XML declaration.

Example

```
<?xml version="1.0" encoding="utf-8"?>
```

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