Darwin Information Typing Architecture (DITA) for Technical Content Version 2.0

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Technical Committee:
OASIS Darwin Information Typing Architecture (DITA) TC

Chair:
Kristen James Eberlein (kris@eberleinconsulting.com), Eberlein Consulting LLC

Editors:
Kristen James Eberlein (kris@eberleinconsulting.com), Eberlein Consulting LLC
Robert D. Anderson (robert.dan.anderson@oracle.com), Oracle

Additional artifacts:
This prose specification is one component of a work product that also includes:

- X (DITA source)
- X (Grammar files)

Related work:
...

Abstract:
The Darwin Information Typing Architecture (DITA) for Technical Content Version 2.0 specification ...

Status:
This document was last revised or approved by the OASIS Darwin Information Typing Architecture (DITA) TC on the above date. The level of approval is also listed above. Check the “Latest stage” location noted above for possible later revisions of this document. Any other numbered Versions and other technical work produced by the Technical Committee (TC) are listed at https://www.oasis-open.org/committees/tc_home.php?wg_abbrev=dita#technical.

TC members should send comments on this specification to the TC’s email list. Others should send comments to the TC’s public comment list, after subscribing to it by following the instructions at the "Send

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Note that any machine-readable content (Computer Language Definitions) declared Normative for this Work Product is provided in separate plain text files. In the event of a discrepancy between any such plain text file and display content in the Work Product's prose narrative document(s), the content in the separate plain text file prevails.

Citation format:
When referencing this specification, the following citation format should be used:

[wp-abbrev]

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1 Introduction

The technical content part of DITA models the semantics of information types for technical content.

The technical content part of DITA adds the semantics of technical-content information-types to base DITA. This is done through several specializations:

- Topic specializations:
  - Concept
  - Glossary entry
  - Reference
  - Task
  - Troubleshooting
- Domain specializations:
  - Abbreviated form
  - Equation
  - Hazard statement
  - Highlight
  - Indexing
  - Markup
  - MathML
  - Programming
  - Release management
  - Software
  - SVG
  - Syntax diagram
  - User interface
  - Utilities
  - XML mention
- Bookmap map specialization

1.1 About DITA for Technical Content

The DITA technical content specification is designed for users who use information typing and document complex applications and devices, such as software, hardware, medical devices, and more.

1.1.1 Written specification

The specification is written for implementers of the DITA standard, including tool developers and XML architects who develop specializations.

The specification contains several parts:

- Introduction
- Architectural specification
- Language reference
- Conformance statement
- Appendices

The specification is available in the following formats:
1.1.2 XML grammar files

The XML grammar files are available in RELAX NG (RNG), and XML Document-Type Definitions (DTD).

While the files should define the same DITA elements, the RELAX NG grammars are normative if there is a discrepancy.

1.2 Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMEND", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC-2119] and [RFC8174] when, and only when, they appear in all capitals, as shown here.

The DITA specification uses <keyword> elements with the @outputclass attribute set to "RFC-2119" for these key words. In general, normative statements that use such key words pertain to what is needed for interoperability.

These key words are rendered with bold formatting. The normative statements are indicated visually in the rendered specification by blue lines at the left and right of the statement:

```
if the root element of a map or a top-level topic has no value for the @xml:lang attribute, a processor SHOULD assume a default value. The default value of the processor can be either fixed, configurable, or derived from the content itself, such as the @xml:lang attribute on the root map.
```

In addition, a hyperlink is rendered to the left of the statement that contains the normative term. The link is to a generated appendix that groups all the normative statements that appear in the specification.

1.3 References

This section contains the normative and informative references that are used in this document.

While any hyperlinks included in this section were valid at the time of publication, OASIS cannot guarantee their long-term validity.

1.3.1 Normative references

The following documents are referenced in such a way that some or all of their content constitutes requirements of this document.


[XML 1.0]  

[XML 1.1]  

1.3.2 Informative references

The following referenced documents are not required for the application of this document but might assist the reader with regard to a particular subject area.

[ANSI Z535.6]  

[cii-v3.0]  
OASIS Committee Specification 02, Customer Information Quality Specifications Version 3.0. Name (xNL), Address (xAL), Name and Address (xNAL) and Party (xPIL), http://www.oasis-open.org/committees/download.php/29877/OASIS%20CIQ%20V3.0%20CS02.zip, 20 September 2008.

[HTML5]  

[ISO 8601]  

[ISO/IEC 19757-3]  

[Namespace in XML 1.0]  

[Namespace in XML 1.1]  

[OASIS Table Model]  

[RELAX NG]  
[RELAX NG Compact Syntax]

[RELAX NG DTD Compatibility]

[SVG 1.1]

[Unicode BiDi]

[WCAG 2.1]

[XHTML 1.0]

[XHTML 1.1]

[XPointer 1.0]

[XML Catalogs 1.1]

[xml:tm 1.0]

[XSL 1.0]

[XSL 1.1]
1.4 Formatting conventions in the HTML5 version of the specification

Given the size and complexity of the specification, it is not generated as a single HTML5 file. Instead, each DITA topic is rendered as a separate HTML5 file. The HTML5 version of the specification uses certain formatting conventions to aid readers in navigating through the specification and locating material easily: Link previews and navigation links.

1.4.1 Link previews

The DITA specification uses the content of the DITA `<shortdesc>` element to provide link previews for its readers. These link previews are visually highlighted by a colored background.

The link previews serve as enhanced navigation aids, enabling readers to more easily locate content. This usability enhancement is one of the ways in which the specification illustrates the capabilities of DITA and exemplifies DITA best practices.

The following screen capture illustrates how link previews are displayed in the HTML5 version of the specification:

**Figure 1: Link previews**

1.4.2 Navigation links

To ease readers in navigating from one topic to another, each HTML5 file generated by a DITA topic contains navigation links at the bottom.

**Parent topic**

- Takes readers to the parent topic, which is the topic referenced by the closest topic in the containment hierarchy
Previous topic
Takes readers to the previous topic in the reading sequence

Next topic
Takes readers to the next topic in the reading sequence

Return to main page
Takes readers to the place in the table of contents for the current topic in the reading sequence

The following screen capture illustrates how navigation links are displayed in the HTML5 version of the specification:

**Figure 2: Navigation links**

When readers hover over the navigation links, the short description of the DITA topic is also displayed.
2 Topic and map document types

The Technical Content package contains various document types: concept, glossary entry, glossary group, reference, general task, strict task, and troubleshooting. The package also includes the bookmap document type.

2.1 Bookmap

The DITA bookmap specialization represents the key markup requirements for managing DITA content through book-oriented publication processes, including book metadata and book structures for organizing content.

Purpose

Book maps enable authors to produce documents that are structured like traditional print-oriented media. They also provide metadata for recording information about the book, including authors, owners, versions, and production history.

Content model

A book map can contain the following document structures:

- Titles
- Metadata
- Front matter (including notices and a preface)
- Parts
- Chapters
- Appendixes
- Back matter
- Relationship tables

Other components of a book map enable authors to specify that artifacts such as a table of contents (TOC) or an index should be generated.

Example

The following code sample contains the markup for a bookmap:

```xml
<bookmap id="taskbook">
  <booktitle>
    <mainbooktitle>Product tasks</mainbooktitle>
    <booktitlealt>Tasks and what they do</booktitlealt>
  </booktitle>
  <bookmeta>
    <author>John Doe</author>
    <bookrights>
      <copyrfirst>
        <year>2020</year>
      </copyrfirst>
      <bookowner>
        <person href="task-preface.dita">Jane Doe</person>
      </bookowner>
    </bookrights>
  </bookmeta>
  <frontmatter>
    <preface/>
  </frontmatter>
</bookmap>
```
2.2 Concept

Concept topics are designed to provide conceptual or descriptive information.

Purpose

Concept topics serve a variety of purposes:

- Provide background information that helps readers understand essential facts about a product, process, or task
- Provide an extended definition of a major abstraction, such as a process or function
- Explain the nature and components of a product and describe how it fits into a category of products
- Help readers map their knowledge and understanding to the tasks that they need to perform

Content model

The body of a concept topic can contain the following document structures:

- Basic block elements: divisions, paragraphs, lists, tables, figures, etc.
- Concept body divisions: `<conbodydiv>`
- Examples
- Sections

However, after a section, example, or concept body division is introduced into the topic structure, it can be followed only by a section, example, or concept body division.

This design supports the following best practices and use cases:

- Ensures that there are clear boundaries between sections
- Enables creation of short concept topics that only include a few basic block elements, for example, a paragraph, list, and image

Example

The following code sample contains a simple concept topic:

```xml
<concept id="color_triads">
  <title>Color triads</title>
  <shortdesc>A basic concept in color theory is the use of triads, colors that are three steps apart on the color wheel.</shortdesc>
  <conbody>
    <p>If you have difficulty picking colors when designing, you can use a color triad. Use one color as the main color and then the other two as accent colors.</p>
  </conbody>
</concept>
```
The most simple color wheel contains 12 colors: red, red-orange, orange, yellow-orange, yellow, yellow-green, green, blue-green, blue, blue-violet, violet (purple), and red-violet.

Start with the first color green. Skip the next three colors, and the second color of the triad is violet. Skip the next three colors, and the third color of the triad is orange. This gives you the triad of green, violet, and orange.

2.3 Glossary entry
A glossary entry topic defines a single meaning of a term. It also can provide information such as part of speech, acronyms, and acronym expansions.

**Purpose**
Glossary entry topics serve the following purposes:

- They ensure that a team of writers can use the same terminology.
- They make it possible to create glossaries that can be used to provide readers with definitions of terms and explanations about acronyms.

**Content model**
Each glossary entry topic contains the following structures:

- Term
- Definition of term
- Glossary body (which can contain acronyms and surface terms)
- Related links

**Example**
The following code sample contains a simple glossentry topic:

```xml
<glossentry id="ddl">
  <glossterm>data definition language</glossterm>
  <glossdef>A language used for defining database schemas</glossdef>
</glossentry>
```

Comment by Kristen J Eberlein on 07 October 2022
This should have a glossbody that specifies an acronym and a surface term. Also related links.

Disposition: Unassigned

2.4 Glossary group
Glossary group topics are designed to enable authors to author and edit glossary entries in a single file, rather than working with many single glossary entry topics.
Purpose
The glossary group topic has the following purposes:

- 

Content model

Example
The following code sample shows a glossary group topic:

2.5 Reference
Reference topics contain reference information that users might need to consult occasionally, for example, product specifications, part lists, API calls, and programming language commands.

Purpose and usage
Reference topics serve the following purposes:

- Provide data that supports users as they perform a task
- Provide quick access to fact-based information
- Contain detailed information that users look up infrequently

Reference topics are used for the following types of information and more:

- API documentation
- Bibliographies
- Configuration file options
- Catalogs
- Element references
- Lists of equipment, ingredients, parts, and tools
- Specifications
- Syntax diagrams and explanations

Content model
The body of a reference topic can contain the following document structures:

- Examples: `<example>`
- Property lists: `<properties>` (69)
- Reference body divisions: `<refbodydiv>` (73)
- Sections: `<section>`
- Syntax sections: `<refsyn>` (75)
- Tables: `<simpletable>` and `<table>`

These structures can appear in any order or combination. However, basic document structure such as paragraphs, lists, and figures cannot be placed directly in the body of the reference topic. They must be contained within one of the structures listed above.
2.6 Task

DITA offers two varieties of task topics: general task and strict task. Both task topics serve the same purpose: to provide users with comprehensive instructions for performing a task. Their content models vary, however.

2.6.1 General task

A general task topic answers the “How do I?” question by providing instructions and other necessary information that enables users to complete the task successfully. It has a content model that is more relaxed than that of the strict task.

Content model

The general task topic is divided into three parts:

Introduction

This portion of the topic can contain the following structural sections:

- Prerequisites: `<prerequisites>` (83)
- Contextual information: `<context>` (81)
- Sections: `<sections>`

These sections are all optional. They can appear in any order and can occur multiple times.

Procedural instructions

This portion of the topic can contain only one of the following structural sections:
• Steps: <steps> (85)
• Steps informal: <steps-informal> (85)
• Steps unordered: <steps-unordered> (88)

Post-instructions
The section of the topic can contain the following structural sections:

1. Result: <result> (83)
2. Troubleshooting information: <tasktroubleshooting> (91)
3. Example: <example>
4. What to do next: <postreq> (82)

While all of the above structural components are optional, they must occur in the outlined order. Examples and post-requisites can occur multiple times.

Example
The following code sample illustrates the relaxed content model of the general task topic. Note that there are multiple <prereq> elements and that they are preceded by a <context> element. The stylesheets used to generate output produce different labels for each of the <prereq> sections, triggered by the value of the @outputclass attribute.

```xml
<task id="changing_a_tire">
  <title>Changing a tire</title>
  <taskbody>
    <context>
      A flat tire typically shows up unexpectedly and catapults itself onto the top of your priority list. A flat tire can happen to anyone at any time. It doesn’t matter if you were already running late or if you’re wearing a cocktail dress. Regardless of your situation, the basic mechanics of changing a tire are the same whether you’re working with a car, truck, van, or SUV.
    </context>
    <prereq outputclass="safety">
      <ul>
        <li>Find a safe place to pull over. The ground should be solid and level to keep your car from rolling. If you’re on the side of the road, pull over as far possible. Avoid stopping near any bends in the road, as this reduces visibility for both you and other drivers. If you’re in a dark or unsafe area, carefully drive to a better spot.</li>
        <li>Use your hazard lights and parking brake to keep yourself and your vehicle safe by increasing your visibility and decreasing the vehicle’s ability to roll.</li>
      </ul>
    </prereq>
    <prereq outputclass="tools">
      At the bare minimum, you’ll need a jack, wrench, and a spare tire. These three items should always be in your vehicle just in case a flat tire occurs. Additional items that can make tire changing a little easier include:
      <ul>
        <li>Flashlight</li>
        <li>Gloves</li>
        <li>Matt for kneeling</li>
        <li>Rain poncho</li>
        <li>Tire gauge</li>
        <li>Your vehicle’s owner’s manual</li>
      </ul>
    </prereq>
  </taskbody>
</task>
```
2.6.2 Strict task
A strict task topic answers the "How do I?" question by providing precise step-by-step instructions and other necessary information that enables users to complete the task successfully.

Content model
The strict task topic is divided into three parts:

Introduction
This portion of the topic can contain the following structural sections:
1. Prerequisites: <prerequisites> (83)
2. Contextual information: <context> (81)

These sections are all optional, but they must occur in the outlined order.

Procedural instructions
This portion of the topic can contain only one of the following structural sections:
• Steps: <steps> (85)
• Steps unordered: <steps-unordered> (88)

Post-instructions
The section of the topic can contain the following structural sections:
1. Result: <result> (83)
2. Troubleshooting information: <tasktroubleshooting> (91)
3. Example: <example>
4. What to do next: <postreq> (82)

These sections are all optional, but they must occur in the outlined order.

Example
The following code sample contains a strict task topic:

```xml
<task id="birdhousebuilding">
  <title>Building a bird house</title>
  <shortdesc>Building a birdhouse is a perfect activity for adults to share with their children or grandchildren. It can be used to teach about birds, as well as the proper use of tools.</shortdesc>
  <prereq>To build a sound birdhouse, you will need a complete set of tools:
  <ul>
    <li>hand saw</li>
    <li>hammer ...</li>
  </ul></prereq>
  <context>Birdhouses provide safe locations for birds to build nests and raise their young. They also provide shelter during cold and rainy spells.</context>
  <steps>
    <step><cmd>Lay out the dimensions for the birdhouse elements.</cmd></step>
    <step><cmd>Cut the elements to size.</cmd></step>
    <step><cmd>Drill a 1 1/2" diameter hole for the bird entrance on the front.</cmd>
      <info>You need to look at the drawing for the correct placement of the hole.</info>
    </step>
    <!--...-->
    <step></step>
  </steps>
  <result>You now have a beautiful new birdhouse!</result>
  <postreq>Now find a good place to mount it.</postreq>
</taskbody>
</task>
```
2.7 Troubleshooting

Troubleshooting topics are designed to document problems that people might encounter. They provide a topic structure that enables content authors to describe a condition, provide diagnostic information, discuss causes, and outline possible solutions.

Purpose

Troubleshooting topics serve the following purposes:

- Describe the problem condition, which usually is a state in a system, product, or service that a reader wants to correct
- Provide information that helps the reader diagnose the cause of the problem, if it is known
- Explain the cause of the problem and how to fix it

Content model

The troubleshooting topic is structured in three parts:

Condition

This section of the topic provides information about the problem condition, and it is specified by the <condition> element. This element is optional, as often the problematic condition can be adequately described in the title and short description.

Diagnostics

This optional section of the topic provides information about how to determine possible causes of the problem. It is specified by the <diagnostics> element, which must contain one or both of the following structural elements:

- General diagnostic information (<diagnostics-general>)
- Procedural diagnostic information (<diagnostics-steps>)

Trouble solution

This optional section of the topic provides information about possible causes and remedies for the problem. It is specified by <troubleSolution> elements.

Cause and remedy might occur in combinations other than pairs. It is possible to have:

- Multiple causes with the same remedy
- A single cause with more than one remedy
- A remedy with no known cause
- A cause with no known remedy

Examples

This section of the topics contains examples of troubleshooting topics.

Figure 3: Simple troubleshooting topic

The following code sample shows a simple troubleshooting topic. The title and short description describe the problem, and the single <troubleSolution> element explains the cause of the problem and how to remedy it.

```xml
<troubleshooting id="oasis-spec-not-rendered-correctly">
  <title>Specification PDF is not rendered correctly</title>
  <shortdesc>The specification URIs and notices appear in the TOC; they also appear twice in the body of the document.</shortdesc>
  <troublebody>
    <troubleSolution>
      dita-2.0-technical-content-specification
      Standards Track Work Product
      Copyright © OASIS Open 2022. All Rights Reserved.
      21 March 2023
      Page 19 of 221
```
This problem occurs when the `notices` element for external publishing is not excluded.

Use a DITAVAL file that excludes the `notices` element when you generate the PDF.

The following code sample shows a complex troubleshooting topic about "Blinking printer lights." It contains a `diagnostics-general` element that contains a table that outlines printer light conditions and possible remedies. It also includes several `troubleSolution` elements that reuse steps from other DITA topics.

```
<troubleSolution id="jam">
  <title>Clearing a paper jam</title>
  <steps conkeyref="clear-jam/steps">
    <step><cmd/></step>
  </steps>
</troubleSolution>
```
The table in the `<diagnostics-general>` element might be rendered in the following way. The hyperlinks in the "Issue" column resolve to the `<remedy>` elements in the topic.

<table>
<thead>
<tr>
<th>Lights</th>
<th>Issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>The power light is flashing and the resume light is off.</td>
<td>The printer is preparing to print. No action is required. The light will stop flashing when the printer has received all data.</td>
</tr>
<tr>
<td>The connection and error lights flash for five seconds.</td>
<td>The printer has lost connection with the camera. Unplug and replug the camera.</td>
</tr>
<tr>
<td>The power light is on, and the resume light is flashing.</td>
<td>Printer jam. See Clearing a printer jam.</td>
</tr>
<tr>
<td>The left cartridge light is on, and right cartridge light is off.</td>
<td>Low ink. See Replacing an ink cartridge.</td>
</tr>
<tr>
<td>The left cartridge light is on, and the right cartridge light is flashing.</td>
<td>Dirty ink cartridge. See Cleaning an ink cartridge.</td>
</tr>
<tr>
<td>The connection light is on, and the error light is flashing.</td>
<td>The camera is not set to the correct mode for transferring photos. Change the camera mode.</td>
</tr>
</tbody>
</table>

Related reference

Troubleshooting elements (93)

Troubleshooting elements provide the fundamental structure for troubleshooting topics. Troubleshooting topics describe problems and provide information about how to fix them.
3 Element reference

This section contains topics for each element defined in the technical content specializations. These elements include the original concept, task, and reference specializations, as well as specializations added in later releases. It also includes domains designed primarily for technical content.

3.1 Elements, A to Z

This section provides an alphabetized list of links to all elements in the specification.

- 3.3.1.1 abbreviated-form (102)
- 3.2.1.1.1 abbrevlist (27)
- 3.3.14.2 addressdetails (153)
- 3.3.14.3 administrativearea (154)
- 3.2.1.1.2 amendments (27)
- 3.7.1 apiname (115)
- 3.2.1.1.3 appendices (28)
- 3.2.1.1.4 appendix (28)
- 3.2.1.2.1 approved (41)
- 3.3.14.1 authorinformation (152)
- 3.2.1.1.6 backmatter (30)
- 3.2.1.1.7 bibliolist (30)
- 3.2.1.1.8 bookabstract (31)
- 3.2.1.2.2 bookevent (42)
- 3.2.1.2.3 bookevent (42)
- 3.2.1.2.4 bookeventtype (43)
- 3.2.1.2.5 bookid (43)
- 3.2.1.1.9 booklibrary (31)
- 3.2.1.1.10 booklist (32)
- 3.2.1.1.11 booklists (32)
- 3.2.1.1.5 bookmap (29)
- 3.2.1.2.6 bookmeta (43)
- 3.2.1.2.7 booknumber (44)
- 3.2.1.2.8 bookowner (45)
- 3.2.1.2.9 bookpartner (45)
- 3.2.1.2.10 bookrestriction (46)
- 3.2.1.2.11 bookrights (46)
- 3.2.1.1.12 booktitle (33)
- 3.2.1.1.13 booktitlealt (33)
- 3.2.7.1 cause (93)
- 3.3.8.1 change-completed (120)
- 3.3.8.2 change-historylist (121)
- 3.3.8.3 change-item (121)
- 3.3.8.4 change-organization (122)
- 3.3.8.5 change-person (123)
- 3.3.8.6 change-request-id (123)
3.2 Topic and map specializations

Content TBD

3.2.1 Bookmap elements

Elements in the bookmap section are used to organize DITA content into book form. They include elements for dividing up content, such as chapter and appendix, as well as metadata specific to publishing.

3.2.1.1 Bookmap content elements

The Bookmap specialization of <map> supports standard book production for collections of DITA topics. The OASIS document type for the bookmap specialization also includes substantial book metadata for describing authors, based on the eXtensible Name and Address Language, or xNAL.

3.2.1.1.1 <abbrevlist>

The <abbrevlist> element references a list of abbreviations.

Processing expectations

When the @href attribute is not specified, a processor might generate a list of abbreviations at the specified location in the map.

Specialization hierarchy

The <abbrevlist> element is specialized from <topicref>. It is defined in the bookmap module.

Attributes

The following attributes are available on this element: common map attributes (194), link-relationship attributes (194), universal attributes (189), and @keyref (200).

For this element, the @href attribute references a manual listing for the current element. If the @href attribute is not specified, processors can choose to generate an appropriate listing for this element.

Example

<abbrevlist href="abbrev.dita"/>

3.2.1.1.2 <amendments>

The <amendments> element references a list of amendments or updates to the book.

Processing expectations

When the @href attribute is not specified, a processor might generate a list of amendments or updates at the specified location in the map.
Specialization hierarchy

The `<amendments>` element is specialized from `<topicref>`. It is defined in the bookmap module.

Attributes

The following attributes are available on this element: common map attributes (194), link-relationship attributes (194), universal attributes (189), and `@keyref` (200).

Example

The following code sample specifies that a change history list is generated in the publication front matter. The content of the change history list is contained in the DITA resource referenced by `@keyref`.

```xml
<frontmatter>
  <booklists>
    <amendments keyref="change-history"/>
  </booklists>
</frontmatter>
```

If the `<amendments>` element did not reference a resource, the change history list would be auto-generated by the processor.

3.2.1.1.3 `<appendices>`

The `<appendices>` element is an optional wrapper for `<appendix>` elements within a bookmap.

Specialization hierarchy

The `<appendices>` element is specialized from `<topicref>`. It is defined in the bookmap module.

Attributes

The following attributes are available on this element: common map attributes (194), link-relationship attributes (194), universal attributes (189), and `@keyref` (200).

Example

```xml
<appendices toc="yes" deliveryTarget="html">
  <topicmeta>
    <navtitle>Appendices</navtitle>
  </topicmeta>
  <appendix href="return-codes.dita"/>
  <appendix href="messages.dita"/>
  <appendix href="extra-info.dita"/>
</appendices>
```

3.2.1.1.4 `<appendix>`

The `<appendix>` element references a topic as an appendix within a book.

Specialization hierarchy

The `<appendix>` element is specialized from `<topicref>`. It is defined in the bookmap module.
Attributes

The following attributes are available on this element: common map attributes (194), link-relationship attributes (194), universal attributes (189), and @keyref (200).

Example

Appendix topics that include subtopics:

```xml
<appendix href="intro.dita">
  <topicref href="caring.dita"/>
  <topicref href="feeding.dita"/>
</appendix>
<appendix href="setup.dita">
  <topicref href="prereq.dita"/>
  <topicref href="download.dita"/>
</appendix>
```

Appendix that references a DITA map of content:

```xml
<appendix href="intro.ditamap" format="ditamap"/>
```

3.2.1.1.5 <bookmap>

The `<bookmap>` element is a map specialization used to describe the relationships among a set of DITA topics intended to be configured as a traditional book.

Usage information

Book maps consist of references to topics organized as book content. The topic references therefore are labeled according to the book components they point to, such as book title, front matter, chapter, and appendix.

Specialization hierarchy

The `<bookmap>` element is specialized from `<map>`. It is defined in the bookmap module.

Attributes

The following attributes are available on this element: architectural attributes (194), common map attributes (194), universal attributes (189), @format (199), @scope (204), and @type (205).

Example

```xml
<bookmap xml:lang="en-us">
  <booktitle>
    <booklibrary>Books about stuff</booklibrary>
    <mainbooktitle>A book about one thing</mainbooktitle>
  </booktitle>
  <bookmeta>
    <bookrights>
      <copyrfirst><year>2016</year></copyrfirst>
      <copyrlast><year>2020</year></copyrlast>
      <bookowner>
        <organization>OASIS</organization>
      </bookowner>
    </bookrights>
  </bookmeta>
  <booklists>
    <toc/>
    <figurelist/>
  </booklists>
</bookmap>
```
3.2.1.1.6 <backmatter>
The <backmatter> element contains the material that follows the main body of a document and any appendices. Back matter might include items such as a colophon, legal notices, and book lists such as a glossary or an index.

Specialization hierarchy
The <backmatter> element is specialized from <topicref>. It is defined in the bookmap module.

Attributes
The following attributes are available on this element: common map attributes (194), universal attributes (189), @format (199), @keyref (200), @scope (204), and @type (205).

Example
See the example in 3.2.1.5 bookmap (29).

3.2.1.1.7 <bibliolist>
The <bibliolist> element references a topic containing a list of bibliographic entries within the book.

Processing expectations

Processing expectations
When the @href attribute is not specified, a processor might generate a list of bibliographic entries at the specified location in the map.

Specialization hierarchy
The <bibliolist> element is specialized from <topicref>. It is defined in the bookmap module.
Attributes

The following attributes are available on this element: common map attributes (194), link-relationship attributes (194), universal attributes (189), and @keyref (200).

For this element, the @href attribute references a manual listing for the current element. If the @href attribute is not specified, processors can choose to generate an appropriate listing for this element.

Example

```xml
<bookmap>
  <!-- ... -->
  <backmatter>
    <amendments href="updatesToTheBook.dita"/>
    <booklists>
      <trademarklist href="listoftrademarks.dita"/>
      <bibliolist href="bibliography.dita"/>
      <indexlist/>
    </booklists>
  </backmatter>
</bookmap>
```

3.2.1.1.8 <bookabstract>

The <bookabstract> element references a topic used within a bookmap as a brief summary of the book’s content.

Usage information

A book abstract is generally rendered as part of the book’s front matter. It is used to help the reader quickly evaluate the book’s purpose.

Specialization hierarchy

The <bookabstract> element is specialized from <topicref>. It is defined in the bookmap module.

Attributes

The following attributes are available on this element: common map attributes (194), link-relationship attributes (194), universal attributes (189), and @keyref (200).

Example

See the example in 3.2.1.5 bookmap (29).

3.2.1.1.9 <booklibrary>

The <booklibrary> element contains the library information for a book.

Usage information

Library entries contain information about the series, library, or collection of documents to which the book belongs.

Specialization hierarchy

The <booklibrary> element is specialized from <ph>. It is defined in the bookmap module.
**Attributes**
The following attributes are available on this element: *universal attributes* (189) and `@keyref` (200).

**Example**
See the example in [3.2.1.5 bookmap](#) (29).

### 3.2.1.10 `<booklist>`
The `<booklist>` element references a topic or map containing a list of items within the book.

**Usage information**
The `<booklist>` element is a general purpose element, designed for use in specializations, that references a topic or map containing a list of items within the book. For example, it could be used to reference a topic that contains a list of authors for the book. When a more specific element is already available, such as `<tablelist>` for a list of tables, use that element instead.

**Specialization hierarchy**
The `<booklist>` element is specialized from `<topicref>`. It is defined in the bookmap module.

**Attributes**
The following attributes are available on this element: *common map attributes* (194), *link-relationship attributes* (194), *universal attributes* (189), and `@keyref` (200).

For this element, the `@href` attribute references a manual listing for the current element. If the `@href` attribute is not specified, processors can choose to generate an appropriate listing for this element.

**Example**
In this case the `<booklist>` element references a topic that contains a list of authors of topics in this document.

```xml
<booklists>
  <toc/>
  <tablelist/>
  <booklist href="authors.dita">
    <topicmeta>
      <navtitle>List of authors</navtitle>
    </topicmeta>
  </booklist>
</booklists>
```

### 3.2.1.11 `<booklists>`
The `<booklists>` element references lists of various kinds within the book.

**Processing expectations**
The `<booklists>` element indicates to processors that lists are to be rendered or generated at that location in the front or back matter.

**Specialization hierarchy**
The `<booklists>` element is specialized from `<topicref>`. It is defined in the bookmap module.
Attributes
The following attributes are available on this element: common map attributes (194), universal attributes (189), @format (199), @keyref (200), @scope (204), and @type (205).

Example
The following code sample indicates that lists are generated in the front and back matter of the publication.

```xml
<bookmap>
  <booktitle>
    <mainbooktitle>Sample publication</mainbooktitle>
  </booktitle>
  <frontmatter>
    <booklists>
      <toc>
        <amendments/>
        <figurelist/>
        <tablelist/>
      </booklists>
    </frontmatter>
    ...
    <backmatter>
      <booklists>
        <abbrevlist/>
        <glossarylist/>
        <indexlist/>
      </booklists>
    </backmatter>
  </booklists>
</bookmap>
```

3.2.1.1.12 <booktitle>
The <booktitle> element contains the title information for a book, including the library title, main title, subtitle, and any other titles.

Specialization hierarchy
The <booktitle> element is specialized from <title>. It is defined in the bookmap module.

Attributes
The following attributes are available on this element: ID and conref attributes (189), localization attributes (189), @base (190), @class (190), @outputclass (192), and @rev (193).

Example
See the example in 3.2.1.5 bookmap (29).

3.2.1.1.13 <booktitlealt>
The <booktitlealt> element contains an alternative title, subtitle, or short title for a book.

Specialization hierarchy
The <booktitlealt> element is specialized from <ph>. It is defined in the bookmap module.

Attributes
The following attributes are available on this element: universal attributes (189) and @keyref (200).
**Example**

```xml
<bookmap>
  <booktitle>
    <mainbooktitle>This is my big and fancy book</mainbooktitle>
    <booktitlealt>Shorter title</booktitlealt>
  </booktitle>
  <!-- ... -->
</bookmap>
```

### 3.2.1.1.14 `<chapter>`

The `<chapter>` element references a topic or map as a chapter within a book.

**Specialization hierarchy**

The `<chapter>` element is specialized from `<topicref>`. It is defined in the bookmap module.

**Attributes**

The following attributes are available on this element: common map attributes (194), link-relationship attributes (194), universal attributes (189), and [@keyref](200).

**Example**

Chapter topics that include subtopics:

```xml
<chapter href="intro.dita">
  <topicref href="feeding.dita"/>
</chapter>
```

Chapter that references a DITA map of content:

```xml
<chapter href="intro.ditamap" format="ditamap"/>
```

### 3.2.1.15 `<colophon>`

The `<colophon>` element references a topic describing how this document was created.

**Usage information**

In publishing, a colophon describes details of the production of a book. This information generally includes the typefaces used, and often the names of their designers; the paper, ink and details of the binding materials and methods might also receive mention. In the case of technical books, a colophon might specify the software used to prepare the text and diagrams for publication. The `<colophon>` can appear in the `<frontmatter>` or `<backmatter>`.

**Specialization hierarchy**

The `<colophon>` element is specialized from `<topicref>`. It is defined in the bookmap module.
Attributes
The following attributes are available on this element: common map attributes (194), link-relationship attributes (194), universal attributes (189), and @keyref (200).

Example

```xml
<bookmap>
  <title>Sample book</title>
  <!-- ... -->
  <backmatter>
    <colophon href="ProdNotes.dita">
      <topicmeta>
        <navtitle>Production Notes</navtitle>
      </topicmeta>
    </colophon>
  </backmatter>
</bookmap>
```

3.2.1.16 <dedication>
The <dedication> element references a topic containing a dedication for the book, such as to a person or group.

Specialization hierarchy
The <dedication> element is specialized from <topicref>. It is defined in the bookmap module.

Attributes
The following attributes are available on this element: common map attributes (194), link-relationship attributes (194), universal attributes (189), and @keyref (200).

Example

```xml
<frontmatter>
  <dedication href="dtm.dita">
    <topicmeta>
      <navtitle>Dedicated to Mother</navtitle>
    </topicmeta>
  </dedication>
</frontmatter>
```

3.2.1.17 <draftintro>
The <draftintro> element references a topic used as an introduction to the draft of this book.

Specialization hierarchy
The <draftintro> element is specialized from <topicref>. It is defined in the bookmap module.

Attributes
The following attributes are available on this element: common map attributes (194), link-relationship attributes (194), universal attributes (189), and @keyref (200).
Example

```dita
<frontmatter>
  <draftintro href="introducing.dita">
    <topicmeta>
      <navtitle>Introduction to this draft</navtitle>
    </topicmeta>
  </draftintro>
</frontmatter>
```

### 3.2.1.18 `<figurelist>`

The `<figurelist>` element references a topic containing a list of figures in the book.

#### Processing expectations

When the `@href` attribute is not specified, a processor might generate a list of figures at the specified location in the map.

#### Specialization hierarchy

The `<figurelist>` element is specialized from `<topicref>`. It is defined in the bookmap module.

#### Attributes

The following attributes are available on this element: common map attributes (194), link-relationship attributes (194), universal attributes (189), and `@keyref` (200).

For this element, the `@href` attribute references a manual listing for the current element. If the `@href` attribute is not specified, processors can choose to generate an appropriate listing for this element.

**Example**

See the example in [3.2.1.15 bookmap](#) (29).

### 3.2.1.19 `<frontmatter>`

The `<frontmatter>` element contains the material that precedes the main body of a document.

#### Usage information

The front matter might include items such as an abstract, a preface, and various types of book lists such as a `<toc>`, `<tablelist>`, or `<figurelist>`.

#### Specialization hierarchy

The `<frontmatter>` element is specialized from `<topicref>`. It is defined in the bookmap module.

#### Attributes

The following attributes are available on this element: common map attributes (194), universal attributes (189), `@format` (199), `@keyref` (200), `@scope` (204), and `@type` (205).

**Example**

See the example in [3.2.1.15 bookmap](#) (29).
3.2.1.20 <glossarylist>
The <glossarylist> element references a list of glossary entries within the book.

Processing expectations
When the @href attribute is not specified, a processor might generate a list of glossary entries at the specified location in the map.

Specialization hierarchy
The <glossarylist> element is specialized from <topicref>. It is defined in the bookmap module.

Attributes
The following attributes are available on this element: common map attributes (194), link-relationship attributes (194), universal attributes (189), and @keyref (200).

For this element, the @href attribute references a manual listing for the current element. If the @href attribute is not specified, processors can choose to generate an appropriate listing for this element.

Example
See 3.2.1.1.6 backmatter (30).

3.2.1.21 <indexlist>
The <indexlist> element indicates to the processing software that the author wants an index at the particular location.

Processing expectations
When the @href attribute is not specified, a processor might generate an index at the specified location in the map. If the @href attribute is specified, the referenced topic or map contains a manually created index.

Specialization hierarchy
The <indexlist> element is specialized from <topicref>. It is defined in the bookmap module.

Attributes
The following attributes are available on this element: common map attributes (194), link-relationship attributes (194), universal attributes (189), and @keyref (200).

For this element, the @href attribute references a manual listing for the current element. If the @href attribute is not specified, processors can choose to generate an appropriate listing for this element.

Example
See the example in 3.2.1.5 bookmap (29).
3.2.1.22 `<mainbooktitle>`
The `<mainbooktitle>` element contains the primary title for a book.

**Specialization hierarchy**
The `<mainbooktitle>` element is specialized from `<ph>`. It is defined in the bookmap module.

**Attributes**
The following attributes are available on this element: universal attributes (189) and `@keyref` (200).

**Example**
See the example in 3.2.1.5 bookmap (29).

3.2.1.23 `<notices>`
The `<notices>` element references a topic containing special notice information, for example, legal notices about supplementary copyrights and trademarks associated with the book.

**Specialization hierarchy**
The `<notices>` element is specialized from `<topicref>`. It is defined in the bookmap module.

**Attributes**
The following attributes are available on this element: common map attributes (194), link-relationship attributes (194), universal attributes (189), and `@keyref` (200).

**Example**
This example references a notices topic that contains legal content.

```dita
<backmatter>
  <notices href="notices.dita" navtitle="Legal notices">
    <topicmeta>
      <navtitle>Legal notices</navtitle>
    </topicmeta>
  </notices>
  <booklists>
    <!-- Index, glossary, or other lists -->
  </booklists>
</backmatter>
```

3.2.1.24 `<part>`
The `<part>` element references topic or a map as a part within a book.

**Usage information**
Use `<part>` to divide a document's chapters into logical groupings. For example, in a document that contains both guide and reference information, you can define two parts, one containing the guide information and the other containing the reference information.

**Specialization hierarchy**
The `<part>` element is specialized from `<topicref>`. It is defined in the bookmap module.
Attributes

The following attributes are available on this element: common map attributes (194), link-relationship attributes (194), universal attributes (189), and @keyref (200).

Example

Part topics that include chapters and subtopics:

```xml
<part href="guide.dita">
  <chapter href="intro.dita">
    <topicref href="caring.dita"/>
    <topicref href="feeding.dita"/>
  </chapter>
  <chapter href="setup.dita">
    <topicref href="prereq.dita"/>
    <topicref href="download.dita"/>
  </chapter>
</part>

<part href="ref.dita">
  <chapter href="commands.dita">
    <topicref href="care.dita"/>
    <topicref href="feed.dita"/>
  </chapter>
  <chapter href="apis.dita">
    <topicref href="acare.dita"/>
    <topicref href="afeed.dita"/>
  </chapter>
</part>
```

Parts that reference DITA maps of content:

```xml
<part href="intro.ditamap" format="ditamap"/>
<part href="guide.ditamap" format="ditamap"/>
```

3.2.1.1.25 <preface>

The <preface> element references a topic or map containing introductory information about a book, such as the purpose and structure of the document.

Specialization hierarchy

The <preface> element is specialized from <topicref>. It is defined in the bookmap module.

Attributes

The following attributes are available on this element: common map attributes (194), link-relationship attributes (194), universal attributes (189), and @keyref (200).

Example

See the example in 3.2.1.5 bookmap (29).

3.2.1.1.26 <tablelist>

The <tablelist> element references a topic that contains a list of tables within the book.

Processing expectations

When the @href attribute is not specified, a processor might generate a list of tables at the specified location in the map.
Specialization hierarchy
The `<tablelist>` element is specialized from `<topicref>`. It is defined in the bookmap module.

Attributes
The following attributes are available on this element: common map attributes (194), link-relationship attributes (194), universal attributes (189), and `@keyref` (200).

For this element, the `@href` attribute references a manual listing for the current element. If the `@href` attribute is not specified, processors can choose to generate an appropriate listing for this element.

Example
See the example in 3.2.1.1.5 bookmap (29).

3.2.1.1.27 `<toc>`
The `<toc>` element indicates to the processing software that the author wants a table of contents generated at the particular location.

Processing expectations
When the `@href` attribute is not specified, a processor might generate a table of contents at the specified location in the map. If the `@href` attribute is specified, the referenced topic or map contains a manually created table of contents.

Specialization hierarchy
The `<toc>` element is specialized from `<topicref>`. It is defined in the bookmap module.

Attributes
The following attributes are available on this element: common map attributes (194), link-relationship attributes (194), universal attributes (189), and `@keyref` (200).

For this element, the `@href` attribute references a manual listing for the current element. If the `@href` attribute is not specified, processors can choose to generate an appropriate listing for this element.

Example
See the example in 3.2.1.1.5 bookmap (29).

3.2.1.1.28 `<trademarklist>`
The `<trademarklist>` element references a topic that contains a list of trademarks within the book.

Processing expectations
When the `@href` attribute is not specified, a processor might generate a list of trademarks at the specified location in the map.

Specialization hierarchy
The `<trademarklist>` element is specialized from `<topicref>`. It is defined in the bookmap module.
Attributes

The following attributes are available on this element: common map attributes (194), link-relationship attributes (194), universal attributes (189), and @keyref (200).

For this element, the @href attribute references a manual listing for the current element. If the @href attribute is not specified, processors can choose to generate an appropriate listing for this element.

Example

See the example in 3.2.1.1.5 bookmap (29).

3.2.1.2 Book map metadata elements

The book map specialization supports standard book production. This section contains the metadata elements used by bookmap to store book-related metadata.

Note

The OASIS document type for the bookmap specialization includes the xNAL domain for describing the author or authors of a document. All elements that appear in that domain (the <authorinformation> element and all of its descendants) are described in the xNAL domain section, rather than in this bookmap metadata section.

3.2.1.2.1 <approved>

The <approved> element contains information about when and by whom the book was approved during its publication history.

Specialization hierarchy

The <approved> element is specialized from <data>. It is defined in the bookmap module.

Attributes

The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

Example

See the example in 3.2.1.2.2 bookchangehistory (41).

3.2.1.2.2 <bookchangehistory>

The <bookchangehistory> element contains information about a book's publishing lifecycle

Usage information

This element contains information about the history of the book's creation and publishing lifecycle, including who wrote, reviewed, edited, and tested the book. It also specifies when these events took place.

Specialization hierarchy

The <bookchangehistory> element is specialized from <data>. It is defined in the bookmap module.
Attributes
The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

Example
<bookmeta>
  <bookchangehistory>
    <reviewed>
      <started><year>2019</year><month>10</month></started>
      <completed><year>2020</year><month>01</month></completed>
    </reviewed>
    <edited>
      <person>Joe T. Editor</person>
      <completed><year>2020</year><month>03</month><day>15</day></completed>
    </edited>
    <tested>
      <organization>OASIS</organization>
      <completed><year>2020</year><month>04</month></completed>
    </tested>
    <approved>
      <organization>OASIS</organization>
      <completed><year>2020</year><month>05</month></completed>
    </approved>
    <bookevent>
      <bookeventtype name="Type of Major Event"/>
      <completed><year>2021</year></completed>
    </bookevent>
  </bookchangehistory>
</bookmeta>

3.2.1.2.3 <bookevent>
The <bookevent> element indicates a general event in the publication history of a book.

Usage information
This element is appropriate for specialization if the current set of specific book event types does not meet your needs. If an element already exists to describe a specific type of event, such as <reviewed>, <edited>, or <approved>, use that element instead.

Specialization hierarchy
The <bookevent> element is specialized from <data>. It is defined in the bookmap module.

Attributes
The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

Example
See the example in 3.2.1.2.2 bookchangehistory (41).
3.2.1.2.4 <bookeventtype>
The <bookeventtype> element indicates the specific nature of a <bookevent>, such as updated, indexed, or deprecated.

Usage information
The required @name attribute indicates the event's type.

Specialization hierarchy
The <bookeventtype> element is specialized from <data>. It is defined in the bookmap module.

Attributes
The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).
For this element, the @name attribute is required.

Example
See the example in 3.2.1.2.2 bookchangehistory (41).

3.2.1.2.5 <bookid>
The <bookid> element contains the publisher's identification information for the book, such as part number, edition number, or ISBN number.

Specialization hierarchy
The <bookid> element is specialized from <data>. It is defined in the bookmap module.

Attributes
The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

Example
See 3.2.1.2.6 bookmeta (43).

3.2.1.2.6 <bookmeta>
The <bookmeta> element contains metadata about the book, such as copyright information, author information, and any classifications.

Specialization hierarchy
The <bookmeta> element is specialized from <topicmeta>. It is defined in the bookmap module.

Attributes
The following attributes are available on this element: universal attributes (189).
Example
In this example:

- The `<authorinformation>` contains the content for a reader's comment form; the `<maintainer>` element references that author information to create the reader comment form.
- The `<prodinfo>` element contains the book's product information. This includes the product name, and the version, release, and modification information.
- The `<bookid>` element contains the book's form number and part number information. The `<maintainer>` element contains information about the current maintainer of the book; it might reference the `<authorinformation>` element to provide detailed information about an author that is also the current maintainer.
- The `<bookrights>` element contains the book's copyright information.

This example makes heavy use of `<authorinformation>`, which is a domain element that OASIS delivers only with the `<bookmap>` specialization. However, other DTD, XSD Schema, or RELAX NG implementations of `<bookmap>` may not include the domain with `<authorinformation>; likewise, `<authorinformation>` may be included in other document types.

```
<bookmeta>
  <authorinformation id="rcf">
    <organizationinfo>
      <namedetails>
        <organizationnamedetails>
          <organizationname>IBM</organizationname>
          </organizationnamedetails>
        </namedetails>
      </organizationinfo>
    <addressdetails>ATTN: Dept XYZ<br>3905 37th Street NW<br>Rochester, MN<br>55901</addressdetails>
    <country>USA</country>
  </addressdetails>
  <contactnumbers>
    <contactnumber type="telephone">800-555-1212</contactnumber>
    <contactnumber type="fax">800-555-1213</contactnumber>
  </contactnumbers>
  <emailaddresses><emailaddress>fred@example.com</emailaddress></emailaddresses>
  <urls><url>http://www.example.com/fred</url></urls>
  </organizationinfo>
  <prodinfo>
    <prodname>My Product</prodname>
    <vrmlist><vrm release="1" version="3"></vrmlist>
  </prodinfo>
  <bookid>
    <bookpartno>99F9999</bookpartno>
    <booknumber>SC00-0000-00</booknumber>
    <maintainer href="#rcf"></maintainer>
  </bookid>
  <bookrights>
    <copyrfirst><year>2016</year></copyrfirst>
    <copyrlast><year>2020</year></copyrlast>
    <bookowner><organization>OASIS</organization></bookowner>
  </bookrights>
</bookmeta>
```

3.2.1.2.7 `<booknumber>`
The `<booknumber>` element contains the book's form number, such as SC21-1920.

Specialization hierarchy
The `<booknumber>` element is specialized from `<data>`. It is defined in the bookmap module.
Attributes
The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

Example
In this example, "99F1234" is a part number assigned to this book by the publisher, while SC21-1234-00 is a number that identifies this book among all of the author's works.

```xml
<bookmeta>
  <bookid>
    <bookpartno>99F1234</bookpartno>
    <booknumber>SC21-1234-00</booknumber>
  </bookid>
</bookmeta>
```

3.2.1.2.8 <bookowner>
The <bookowner> element specifies the owner of the book's copyright.

Specialization hierarchy
The <bookowner> element is specialized from <data>. It is defined in the bookmap module.

Attributes
The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

Example
```xml
<bookmeta>
  <bookrights>
    <copyrfirst><year>2016</year></copyrfirst>
    <copyrlast><year>2020</year></copyrlast>
  <bookowner>
    <organization>Example Corporation</organization>
  </bookowner>
  </bookmeta>
```

3.2.1.2.9 <bookpartno>
The <bookpartno> element contains the book's part number, such as 99F1234.

Usage information
A publisher might use a number like this one to identify a book for tracking purposes.

Specialization hierarchy
The <bookpartno> element is specialized from <data>. It is defined in the bookmap module.

Attributes
The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).
Example

In this example, "99F1234" is a part number assigned to this book by the publisher, while SC21-1234-00 is a number that identifies this book among all of the author's works.

```xml
<bookmeta>
  <bookid>
    <bookpartno>99F1234</bookpartno>
    <booknumber>SC21-1234-00</booknumber>
  </bookid>
</bookmeta>
```

3.2.1.2.10 <bookrestriction>
The `<bookrestriction>` element specifies whether the book is classified or restricted in some way.

Specialization hierarchy

The `<bookrestriction>` element is specialized from `<data>`. It is defined in the bookmap module.

Attributes

The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

For this element, the `@value` attribute specifies any restrictions on the use of the material, such as declaring the information confidential or for licensed use only.

Example

```xml
<bookrights>
  <copyrfirst><year>2016</year></copyrfirst>
  <copyrlast><year>2020</year></copyrlast>
  <bookowner><organization>Example Corporation</organization></bookowner>
  <bookrestriction value="unclassified"/>
</bookrights>
```

3.2.1.2.11 <bookrights>
The `<bookrights>` element contains the information about the legal rights associated with the book, including copyright dates and owners.

Specialization hierarchy

The `<bookrights>` element is specialized from `<data>`. It is defined in the bookmap module.

Attributes

The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

Example

See 3.2.1.2.6 bookmeta (43).
3.2.1.2.12 <completed>
The <completed> element indicates a completion date for some type of book event, such as a review, editing, or testing.

Specialization hierarchy
The <completed> element is specialized from <ph>. It is defined in the bookmap module.

Attributes
The following attributes are available on this element: universal attributes (189) and @keyref (200).

Example
See the example in 3.2.1.2.2 bookchangehistory (41).

3.2.1.2.13 <copyrfirst>
The <copyrfirst> element contains the copyright year, or the first copyright year within a multi-year copyright statement.

Specialization hierarchy
The <copyrfirst> element is specialized from <data>. It is defined in the bookmap module.

Attributes
The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

Example
See the example in 3.2.1.5 bookmap (29).

3.2.1.2.14 <copyrlast>
The <copyrlast> element contains the last copyright year within a multiyear copyright statement.

Specialization hierarchy
The <copyrlast> element is specialized from <data>. It is defined in the bookmap module.

Attributes
The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

Example
See the example in 3.2.1.5 bookmap (29).
3.2.1.2.15 <day>
The <day> element denotes a day of the month.

Specialization hierarchy
The <day> element is specialized from <ph>. It is defined in the bookmap module.

Attributes
The following attributes are available on this element: universal attributes (189) and @keyref (200).

Example

```
<bookchangehistory>
  <edited>
    <person>Joe T. Editor</person>
    <completed><year>2020</year><month>10</month><day>13</day></completed>
  </edited>
</bookchangehistory>
```

3.2.1.2.16 <edited>
The <edited> element contains information about when and by whom the book was edited during its publication history.

Specialization hierarchy
The <edited> element is specialized from <data>. It is defined in the bookmap module.

Attributes
The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

Example
See the example in 3.2.1.2 bookchangehistory (41).

3.2.1.2.17 <edition>
The <edition> element contains the edition number information, such as First Edition or Third Edition, used by a publisher to identify a book.

Specialization hierarchy
The <edition> element is specialized from <data>. It is defined in the bookmap module.

Attributes
The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

Example

```
<bookmeta>
  <bookid>
    dita-2.0-technical-content-specification
  </bookid>
</bookmeta>
```
3.2.1.2.18 <isbn>

Specialization hierarchy
The <isbn> element is specialized from <data>. It is defined in the bookmap module.

Attributes
The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

Example

```xml
<bookmeta>
  <bookid>
    <isbn>978-0141000039</isbn>
  </bookid>
</bookmeta>
```

3.2.1.2.19 <maintainer>
The <maintainer> element contains information about who maintains the document. The maintainer might be an organization or a person.

Specialization hierarchy
The <maintainer> element is specialized from <data>. It is defined in the bookmap module.

Attributes
The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

Example
See the example in 3.2.1.2.6 bookmeta (43).

3.2.1.2.20 <month>
The <month> element denotes a month of the year.

Specialization hierarchy
The <month> element is specialized from <ph>. It is defined in the bookmap module.

Attributes
The following attributes are available on this element: universal attributes (189) and @keyref (200).
Example

```xml
<bookchangehistory>
  <edited>
    <person>Joe T. Editor</person>
    <completed><year>2020</year><month>10</month><day>13</day></completed>
  </edited>
</bookchangehistory>
```

3.2.1.2.21 <organization>
The <organization> element contains the name of an organization.

Usage information
Note that unlike <organizationname>, the <organization> element is not restricted to use within <authorinformation>; it does not have to contain the name of an authoring organization.

Specialization hierarchy
The <organization> element is specialized from <data>. It is defined in the bookmap module.

Attributes
The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

Example

```xml
<bookmeta>
  <bookrights>
    <copyrfirst><year>2016</year></copyrfirst>
    <copyrlast><year>2020</year></copyrlast>
    <bookowner>Organization>OASIS</organization></bookowner>
  </bookrights>
</bookmeta>
```

3.2.1.2.22 <person>
The <person> element contains information about the name of a person.

Usage information
Note that unlike the <personname> element, the <person> element is not restricted to describing the names of authors.

Specialization hierarchy
The <person> element is specialized from <data>. It is defined in the bookmap module.

Attributes
The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).
Example

```xml
<bookmeta>
  <bookrights>
    <copyrfirst><year>2016</year></copyrfirst>
    <copyrlast><year>2020</year></copyrlast>
    <bookowner><person>Jane Doe</person></bookowner>
  </bookrights>
</bookmeta>
```

3.2.1.2.23 `<printlocation>`

The `<printlocation>` element indicates the location where the book was printed.

Usage information

Comment by robander on 20 May 2021
This seems like an odd restriction / not restriction, if we need it then it should be phrased like other typical-use statements.
Disposition: Unassigned

Customarily, the content is restricted to the name of the country.

Specialization hierarchy

The `<printlocation>` element is specialized from `<data>`. It is defined in the bookmap module.

Attributes

The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

Example

See the example in 3.2.1.2.25 publisherinformation (52).

3.2.1.2.24 `<published>`

The `<published>` element contains information about the person or organization publishing the book, the dates when it was started and completed, and any special restrictions associated with it.

Specialization hierarchy

The `<published>` element is specialized from `<data>`. It is defined in the bookmap module.

Attributes

The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

Example

See the example in 3.2.1.2.25 publisherinformation (52).
3.2.1.2.25 <publisherinformation>
The <publisherinformation> contains information about what group or person published the book, where it was published, and certain details about its publication history.

Usage information
Other publication history information is found in the <bookchangehistory> element.

Specialization hierarchy
The <publisherinformation> element is specialized from <publisher>. It is defined in the bookmap module.

Attributes
The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

Example

```xml
<bookmeta>
  <publisherinformation>
    <organization>Example Publishers</organization>
    <printlocation>Austin, TX</printlocation>
    <published>
      <publishtype value="general"/>
      <completed><year>1977</year></completed>
    </published>
  </publisherinformation>
</bookmeta>
```

3.2.1.2.26 <publishtype>
The <publishtype> element indicates whether the book is generally available from the publisher or is restricted in some way.

Usage information
The @value attribute indicates the restrictions, such as beta release, limited availability, or general availability.

Specialization hierarchy
The <publishtype> element is specialized from <data>. It is defined in the bookmap module.

Attributes
The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

For this element, the @value attribute specifies any restrictions on the availability of the publication.

Example
See the example in 3.2.1.2.25 publisherinformation (52).
3.2.1.2.27 <reviewed>
The <reviewed> element contains information about when and by whom the book was reviewed during its publication history.

Specialization hierarchy
The <reviewed> element is specialized from <data>. It is defined in the bookmap module.

Attributes
The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

Example
See the example in 3.2.1.2 bookchangehistory (41).

3.2.1.2.28 <revisionid>
The <revisionid> element indicates the revision number or revision ID of the book.

Processing expectations
A processor determines how or whether the revision level is displayed. Common methods include using a dash, for example “-01”, or a period, such as “.01”.

Specialization hierarchy
The <revisionid> element is specialized from <ph>. It is defined in the bookmap module.

Attributes
The following attributes are available on this element: universal attributes (189) and @keyref (200).

Example

```xml
<bookchangehistory>
  <edited>
    <person>Joe T. Editor</person>
    <revisionid>1</revisionid>
    <completed><year>2020</year><month>03</month><day>15</day></completed>
  </edited>
  <edited>
    <person>Joe T. Editor</person>
    <revisionid>2</revisionid>
    <completed><year>2020</year><month>10</month><day>13</day></completed>
  </edited>
</bookchangehistory>
```

3.2.1.2.29 <started>
The <started> element indicates a start date for some type of book event, such as a review, editing, or testing.

Specialization hierarchy
The <started> element is specialized from <ph>. It is defined in the bookmap module.
Attributes
The following attributes are available on this element: universal attributes (189) and @keyref (200).

Example
See the example in 3.2.1.2.2 bookchangehistory (41).

3.2.1.2.30 <summary>
The <summary> element contains a text summary associated with a book event (such as <approved> or <reviewed>) or with the list of copyrights for the book.

Specialization hierarchy
The <summary> element is specialized from <ph>. It is defined in the bookmap module.

Attributes
The following attributes are available on this element: universal attributes (189) and @keyref (200).

Example
<bookchangehistory>
  <edited>
    <person>Joe T. Editor</person>
    <revisionid>1</revisionid>
    <completed><year>2020</year><month>03</month><day>15</day></completed>
    <summary>Added several new topics</summary>
  </edited>
  <edited>
    <person>Joe T. Editor</person>
    <revisionid>2</revisionid>
    <completed><year>2020</year><month>10</month><day>13</day></completed>
    <summary>Fixed a few typos</summary>
  </edited>
</bookchangehistory>

3.2.1.2.31 <tested>
The <tested> element contains information about when and by whom the book was tested during its publication history.

Specialization hierarchy
The <tested> element is specialized from <data>. It is defined in the bookmap module.

Attributes
The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

Example
See the example in 3.2.1.2.2 bookchangehistory (41).
3.2.1.2.32 <volume>
The <volume> element contains the book's volume number, such as "2" to represent Volume 2.

Specialization hierarchy
The <volume> element is specialized from <data>. It is defined in the bookmap module.

Attributes
The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

Example
```xml
<bookmeta>
  <bookid><volume>2</volume></bookid>
</bookmeta>
```

3.2.1.2.33 <year>
The <year> element denotes a year.

Specialization hierarchy
The <year> element is specialized from <ph>. It is defined in the bookmap module.

Attributes
The following attributes are available on this element: universal attributes (189) and @keyref (200).

Example
```xml
<bookchangehistory>
  <edited>
    <person>Joe T. Editor</person>
    <completed><year>2020</year><month>10</month><day>13</day></completed>
  </edited>
</bookchangehistory>
```

3.2.2 Concept elements
Concept elements provide the fundamental structure for concept topics. Concept topics are useful for introducing the background or overview information for task or reference topics.

3.2.2.1 <concept>
The <concept> element is the top-level element for a topic that answers the question “what is?”

Usage information
Concepts provide background information that users must know before they can successfully work with a product or interface. Often, a concept is an extended definition of a major abstraction such as a process or function. It might also contain an example, image, or diagram.
Specialization hierarchy

The `<concept>` element is specialized from `<topic>`. It is defined in the concept module.

Attributes

The following attributes are available on this element: architectural attributes (194) and universal attributes (189).

For this element, the `@id` attribute is required.

Example

The following code sample shows a concept topic:

```xml
<concept id="concept">
  <title>DITA concept topic</title>
  <shortdesc>The concept topic answers the question <q>what is?</q></shortdesc>
  <conbody>
    Concept topics provide background information that users must know before they can successfully work with a product or interface. Often, a concept is an extended definition of a major abstraction such as a process or function. It might also have an example or a graphic.</p>
  </conbody>
</concept>
```

3.2.2.2 `<conbody>`

The `<conbody>` element contains the main content of a concept topic.

Usage information

The `<conbody>` element allows paragraphs, lists, and other elements as well as sections and examples. However, `<conbody>` element has a restriction that a `<section>` or an `<example>` can be followed only by other sections, examples, or `<conbodydiv>` elements that group sections and examples.

Specialization hierarchy

The `<conbody>` element is specialized from `<body>`. It is defined in the concept module.

Attributes

The following attributes are available on this element: universal attributes (189).

Example

See `<concept>` (55).

3.2.2.3 `<conbodydiv>`

The `<conbodydiv>` element provides an container for content that might be grouped within a concept topic.

Usage information

There are no additional semantics attached to the `<conbodydiv>` element. It is purely a grouping element that is provided to help organize content for reuse.
The content model of the `<conbodydiv>` element only permits `<section>` and `<example>`.

**Specialization hierarchy**

The `<conbodydiv>` element is specialized from `<bodydiv>`. It is defined in the concept module.

**Attributes**

The following attributes are available on this element: universal attributes (189).

**Example**

The following code sample shows how a `<conbodydiv>` element can be used to group content for reuse:

```xml
<conbody>
  <conbodydiv id="concept-purpose-content-model">
    <section id="purpose">
      <title>Purpose</title>
      <p>Concept topics serve a variety of purposes:</p>
      <!-- ... -->
    </section>
    <section id="content-model">
      <title>Content model</title>
      <p>The body of a concept topic can contain the following document structures:</p>
      <!-- ... -->
    </section>
  </conbodydiv>
</conbody>
```

### 3.2.3 Glossentry elements

Use the glossary entry topic type to define glossary terms. Each glossary topic should define a single sense of a term.

#### 3.2.3.1 `<glossentry>`

The `<glossentry>` element defines a single sense of a glossary term. Glossary entries for different term senses can be reused independently of one another.

**Processing expectations**

The recommended (but not required) book processing is to sort and group glossary entries based on the localized term so a back-of-the-book glossary can contain a collated list of terms with the definitions of the individual senses of each term indented under the term. The glossary can have a different organization in different languages depending on the translation of the terms.

One possible implementation of a glossary in online processing is to associate a hotspot for mentions of terms in `<term>` elements and display the definition on hover or click.

**Specialization hierarchy**

The `<glossentry>` element is specialized from `<concept>`; it is defined in the glossary entry module. The `<concept>` element is specialized from `<topic>`; it is defined in the concept module.

**Attributes**

The following attributes are available on this element: architectural attributes (194) and universal attributes (189).
For this element, the @id attribute is required.

**Example**

**Figure 5: The glossary term "USB flash drive" with additional information**

```xml
<glossentry id="usbfd">
  <glossterm>USB flash drive</glossterm>
  <glossdef>A small portable drive.</glossdef>
  <glossBody>
    <glossPartOfSpeech value="noun"/>
    <glossUsage>Do not provide in upper case (as in "USB Flash Drive") because that suggests a trademark.</glossUsage>
    <glossAlt>
      <glossAcronym>UFD</glossAcronym>
      <glossUsage>Explain the acronym on first occurrence.</glossUsage>
    </glossAlt>
    <glossAlt id="memoryStick">
      <glossSynonym>memory stick</glossSynonym>
      <glossUsage>This is a colloquial term.</glossUsage>
    </glossAlt>
    <glossAlt>
      <glossAbbreviation>stick</glossAbbreviation>
      <glossStatus value="prohibited"/>
      <glossUsage>This is too colloquial.</glossUsage>
      <glossAlternateFor href="#usbfd/memoryStick"/>
    </glossAlt>
    <glossAlt>
      <glossAbbreviation>flash</glossAbbreviation>
      <glossStatus value="prohibited"/>
      <glossUsage>This short form is ambiguous.</glossUsage>
    </glossAlt>
  </glossBody>
</glossentry>
```

### 3.2.3.2 <glossterm>

The `<glossterm>` element specifies the preferred term that is associated with a definition of a sense. If the same term has multiple senses, create a separate `<glossentry>` topic for each sense.

---

**Comment by robander on 20 may 2021**

associated with a definition of a "sense"? I think we need to clear that up.

**Disposition: Unassigned**

---

**Specialization hierarchy**

The `<glossterm>` element is specialized from `<title>`. It is defined in the glossary entry module.

**Attributes**

The following attributes are available on this element: ID and conref attributes (189), localization attributes (189), @base (190), @class (190), @outputclass (192), and @rev (193).

**Example**

See the example in `<glossentry>`.(58)
3.2.3.3 <glossdef>
The <glossdef> element specifies the definition of one sense of a term.

Usage information
If a term has multiple senses, create a separate <glossentry> topic to define each sense.

Specialization hierarchy
The <glossdef> element is specialized from <abstract>. It is defined in the glossary entry module.

Attributes
The following attributes are available on this element: universal attributes (189).

Example
See the example in <glossentry>. (58)

3.2.3.4 <glossAbbreviation>
The <glossAbbreviation> element provides an abbreviated form of the term that is contained in a <glossterm> element.

Specialization hierarchy
The <glossAbbreviation> element is specialized from <title>. It is defined in the glossary entry module.

Attributes
The following attributes are available on this element: ID and conref attributes (189), localization attributes (189), @base (190), @class (190), @outputclass (192), and @rev (193).

Example
See the example in <glossentry>. (58)

3.2.3.5 <glossAcronym>
The <glossAcronym> element defines an acronym for the term that is defined in the <glossterm> element.

Usage information
This element can be used with the <abbreviated-form> element to display an expanded version of an acronym the first time that acronym appears in a set of text. See <abbreviated-form> (102) for information on how the two elements interact.

Note Several issues arise when acronyms are translated into other languages. For example, an acronym in one language might not have an equivalent in another language. When acronyms are first displayed, some languages will display the expanded form first followed by the acronym in parenthesis, while other languages do the reverse. For some acronyms, a translation might need to render both the original and the translated version of the acronym. For all of these reasons, DITA allows an author or translator to control what is presented to a
reader by using the `<glossSurfaceForm>` element, which will often accompany the `<glossAcronym>`. The `<abbreviated-form>` (102) topic contains information on how the `<glossSurfaceForm>` and `<glossAcronym>` elements affect references to the primary term.

**Specialization hierarchy**

The `<glossAcronym>` element is specialized from `<title>`. It is defined in the glossary entry module.

**Attributes**

The following attributes are available on this element: ID and conref attributes (189), localization attributes (189), `@base` (190), `@class` (190), `@outputclass` (192), and `@rev` (193).

**Example**

See the example in `<glossentry>` (58)

### 3.2.3.6 `<glossAlt>`

The `<glossAlt>` element contains a variant term for the preferred term that is defined in the `<glossterm>` element.

#### Usage information

The variant should have the same meaning as the term in the `<glossterm>` element; the variant is simply another way to refer to the same term. There might be many ways to refer to a term; each variant is placed in its own `<glossAlt>` element. The `<glossUsage>` element can be used within `<glossAlt>` to indicate when use of the alternate term is appropriate.

**Note** A list of alternative terms is specific to the language, so the translation of a `<glossentry>` topic might result in empty elements within a `<glossAlt>` container.

**Specialization hierarchy**

The `<glossAlt>` element is specialized from `<section>`. It is defined in the glossary entry module.

**Attributes**

The following attributes are available on this element: universal attributes (189).

**Example**

See the example in `<glossentry>` (58)

### 3.2.3.7 `<glossAlternateFor>`

The `<glossAlternateFor>` element indicates when a variant term has a relationship to another variant term in addition to the preferred term.

---

**Comment by robander on 20 may 2021**

Does it "indicate when a variant term has a relationship" or does it specify that there is a relationship with a specific other term?
Usage information

The `<glossAlternateFor>` element is available inside the `<glossAlt>` element, which is a container that provides a variant for the primary `<glossentry>` term. In some cases, the variant might also be an alternate for another term. In the example below, the abbreviation "stick" is a variant of the primary term (USB flash drive). The `<glossAlternateFor>` element indicates that "stick" is also a variant of the synonym "memory stick".

Comment by robander on 20 may 2021

There is a dependency here between the usage description and an example that is not actually given in this topic; that seems risky and we should probably move or reuse the example here.

Specialization hierarchy

The `<glossAlternateFor>` element is specialized from `<xref>`. It is defined in the glossary entry module.

Attributes

The following attributes are available on this element: link-relationship attributes (194), universal attributes (189), and `@keyref` (200).

For this element, the `@href` attribute references a term for which the current variant is an alternate (in addition to the primary term of this `<glossentry>` topic). The reference will often be to another `<glossAlt>` element within the same `<glossentry>` topic, indicating that the current variant is an alternate for both the primary term and the referenced alternate term.

Example

See the example in `<glossentry>`. (58)

3.2.3.8 `<glossBody>`

The `<glossBody>` element is used to provide details about a glossary term, such as part of speech or additional forms of the term.

Specialization hierarchy

The `<glossBody>` element is specialized from `<conbody>; it is defined in the glossary entry module. The `<conbody>` element is specialized from `<body>; it is defined in the concept module.

Attributes

The following attributes are available on this element: universal attributes (189).

Example

See the example in `<glossentry>`. (58)
3.2.3.9 <glossPartOfSpeech>
The `<glossPartOfSpeech>` element identifies the part of speech for the preferred and alternate terms. Alternate terms must have the same part of speech as the preferred term, because all terms in the `<glossentry>` topic designate the same subject.

Usage information
If validation is required for parts of speech, use a subject scheme to set up controlled values for the @value attribute. Alternatively, processing rules can be used to validate the values. This avoids the need to hard code values in the XML grammar files, which would limit extension and would make values difficult to change for different languages.

Specialization hierarchy
The `<glossPartOfSpeech>` element is specialized from `<data>`. It is defined in the glossary entry module.

Attributes
The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

For this element, the @value attribute specifies the part of speech for the term or terms.

Example
See the example in `<glossentry>`.(58)

3.2.3.10 <glossProperty>
The `<glossProperty>` element specifies additional details about the preferred term or its subject, such as the gender of a noun.

Specialization hierarchy
The `<glossProperty>` element is specialized from `<data>`. It is defined in the glossary entry module.

Attributes
The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

Example
```
<glossentry id="algorithm" xml:lang="es-es">
  <glossterm>El algoritmo</glossterm>
  <glossdef>Un algoritmo define un método de calcular un resultado.</glossdef>
  <glossBody>
    <glossPartOfSpeech value="noun"/>
    <glossProperty name="gender" value="masculine"/>
  </glossBody>
</glossentry>
```
3.2.3.11 <glossScopeNote>

The <glossScopeNote> element contains a clarification of the subject that is designated by the <glossterm>, such as examples of included or excluded companies or products. For instance, a scope note for "Linux" might explain that the term does not apply to UNIX products; it might give examples of Linux products that are included as well as UNIX products that are excluded.

Comment by robander on 20 may 2021
I think we really need to clarify "the subject that is designated by the glossterm"
Disposition: Unassigned

Specialization hierarchy

The <glossScopeNote> element is specialized from <note>. It is defined in the glossary entry module.

Attributes

The following attributes are available on this element: universal attributes (189) and the attributes defined below.

@othertype
Specifies an alternate note type. This value is used as the user-provided note label when the @type attribute value is set to "other".

@type
Specifies the type of a note. This differs from the @type attribute on many other DITA elements. The following are the allowable values:

- "attention"
- "caution"
- "danger"
- "important"
- "note"
- "notice"
- "other"
- "remember"
- "restriction"
- "tip"
- "trouble"
- "warning"
- "-dita-use-conref-target"

Example

```xml
<glossentry id="linuxOS" xml:lang="en-us">
  <glossterm>Linux Operating System</glossterm>
  <glossdef>An operating system based on the kernel created by Linus Torvald.</glossdef>
  <glossBody>
    <glossPartOfSpeech value="noun"/>
    <glossScopeNote>Doesn't apply to UNIX products that bundle other kernels. Also, doesn't apply to the Linux Open Source Project that work on Linux distributions but, instead, only to the distributions themselves. Examples include RedHat, SuSE, and Ubuntu. </glossScopeNote>
  </glossBody>
</glossentry>
```
3.2.3.12 <glossShortForm>
The `<glossShortForm>` element provides a shorter alternative to the primary term that is specified in the `<glossterm>` element.

Usage information

**Note** Any list of alternative terms is specific to the language. Translation of a `<glossentry>` topic might result in an empty `<glossShortForm>` element if there is no equivalent short form in the target language.

Specialization hierarchy

The `<glossShortForm>` element is specialized from `<title>`. It is defined in the glossary entry module.

Attributes

The following attributes are available on this element: ID and conref attributes (189), localization attributes (189), @base (190), @class (190), @outputclass (192), and @rev (193).

Example

```xml
<glossentry id="www">
  <glossterm>World Wide Web</glossterm>
  <glossdef>A collection of documents available through the Internet.</glossdef>
  <glossBody>
    <glossPartOfSpeech value="noun"/>
    <glossAlt>
      <glossShortForm>the Web</glossShortForm>
    </glossAlt>
  </glossBody>
</glossentry>
```

3.2.3.13 <glossStatus>
The `<glossStatus>` element identifies the usage status of a preferred or alternate term. If the status is not specified, the `<glossterm>` provides a preferred term and an alternate term provides an allowed term.

Usage information

If validation is required for status values, use a subject scheme to set up controlled values for the @value attribute. Alternatively, processing rules can be used to validate the values.

Specialization hierarchy

The `<glossStatus>` element is specialized from `<data>`. It is defined in the glossary entry module.

Attributes

The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

For this element, the @value attribute specifies the usage status of the term or alternate term.
Example
See the example in <glossentry>. (58)

3.2.3.14 <glossSurfaceForm>
The <glossSurfaceForm> element specifies an unambiguous presentation of the <glossterm> that might combine multiple forms. The surface form is suitable to introduce the term in new contexts.

Usage information
The <glossSurfaceForm> element is most often used for terms that also specify the <glossAcronym> element. In that context, the <glossSurfaceForm> element contains the term in a manner that introduces both the term and the acronym, so that later references to the term can be replaced with the acronym alone. See the <abbreviated-form> (102) element for a full description of how the surface form is used together with acronyms.

Specialization hierarchy
The <glossSurfaceForm> element is specialized from <p>. It is defined in the glossary entry module.

Attributes
The following attributes are available on this element: universal attributes (189).

Example
The following topic defines the term “Anti-lock Braking System”. Within the topic, the <glossSurfaceForm> element provides a version of the term that combines both the primary term and the acronym. This allows references to the topic from <abbreviated-form> to different versions of the term in different contexts.

```xml
<glossentry id="abs">
  <glossterm>Anti-lock Braking System</glossterm>
  <glossBody>
    <glossSurfaceForm>Anti-lock Braking System (ABS)</glossSurfaceForm>
    <glossAlt>
      <glossAcronym>ABS</glossAcronym>
    </glossAlt>
  </glossBody>
</glossentry>
```

3.2.3.15 <glossSymbol>
The <glossSymbol> element identifies a standard image that is associated with the subject of the <glossterm> element.

Specialization hierarchy
The <glossSymbol> element is specialized from <image>. It is defined in the glossary entry module.

Attributes
The following attributes are available on this element: universal attributes (189), @format (199), @href (199), @keyref (200), @scope (204), and the attributes defined below.
@align
Controls the horizontal alignment of an image when @placement is specified as "break". Common values include "left", "right", and "center".

@height
Specifies the vertical dimension for the resulting display. The value of this attribute is a real number expressed in decimal notation, optionally followed by a unit of measure. The following units of measurement are supported: cm, em, in, mm, pc, pt, and px (centimeters, ems, inches, millimeters, picas, points, and pixels, respectively). The default unit is px (pixels). Possible values include: "5", "5in", and "10.5cm".

@placement
Indicates whether an image is displayed inline or on a separate line. The default value is inline. Allowable values are "inline", "break", and "-dita-use-conref-target" (206).

@scale
Specifies a percentage as an unsigned integer by which to scale the image in the absence of any specified image height or width; a value of 100 implies that the image should be presented at its intrinsic size. If a value has been specified for the @height or @width attribute (or both), the @scale attribute is ignored.

@scalefit
Specifies whether an image is scaled up or down to fit within available space. The allowable values are "yes", "no", and "-dita-use-conref-target" (206). If @height, @width, or @scale is specified, those attributes determine the graphic size, and the @scalefit attribute is ignored. If none of those attributes are specified and scalefit="yes", then the image is scaled by the same factor in both dimensions, so that the graphic will just fit within the available height or width, whichever is more constraining.

The available width would be that of the prevailing column or table cell, that is, the width a paragraph of text would have if the graphic were a paragraph instead od text. The available height is implementation dependent, but if feasible, it is suggested to be the page or table cell height or some other reasonable value.

@width
Specifies the horizontal dimension for the resulting display. The value of this attribute is a real number expressed in decimal notation, optionally followed by a unit of measure. The following units of measurement are supported: cm, em, in, mm, pc, pt, and px (centimeters, ems, inches, millimeters, picas, points, and pixels, respectively). The default unit is px (pixels). Possible values include: "5", "5in", and "10.5cm".

Example

```xml
<glossentry id="atlanticpuffin">
  <glossterm>Atlantic Puffin</glossterm>
  <glossdef>A sea bird that lives in the atlantic</glossdef>
  <glossSymbol href="puffinicon.jpg" scope="local">
    <alt>Atlantic puffin icon</alt>
  </glossSymbol>
</glossentry>
```
3.2.3.16 <glossSynonym>
The <glossSynonym> element provides a term that is a synonym of the primary value in the <glossterm> element.

Usage information

Note   A list of synonyms is specific to the language, so translation of a <glossentry> topic might result in an empty <glossSynonym> element.

Specialization hierarchy

The <glossSynonym> element is specialized from <title>. It is defined in the glossary entry module.

Attributes

The following attributes are available on this element: ID and conref attributes (189), localization attributes (189), @base (190), @class (190), @outputclass (192), and @rev (193).

Example

See the example in <glossentry>. (58)

3.2.3.17 <glossUsage>

The <glossUsage> element provides information about the correct use of a term, such as where or how it can be used.

Specialization hierarchy

The <glossUsage> element is specialized from <note>. It is defined in the glossary entry module.

Attributes

The following attributes are available on this element: universal attributes (189) and the attributes defined below.

@othertype
   Specifies an alternate note type. This value is used as the user-provided note label when the @type attribute value is set to "other".

@type
   Specifies the type of a note. This differs from the @type attribute on many other DITA elements. The following are the allowable values:
   - "attention"
   - "caution"
   - "danger"
   - "important"
   - "note"
   - "notice"
   - "other"
   - "remember"
   - "restriction"
• "tip"
• "trouble"
• "warning"
• "-dita-use-conref-target"

**Example**
See the example in `<glossentry>`. (58)

### 3.2.4 `<glossgroup>`
The `<glossgroup>` is a specialized topic that can contain multiple `<glossentry>` topics within a single document.

**Specialization hierarchy**
The `<glossgroup>` element is specialized from `<concept>`; it is defined in the glossary group module. The `<concept>` element is specialized from `<topic>`; it is defined in the concept module.

**Attributes**
The following attributes are available on this element: architectural attributes (194) and universal attributes (189).

For this element, the @id attribute is required.

**Example**
```xml
<glossgroup id="things" xml:lang="en">
  <title>Some terms</title>
  <glossentry id="bicycle">
    <glossterm>bicycle</glossterm>
    <glossdef>Human powered mode of transport with two wheels</glossdef>
  </glossentry>
  <glossentry id="fruitbat">
    <glossterm>Fruit bat</glossterm>
    <glossdef>A bat which likes fruit</glossdef>
  </glossentry>
</glossgroup>
```

### 3.2.5 Reference elements
Reference elements provide the fundamental structure for reference topics. Reference topics include specialized sections for programming language syntax and property lists, as well as standard elements such as sections, tables, and examples.

#### 3.2.5.1 `<propdesc>`
The `<propdesc>` element contains content that describes the property type and its values.

**Specialization hierarchy**
The `<propdesc>` element is specialized from `<stentry>`. It is defined in the reference module.
Attributes
The following attributes are available on this element: table accessibility attributes (195), universal attributes (189), and the attribute defined below.

@rowspan
Specifies the number of rows that a cell is to span inside a simple table.

Example
See <properties> (69).

3.2.5.2 <propdeschd>
The <propdeschd> element provides a label for the description column in a properties table.

Specialization hierarchy
The <propdeschd> element is specialized from <stentry>. It is defined in the reference module.

Attributes
The following attributes are available on this element: table accessibility attributes (195) and universal attributes (189)

Example
See <properties> (69).

3.2.5.3 <properties>
A properties table describes the properties of a thing, such as an object, part, or category. Each property can include the type, value, and a description.

Usage information
A properties table typically is represented as a simple table with a maximum of three columns. The first column is for the property type, the second column can contain a value or values for the property, and the third column can contain a description.

An optional header row can provide labels for the columns, if an author does not want to use the default labels that might be provided by stylesheets.

Rendering expectations
If a properties table does not contain a header row, processors typically auto-generate labels for the columns in the properties table. The text for the labels is specified in stylesheets.

Specialization hierarchy
The <properties> element is specialized from <simpletable>. It is defined in the reference module.

Attributes
The following attributes are available on this element: universal attributes (189), display attributes (194), and simpletable attributes (194).


Examples
This section contains examples of how the `<properties>` element can be used.

Figure 6: Simple properties table

The following code sample shows a `<properties>` element that describes information about motor oil types:

```
<properties>
  <proptypehd>Oil type</proptypehd>
  <proptypehd>Oil brand</proptypehd>
  <proptypehd>Appropriate use</proptypehd>
  <property>
    <proptype>Primary oil</proptype>
    <propvalue>A1X</propvalue>
    <propdesc>One-cylinder engines</propdesc>
  </property>
  <property>
    <proptype>Secondary oil</proptype>
    <propvalue>B2X</propvalue>
    <propdesc>Two-cylinder engines</propdesc>
  </property>
</properties>
```

The properties table might be rendered as follows:

```
+----------------+--------+----------------+
<table>
<thead>
<tr>
<th>Oil type</th>
<th>Oil brand</th>
<th>Appropriate use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary oil</td>
<td>A1X</td>
<td>One-cylinder engine</td>
</tr>
<tr>
<td>Secondary oil</td>
<td>B2X</td>
<td>Two cylinder engine</td>
</tr>
</tbody>
</table>
```

Figure 7: Properties table with spanned cells

The following code sample shows a properties table with spanned cells:

```
<properties>
  <proptypehd>Visual element</proptypehd>
  <proptypehd>Value</proptypehd>
  <proptypehd>What it does</proptypehd>
  <property>
    <proptype rowspan="3">Color</proptype>
    <propvalue>Red</propvalue>
    <propdesc>Indicates an error</propdesc>
  </property>
  <property>
    <propvalue>Green</propvalue>
    <propdesc>Indicates that conditions are good</propdesc>
  </property>
  <property>
    <propvalue>Yellow</propvalue>
    <propdesc>Indicates that a problem might exist</propdesc>
  </property>
  <property>
    <proptype>Shape</proptype>
    <propvalue>Circle, square, or triangle</propvalue>
    <propdesc>Use to add contrast and depth</propdesc>
  </property>
</properties>
```

The properties table might be rendered as follows:

```
+----------------+--------+----------------+
<table>
<thead>
<tr>
<th>Visual element</th>
<th>Value</th>
<th>What it does</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>Red</td>
<td>Indicates an error</td>
</tr>
<tr>
<td>Green</td>
<td></td>
<td>Indicates that conditions are good</td>
</tr>
<tr>
<td>Yellow</td>
<td></td>
<td>Indicates that a problem might exist</td>
</tr>
<tr>
<td>Shape</td>
<td>Circle, square, or triangle</td>
<td>Use to add contrast and depth</td>
</tr>
</tbody>
</table>
```
3.2.5.4 <property>
The <property> element represents a single property in a properties table.

Specialization hierarchy
The <property> element is specialized from <strow>. It is defined in the reference module.

Attributes
The following attributes are available on this element: universal attributes (189).

Example
See <properties> (69).

3.2.5.5 <prophead>
The <prophead> element contains elements that provide labels for the columns in a properties table.

Rendering expectations
If a properties table does not contain a header row, processors typically auto-generate labels for the columns in the properties table. The text for the labels is specified in stylesheets.

Specialization hierarchy
The <prophead> element is specialized from <sthead>. It is defined in the reference module.

Attributes
The following attributes are available on this element: universal attributes (189).

Example
See <properties> (69).

3.2.5.6 <proptype>
The <proptype> element contains content that describes the type of the property.

Specialization hierarchy
The <proptype> element is specialized from <stentry>. It is defined in the reference module.
Attributes
The following attributes are available on this element: table accessibility attributes (195), universal attributes (189), and the attribute defined below.

@rowspan
   Specifies the number of rows that a cell is to span inside a simple table.

Example
See <properties> (69).

3.2.5.7 <proptypehd>
The <proptypehd> element provides a label for the type column in a properties table.

Specialization hierarchy
The <proptypehd> element is specialized from <stentry>. It is defined in the reference module.

Attributes
The following attributes are available on this element: table accessibility attributes (195) and universal attributes (189)

Example
See <properties> (69).

3.2.5.8 <propvalue>
The <propvalue> element contains content that indicates a value for the property type.

Specialization hierarchy
The <propvalue> element is specialized from <stentry>. It is defined in the reference module.

Attributes
The following attributes are available on this element: table accessibility attributes (195), universal attributes (189), and the attribute defined below.

@rowspan
   Specifies the number of rows that a cell is to span inside a simple table.

Example
See <properties> (69).

3.2.5.9 <propvaluehd>
The <propvaluehd> element provides a label for the value column in a properties table.

Specialization hierarchy
The <propvaluehd> element is specialized from <stentry>. It is defined in the reference module.
Attributes
The following attributes are available on this element: table accessibility attributes (195) and universal attributes (189).

Example
See <properties> (69).

3.2.5.10 <refbody>
The <refbody> element contains the main content of a reference topic.

Specialization hierarchy
The <refbody> element is specialized from <body>. It is defined in the reference module.

Attributes
The following attributes are available on this element: universal attributes (189).

Example
See <reference> (74).

3.2.5.11 <refbodydiv>
The <refbodydiv> element provides a container for contiguous content in a reference topic. There is no additional semantic meaning.

Usage information
The <refbodydiv> element is useful primarily for reuse and as a specialization base.

Specialization hierarchy
The <refbodydiv> element is specialized from <bodydiv>. It is defined in the reference module.

Attributes
The following attributes are available on this element: universal attributes (189).

Example
The following code sample shows how a <refbodydiv> element can be used to group content for reuse:

```xml
<reference id="sample-refbodydiv" xml:lang="en">
  <title>Sample for refbody</title>
  <shortdesc>This shows how refbodydiv might be used.</shortdesc>
  <refbody>
    <refbodydiv id="widget1">
      <section>This is one part of the sample</section>
      <refsyn>Syntax for this part</refsyn>
    </refbodydiv>
    <refbodydiv id="widget2">
      <section>This is another part of the sample</section>
      <refsyn>Syntax for this part</refsyn>
    </refbodydiv>
  </refbody>
</reference>
```
3.2.5.12 <reference>
The <reference> element is the top-level element for a reference topic. A reference topic can include specialized sections for programming syntax and property tables, as well as standard sections, tables, and examples.

Usage information
For information about the purpose and content model of a reference topic, see 2.5 Reference (15).

Specialization hierarchy
The <reference> element is specialized from <topic>. It is defined in the reference module.

Attributes
The following attributes are available on this element: architectural attributes (194) and universal attributes (189).
For this element, the @id attribute is required.

Example
The following code sample shows how a reference topic can be used:

```xml
<reference id="requiredTools">
  <title>Tools required to maintain Acme machinery</title>
  <refbody>
    <section>
      <title>Small tools</title>
      <ul>
        <li>Hard hat</li>
        <li>Hammer</li>
        <li>Nail</li>
        <li>Metal polish</li>
        <!-- .... -->
      </ul>
    </section>
    <section>
      <title>Expensive tools</title>
      <!-- .... -->
    </section>
  </refbody>
</reference>
```
3.2.5.13 `<refsyn>`
The `<refsyn>` element contains content that describes the syntax of a command.

**Specialization hierarchy**
The `<refsyn>` element is specialized from `<section>`. It is defined in the reference module.

**Attributes**
The following attributes are available on this element: universal attributes (189).

**Example**
The following code sample shows how the `<refsyn>` element can be used to document the syntax for the Windows `mkdir` command:

```xml
<refsyn>
  <title>Syntax</title>
  <codeblock>mkdir <varname>drive</varname> <varname>directory</varname></codeblock>
  <parml>
    <plentry>
      <pt><varname>drive</varname></pt>
      <pd>Specifies the drive on which the new directory is created. This is an optional parameter.</pd>
    </plentry>
    <plentry>
      <pt><varname>path</varname></pt>
      <pd>Specifies the fully-qualified name of the new directory. This is a required parameter.</pd>
    </plentry>
  </parml>
</refsyn>
```

3.2.6 Task elements
Task elements provide the fundamental structure for task topics. The task topic includes sections for describing the context, prerequisites, actual steps, expected results, troubleshooting, example, and expected next steps for a task.

3.2.6.1 `<chdesc>`
The `<chdesc>` element provides the content of the second cell in a choice table row. This content describes the option that people can take to complete the step, and it explains the result of the choice, if it is not immediately obvious.

**Specialization hierarchy**
The `<chdesc>` element is specialized from `<stentry>`. It is defined in the task module.

**Attributes**
The following attributes are available on this element: table accessibility attributes (195) and universal attributes (189).

**Example**
See `<choicetable>` (77).
3.2.6.2 <chdeschd>
The <chdeschd> element provides a label for the second column in a choice table.

Rendering expectations
The contents of the <chdeschd> element is typically rendered in a bold font.

Specialization hierarchy
The <chdeschd> element is specialized from <stentry>. It is defined in the task module.

Attributes
The following attributes are available on this element: table accessibility attributes (195) and universal attributes (189).

Example
See <choicetable> (77).

3.2.6.3 <chhead>
The <chhead> element contains elements that provide labels for the columns in a choice table.

Rendering expectations
Labels provided by the <chhead> element override any default headings for the <choicetable> that might be provided by stylesheets.

Specialization hierarchy
The <chhead> element is specialized from <sthead>. It is defined in the task module.

Attributes
The following attributes are available on this element: universal attributes (189).

Example
See <choicetable> (77).

3.2.6.4 <choice>
A <choice> element describes a way to complete the current step.

Specialization hierarchy
The <choice> element is specialized from <li>. It is defined in the task module.

Attributes
The following attributes are available on this element: universal attributes (189).
Example
See `<choices>` (77)

3.2.6.5 `<choices>`
The `<choices>` element contains a list of choices. Each choice represents a way to complete the current step.

Usage information
The `<choices>` element provides information when there is more than one way to complete a step. It is a list.

Specialization hierarchy
The `<choices>` element is specialized from `<ul>`. It is defined in the task module.

Attributes
The following attributes are available on this element: universal attributes (189).

Example
The following code sample shows how the `<choices>` element can be used when different operating systems have different keyboard shortcuts. In this scenario, flagging is used to render labels for the different operating systems.

```xml
<step>
  <cmd>To edit the attributes, select the element and press the applicable keyboard shortcut for your operating system:</cmd>
  <choices>
    <choice platform="mac-os">option + return</choice>
    <choice platform="windows">Alt + Enter</choice>
  </choices>
</step>

The rendered output might look like the following:

```
  5. To edit the attributes, select the element and press the applicable keyboard shortcut for your operating system:
     - [Mac OS] option + return
     - [Windows] Alt + Enter
```

3.2.6.6 `<choicetable>`
A choice table provides information about a set of options for completing a step.

Usage information
A choice table provides information when there is more than one way to complete a step. It is a simple table with two columns. The first cell in a row labels the option, and the second cell in the row describes the option that a user can take to complete the step.

An optional header row can provide labels for the columns, if an author does not want to use the default labels that might be provided by stylesheets.
Rendering expectations

If a choice table does not contain a header row, processors typically auto-generate labels for the columns in the choice table. The text for the labels is specified in stylesheets.

Specialization hierarchy

The `<choicetable>` element is specialized from `<simpletable>`. It is defined in the task module.

Attributes

The following attributes are available on this element: universal attributes (189), display attributes (194), and `simpletable` attributes (194).

For this element, the `@keycol` attribute has a default value of "1".

Examples

This section contains examples of how the `<choicetable>` element can be used.

Figure 8: Simple choice table

The following code sample contains a `<choicetable>` element that is used to explain the options that a user can take to cancel a job:

```xml
<step>
  <cmd>Select the option that you want:</cmd>
  <choicetable relcolwidth="1* 2*">
    <chrow>
      <choption>Cancel job</choption>
      <chdesc>The application attempts to cancel the job gracefully. The job might not be completely canceled, although the job status is "Canceled".</chdesc>
    </chrow>
    <chrow>
      <choption>Force the job to cancel</choption>
      <chdesc>The application will force the job to be canceled. This might result in a mismatch between the state file and the actual resource state.</chdesc>
    </chrow>
  </choicetable>
</step>
```

The choice table might be rendered in the following way. Note that the labels for the columns are contributed by the stylesheets that are used by the processor.
The following code sample contains a `<choicetable>` element that contains a header row. The choice table is used to provide users with instructions for creating a filter using either the command line or the graphical user interface. The header row is used to specify column labels of "Option" and "Action".

```xml
<step>
  <cmd>Create a new filter:</cmd>
  <choicetable>
    <chhead>
      <choptionhd>Option</choptionhd>
      <chdeschd>Action</chdeschd>
    </chhead>
    <chrow>
      <choption>Command-line interface</choption>
      <chdesc>Type `<codeph>arg -f filter</codeph>`</chdesc>
    </chrow>
    <chrow>
      <choption>Product GUI</choption>
      <chdesc>Click `<uicontrol>New Filter</uicontrol>`</chdesc>
    </chrow>
  </choicetable>
</step>
```

The choice table might be rendered in the following way:

<table>
<thead>
<tr>
<th>Option</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command-line interface</td>
<td>Type <code>&lt;codeph&gt;arg -f filter&lt;/codeph&gt;</code></td>
</tr>
<tr>
<td>Product GUI</td>
<td>Click <code>&lt;uicontrol&gt;New Filter&lt;/uicontrol&gt;</code></td>
</tr>
</tbody>
</table>

**3.2.6.7 `<choption>`**

The `<choption>` element contains the content of the first cell in a choice table row. This content labels the option that people can take to complete the step.

**Rendering expectations**

Unless the `@keycol` attribute on the `<choicetable>` element is set to "0", the contents of the `<choiceoption>` element is typically rendered in a bold font.
Specialization hierarchy
The `<choption>` element is specialized from `<stentry>`. It is defined in the task module.

Attributes
The following attributes are available on this element: table accessibility attributes (195) and universal attributes (189)

Example
See `<choicetable>` (77).

3.2.6.8 `<choptionhd>`
The `<choptionhd>` element provides a label for the first column in a choice table.

Rendering expectations
The contents of the `<chdeschd>` element is typically rendered in a bold font.

Specialization hierarchy
The `<choptionhd>` element is specialized from `<stentry>`. It is defined in the task module.

Attributes
The following attributes are available on this element: table accessibility attributes (195) and universal attributes (189)

Example
See `<choicetable>` (77).

3.2.6.9 `<chrow>`
The `<chrow>` element represents a row in a choice table. It contains a pair of elements: `<choption>` and `<chdesc>`.

Specialization hierarchy
The `<chrow>` element is specialized from `<strow>`. It is defined in the task module.

Attributes
The following attributes are available on this element: universal attributes (189).

Example
See `<choicetable>` (77).
3.2.6.10 <cmd>
A command specifies the action that people take to complete a step.

Specialization hierarchy
The <cmd> element is specialized from <ph>. It is defined in the task module.

Attributes
The following attributes are available on this element: universal attributes (189) and @keyref (200).

Example
In the following code sample, the <cmd> element provides clear, active-voice instruction for how to complete a step:

```xml
<step>
  <cmd>Specify the configuration parameters.</cmd>
</step>
```

3.2.6.11 <context>
Contextual information is background information that helps people understand the purpose of the task and what they will gain by completing it.

Rendering expectations
Implementations might want to consider having their stylesheets render a label for this element.

Specialization hierarchy
The <context> element is specialized from <section>. It is defined in the task module.

Attributes
The following attributes are available on this element: universal attributes (189).

Example
An author uses the following markup to provide users with more contextual information than is appropriate for a short description. Style sheets might generate a label, for example, "About this procedure", to indicate clearly that the information provided is background information.

```xml
<task id="Generating-stub-files" xml:lang="en-us">
  <title>Generating stub files</title>
  <shortdesc>You can use Task Modeler to generate stub files. Stub files are DITA files that contain only a title.</shortdesc>
  <taskbody>
    <context>As you perform this procedure, you can select the conventions that you want to use for file names.</context>
    <!-- ... -->
  </taskbody>
</task>
```
3.2.6.12 <info>
The <info> element contains additional information about the step.

Specialization hierarchy
The <info> element is specialized from <div>. It is defined in the task module.

Attributes
The following attributes are available on this element: universal attributes (189).

Example
In the following code sample, the <info> element provides additional information about the ways that the step can be performed:

```xml
  <step>
    <cmd>Specify the configuration parameters.</cmd>
    <info>You can use either the command line or the product GUI.</info>
  </step>
```

3.2.6.13 <postreq>
Post-requisites are steps or tasks that people might need to perform after completing the current task.

Rendering expectations
Implementations might want to consider having their stylesheets render a label for this element.

Specialization hierarchy
The <postreq> element is specialized from <section>. It is defined in the task module.

Attributes
The following attributes are available on this element: universal attributes (189).

Example
The following code sample shows how a user might be directed to notify a test proctor after completing a test.

```xml
  <steps>
    <!-- ... -->
    <step>
      <cmd>Click <uicontrol>Done</uicontrol> to complete the test.</cmd>
    </step>
  </steps>
  <postreq>Notify the proctor upon completing this self-test.</postreq>
```
3.2.6.14 <prereq>
Prerequisites are things that people need to know or preliminary tasks that people need to perform before starting the current task.

Rendering expectations
Implementations might want to consider having their stylesheets render a label for this element.

Specialization hierarchy
The <prereq> element is specialized from <section>. It is defined in the task module.

Attributes
The following attributes are available on this element: universal attributes (189).

Example
The following code sample is from a topic that explains how to create an SQLJ file. A prerequisite is to log into the SQLJ server.

```xml
<task id="sqlj">
<title>Creating an SQLJ file</title>
<taskbody>
  <prereq>
    Before creating a new SQLJ file, you must log in to the SQLJ server.
  </prereq>
<!-- ... -->
</taskbody>
</task>
```

Style sheets might generate a label, for example, “Before you begin”, to indicate clearly that the prerequisite task needs to be performed before embarking on the procedure.

3.2.6.15 <result>
The <result> element describes the expected outcome for the task as a whole.

Rendering expectations
Implementations might want to consider having their stylesheets render a label for this element.

Specialization hierarchy
The <result> element is specialized from <section>. It is defined in the task module.

Attributes
The following attributes are available on this element: universal attributes (189).

Example
In the following code sample, the author clearly communicates the expected result of successfully completing the task:

```xml
<task id="sqlj">
<title>Creating an SQLJ file</title>
<taskbody>
</taskbody>
```
The <wintitle>File Created<wintle> window is displayed, and the SQLJ file is successfully created.

3.2.6.16 <step>
A step is an action that people take to complete a task. It can also contain additional information about the step, such as an example, result, or troubleshooting guidance.

Rendering expectations
When the @importance attribute is specified on the <step> element, it indicates whether the step is optional or required. Implementations might want to consider having their stylesheets render a applicable label when @importance is specified on <step>.

Specialization hierarchy
The <step> element is specialized from <li>. It is defined in the task module.

Attributes
The following attributes are available on this element: universal attributes (189).
For this element, the @importance attribute is limited to the values "optional", "required", or -dita-use-conref-target (206).

Example
The following code sample shows many of the elements that the <step> element can contain:

```
<step>
  <cmd>Specify the configuration parameters.</cmd>
  <info>The configuration parameters can be specified from either the command line or the product GUI.</info>
  <choices>
    <choice>From a command prompt, type config -l parameter</choice>
    <choice>Click New Configuration Parameters</choice>
  </choices>
  <stepresult>You receive a 'Configuration successful' message.</stepresult>
  <steptroubleshooting>If you do not receive a 'Configuration successful message,' retry the configuration operation.</steptroubleshooting>
</step>
```

3.2.6.17 <stepresult>
The <stepresult> element provides information about the expected outcome of a step.

Specialization hierarchy
The <stepresult> element is specialized from <div>. It is defined in the task module.

Attributes
The following attributes are available on this element: universal attributes (189).
Example

In the following example, the content of the `<stepresult>` element enables the user to ascertain whether they have completed the step correctly:

```xml
<step>
  <cmd>Specify the configuration parameters.</cmd>
  <info>You can use either the command line or the product GUI.</info>
  <choices>
    <choice>From a command prompt, type <codeph>config -l parameter</codeph></choice>
    <choice>Click <uicontrol>New Configuration Parameters</uicontrol></choice>
  </choices>
  <stepresult>You receive a <systemoutput>'Configuration successful'</systemoutput> message.</stepresult>
</step>
```

3.2.6.18 `<steps>`

Steps are a series of actions that people perform in a specific order and manner.

Rendering expectations

Steps that contain only a single step should be rendered as a paragraph. Steps that contain two or more steps should be rendered as an ordered list.

Implementations might want to consider having their stylesheets render a label for this element.

Specialization hierarchy

The `<steps>` element is specialized from `<ol>`. It is defined in the task module.

Attributes

The following attributes are available on this element: universal attributes (189).

Example

The following code sample shows a simple task topic with two steps:

```xml
<task id="sqlj">
  <title>Creating an SQLJ file</title>
  <taskbody>
    <context>Once you have set up SQLJ, you can create a new SQLJ file.</context>
    <steps>
      <step>
        <cmd>In a text editor, create a new file.</cmd>
      </step>
      <step>
        <cmd>Enter the first query statement.</cmd>
      </step>
    </steps>
  </taskbody>
</task>
```

3.2.6.19 `<steps-informal>`

Informal steps are steps that do not follow a strict content model. A paragraph might describe more than one step, or a paragraph might combine procedural information along with other information.

Rendering expectations

Implementations might want to consider having their stylesheets render a label for this element.
Specialization hierarchy

The `<steps-informal>` element is specialized from `<section>`. It is defined in the task module.

Attributes

The following attributes are available on this element: universal attributes (189).

Example

The following code sample shows how an author provided informal information about how to grow a flower from seed:

```xml
<task id="growing-flower">
    <title>Growing a flower from seed</title>
    <taskbody>
        <steps-informal>
            <p>Put the soil in the container any old way. It doesn't really matter how you do it as long as it is at least 12 cm deep. Once the soil is in place, plant the seeds, water appropriately and wait.</p>
        </steps-informal>
    </taskbody>
</task>
```

3.2.6.20 `<stepsection>`

The `<stepsection>` element contains expository text that might be rendered before a step.

Usage information

The `<stepsection>` element can be used to break up lengthy procedures by providing labels for groups of steps. Note that introducing `<stepsection>` elements will not affect the contiguous numbering of the steps.

Rendering expectations

001 (174) Processors which render the content of `<stepsection>` elements among the `<step>` elements MUST NOT number the `<stepsection>` elements.

Specialization hierarchy

The `<stepsection>` element is specialized from `<li>`. It is defined in the task module.

Attributes

The following attributes are available on this element: universal attributes (189).

Example

The following code sample shows how `<stepsection>` element can be used to group steps in a high-level overview topic that links to other topics:

```xml
<steps>
    <stepsection>Install and configure the application:</stepsection>
    <step>
        <cmd><xref keyref="download">Download the application</xref>.</cmd>
    </step>
</steps>
```
<cmd><xref keyref="install">Install the application</xref>.</cmd>
</step>
<step>
<cmd><xref keyref="configure">Configure the application</xref></cmd>
</step>
<stepsection>Set up the development environment:</stepsection>
<step>
<cmd><xref keyref="prep">Prepare the environment</xref>.</cmd>
</step>
<stepsection>Start the tutorial:</stepsection>
<step>
<cmd><xref keyref="create-plugin">Exercise: Create a plug-in</xref>.</cmd>
</step>

This topic might be rendered in the following way. Note that the numbering of the steps is not affected by the introduction of the <stepsection> elements.

Install and configure the application:
1. Download the application.
2. Install the application.
3. Configure the application.

Set up the development environment:
4. Prepare the environment.

... Start the tutorial
8. Exercise: Create a plug-in.

... 3.2.6.21 <steptroubleshooting>
Step troubleshooting is information that is intended to help people respond to the situation if a step does not complete as expected.

Specialization hierarchy
The <steptroubleshooting> element is specialized from <div>. It is defined in the task module.

Attributes
The following attributes are available on this element: universal attributes (189).

Example
The following code sample shows how the <steptroubleshooting> element specifies the troubleshooting actions that a user can take if the step does not complete as they expected:

<step>
<cmd>Log in to the system</cmd>
<stepresult>
<p>The <wintitle>Welcome</wintitle> screen appears.</p>
</stepresult>
If the <wintitle>Welcome</wintitle> screen does not appear, try one or more of the following actions:

- Verify that the user name was entered correctly
- Verify that the password was entered correctly
- Confirm that the maintenance contract is still active

### 3.2.6.22 <steps-unordered>

Unordered steps are steps in which the order of the steps to be performed might vary from one situation to another.

**Rendering expectations**

Implementations might want to consider having their stylesheets render a label for this element.

**Specialization hierarchy**

The `<steps-unordered>` element is specialized from `<ul>`. It is defined in the task module.

**Attributes**

The following attributes are available on this element: universal attributes (189).

**Example**

The following code sample shows how an author provided information about the tasks that need to be performed before leaving on a vacation. While each step involves a single item, the steps can be performed in any order.

```xml
<task id="prep-for-trip">
  <title>Preparing for a trip</title>
  <taskbody>
    <steps-unordered>
      <step>
        <cmd>Arrange for a pet sitter</cmd>
      </step>
      <step>
        <cmd>Do laundry</cmd>
      </step>
      <step>
        <cmd>Buy a plane ticket</cmd>
      </step>
    </steps-unordered>
  </taskbody>
</task>
```

### 3.2.6.23 <stepxmp>

A step example illustrates how a step is completed. The example might be text-based, an image, a code sample, a link to a video, or some other representation.

**Specialization hierarchy**

The `<stepxmp>` element is specialized from `<div>`. It is defined in the task module.
Attributes
The following attributes are available on this element: universal attributes (189).

Example
The following code sample shows how the <stepxmp> can provide an example of how a user can perform a step:

```
<step>
  <cmd>Add an XML comment in the map that explains why you applied the filtering attribute.</cmd>
  <stepxmp>
    <!-- 18 Dec 2019 ML: The following topic is under review and should not be published externally. [DH-1441]. -->
  </stepxmp>
</step>
```

3.2.6.24 <task>
The <task> element is the top-level element for a task topic. Task topics provide the instructions that guide people to perform a task.

Usage information
The OASIS DITA Technical Committee distributes two document-type shells for task topics: general task and strict task.

General task
Has a more relaxed content model. It allows <section> and <steps-informal> inside of the task body; it also allows multiple instances and varying order for the elements that make up the task body.

(Strict) task
Maintains a strict order and cardinality for elements within the <taskbody> content model. The strict task is implemented with a constraint module.

Specialization hierarchy
The <task> element is specialized from <topic>. It is defined in the task module.

Attributes
The following attributes are available on this element: architectural attributes (194) and universal attributes (189).

For this element, the @id attribute is required.

Example
The following code sample shows that <task> is the topic-level element for a task topic:

```
<task id="learn-dita">
  <title>Learning DITA</title>
  <!-- ... -->
</task>
3.2.6.25 <taskbody>
The <taskbody> element contains the body of a task topic. The task body can include prerequisites, contextual information, steps, results, examples, troubleshooting information, and post-requisites. General task topics can also contain generic sections.

Usage information
The content model for the task topic varies depending on whether the strict task or general task document-type shell is used.

Specialization hierarchy
The <taskbody> element is specialized from <body>. It is defined in the task module.

Attributes
The following attributes are available on this element: universal attributes (189).

Examples
This section contains examples of the <taskbody> element in both (strict) task and general task topics.

Figure 10: Strict task topic
The following code sample shows how the <taskbody> element contains the main building blocks of a strict task topic:

```dita
<task id="Generating-stub-files" xml:lang="en-us">
<title>Generating stub files</title>
<shortdesc>You can use Task Modeler to generate stub files. Stub files are DITA files that contain only a title.</shortdesc>
<taskbody>
<prereq>You must have created a DITA map in Task Modeler.</prereq>
<context>As you perform this procedure, you can select the conventions that you want to use for file names.</context>
<steps>
<!-- ... -->
</steps>
<result>In the File Manager view, you can see the file names and paths of the DITA topics.</result>
<tasktroubleshooting>If you cannot see the file name and paths of the DITA topics, refresh the view.</tasktroubleshooting>
@example> <!-- ... --> </example>
$postreq>You now can create a relationship table to define links between the topics in your DITA map.</postreq>
</taskbody>
</task>
```

In a strict task topic, while the child elements of <taskbody> are all optional, they can only occur once and must appear in a specific order.

Figure 11: General task topic
The following code sample shows how the <taskbody> element contains building blocks of a general task topic:

```dita
<task id="completing-group-project">
<title>Completing the final project</title>
<shortdesc>This handout contains information about completing the final project for History 275, "Exploring your community history."</shortdesc>
<taskbody>
<context>The final project will account for 35% of your final grade.</context>
```
You must have an account on the college's collaboration platform.

**Required reading**

- Section 7.0 in the class course pack
- *Using Oral History in Community History Projects (Practices in Oral History)*

Note that there is more flexibility in the content model for `<taskbody>` in general task than there is in the strict task. In this example, `<context>` precedes `<prereq>`, and `<prereq>` is following by a section titled "Required reading".

Figure 12: General task topic used for reuse

The following code sample shows the content of a general task topic that is used to store `<prereq>` elements that are reused. While the implementation uses the strict task topic for their product documentation, using a general task topic for a reuse topic enables them to have multiple `<prereq>` elements in a single topic.

```xml
<task id="reuse-prereq">
  <title>Reuse topic: <xml:element>prereq</xml:element></title>
  <shortdesc>This topic stores <xml:element>prereq</xml:element> elements that are reused in the product documentation.</shortdesc>
  <taskbody>
    Service Pack 10 must be installed.<prereq id="sp-10">Service Pack 10 must be installed.</prereq>
    You must have administrator access in order to perform this procedure.<prereq id="admin-access">You must have administrator access in order to perform this procedure.</prereq>
  </taskbody>
</task>
```

### 3.2.6.26 `<tasktroubleshooting>`

Task troubleshooting information is information that is intended to help people respond to the situation if a task does not complete as expected.

**Usage information**

In particular, the `<tasktroubleshooting>` element can be used to explain how users can recover when the results of a task do not match those listed in the `<result>` element. The troubleshooting remedy typically contains one or more actions for solving a problem. For complex remedies, link to another task.

**Rendering expectations**

Implementations might want to consider having their stylesheets render a label for this element.

**Specialization hierarchy**

The `<tasktroubleshooting>` element is specialized from `<section>`. It is defined in the task module.
**Attributes**

The following attributes are available on this element: universal attributes (189).

**Example**

In the following code sample, the `<tasktroubleshooting>` element contains brief information that explains the steps that the user can take when the results of a task are not as expected. For a complex remedy, the author could provide a link to another task topic.

```xml
<task id="add-new-categories">
<title>Adding new user categories</title>
<taskbody>
  <steps>
  <!-- ... -->
  </steps>
  <result>
    <p>The User Type menu displays the new types you added.</p>
  </result>
  <tasktroubleshooting>
    <p>If the User Type menu does not display the additions, try one or more of the following:
      <ul>
        <li>Refresh the page</li>
        <li>Verify that Add Types window is not still open; if so, go to it and press <uicontrol>OK</uicontrol>.</li>
      </ul>
    </p>
  </tasktroubleshooting>
</taskbody>
```

3.2.6.27 `<tutorialinfo>`

Tutorial information is information that is useful when the task topic is rendered as a tutorial.

**Specialization hierarchy**

The `<tutorialinfo>` element is specialized from `<div>`. It is defined in the task module.

**Attributes**

The following attributes are available on this element: universal attributes (189).

**Example**

The following code sample is of a task topic that is used both in a product manual and in a tutorial. Note that the `<context>` and `<tutorialinfo>` elements are intended to be rendered only when the tutorial is generated.

```xml
<task id="task-msg-x1z-gwb">
<title>Taking pictures in low light without a flash</title>
<shortdesc>Taking pictures in low light situations without a flash can be a challenge if you don't know what you're doing and can result in photos that are too dark, blurry, or grainy. Follow these suggestions to get excellent shots in low light situations without the need for your camera's flash.</shortdesc>
<taskbody>
  <context deliveryTarget="tutorial">For example, suppose you are visiting the Louvre and want to capture memories of your visit. Most museums do not allow flash photography of their art masterpieces. What settings will work best for that situation? To understand the best settings for such a situation before arriving, use this tutorial to experiment with the impact of your light-controlling settings on your camera.</context>
  <steps>...
  </steps>
</taskbody>
```
<cmd>Put your camera in manual mode.</cmd>
</step>
<step>
<cmd>Increase your ISO setting to adjust how sensitive your camera's image sensor is to light.</cmd>
</step>

<tutorialinfo deliveryTarget="tutorial">Take a picture at each of the following ISO settings: 100, 200, 400, and 800. Compare your results.</tutorialinfo>
</step>
<step>
<cmd>Increase the aperture size, by reducing your f-stop, to adjust how much light is allowed in.</cmd>
</step>

<tutorialinfo deliveryTarget="tutorial">Return your camera to an ISO setting of 100. Take a picture at each of the following f-stops: f/2.0, f/4, f/8, and f/16. Compare your results.</tutorialinfo>
</step>

3.2.7 Troubleshooting elements

Troubleshooting elements provide the fundamental structure for troubleshooting topics. Troubleshooting topics describe problems and provide information about how to fix them.

Related concepts

Troubleshooting (19)

Troubleshooting topics are designed to document problems that people might encounter. They provide a topic structure that enables content authors to describe a condition, provide diagnostic information, discuss causes, and outline possible solutions.

3.2.7.1 <cause>

The <cause> element describes a potential source of the problem that is addressed by the troubleshooting topic.

Usage information

The <cause> element is a component of a potential solution. The cause might be omitted if it is implicit or if the remedy is not associated with a cause.

Specialization hierarchy

The <cause> element is specialized from <section>. It is defined in the troubleshooting module.

Attributes

The following attributes are available on this element: universal attributes (189).

Example

In the following code sample, the <cause> element contains information that explains the origins of the problem:

<troubleshooting id="simple-example">
<title>System will not turn on</title>
<troublebody>
<condition>The system is plugged in and powered up, but the system will not start. </condition>
</troublebody>
</troubleshooting>
The problem is usually due to the power not being supplied to the system through the electrical outlet. Often, a circuit breaker has been tripped so that no power is available at the outlet.

3.2.7.2 <condition>
The <condition> element describes a state that the troubleshooting topic is intended to remedy. This information helps the user decide whether a troubleshooting topic might contain an applicable remedy for a problem.

Usage information
This section should add to or clarify information that is in the title or short description of the troubleshooting topic. If the title and short description adequately describes the condition, this element might be omitted.

Specialization hierarchy
The <condition> element is specialized from <section>. It is defined in the troubleshooting module.

Attributes
The following attributes are available on this element: universal attributes (189).

Example
In the following code sample, the <condition> element contains information that elaborates on the information that is provided by the title and short description:

```
<troubleshooting id="system-will-not-turn-on">
  <title>System will not turn on</title>
  <shortdesc>Everything looks right, but the system still does not start.</shortdesc>
  <troublebody>
    <condition>
      <title>Condition</title>
      <p>The system is plugged in and powered up, but the system does not start.</p>
    </condition>
    <troubleSolution>
    <!-- ... -->
    </troubleSolution>
  </troublebody>
</troubleshooting>
```

Alternately, the short description could be enhanced and the <condition> element eliminated:

```
<troubleshooting id="system-will-not-turn-on">
  <title>System will not turn on</title>
  <shortdesc>The system is plugged in and powered up, but the system does not start.</shortdesc>
  <troublebody>
    <troubleSolution>
    <!-- ... -->
    </troubleSolution>
  </troublebody>
</troubleshooting>
```
The markup pattern that implementations choose might depend on how they deliver troubleshooting information.

3.2.7.3 <diagnostics>
The `diagnostics` element contains information that helps readers determine the cause of a problem.

Usage information
Diagnostic information is useful when there is more than one potential cause associated with a symptom. The `<diagnostics-general>` element permits content that includes tables and flowcharts, while the `<diagnostics-steps>` element allows for the use of the `<steps>` element. Either or both elements can be present.

Specialization hierarchy
The `<diagnostics>` element is specialized from `<bodydiv>`. It is defined in the troubleshooting module.

Attributes
The following attributes are available on this element: universal attributes (189).

Example
See `<diagnostics-general>` (95) and `<diagnostics-steps>` (97).

3.2.7.4 <diagnostics-general>
The `<diagnostics-general>` element includes non-procedural information that can help determine the causes of a symptom. Results of the diagnoses might link to possible solutions.

Usage information
This element is useful for presenting non-procedural diagnostic information, for example, a diagnostic table or a flowchart. Non-procedural diagnostic information can be used when the symptoms can be observed and do not require people to take action.

Specialization hierarchy
The `<diagnostics-general>` element is specialized from `<section>`. It is defined in the troubleshooting module.

Attributes
The following attributes are available on this element: universal attributes (189).

Example

Comment by Kristen J Eberlein on 15 February 2023
We discussed the car noise example at the 14 February 2023 DITA TC meeting. The consensus was to add a second example, which Stan Doherty will develop.

Disposition: Unassigned
This section contains examples of how the `<diagnostics-general>` element can be used. Implementations might well have different business rules for how to document troubleshooting.

**Figure 13: Example: Simple diagnosis**

The following code sample shows how the `<diagnostics-general>` element can contain a table to help a reader determine the cause of a problem. The table then references the associated remedy.

```xml
<troubleshooting id="car-makes-funny-noises">
  <title>Car is making funny noises.</title>
  <shortdesc>You probably know how your vehicle sounds when it’s running properly. Listening to your car can help you troubleshoot problems. If you hear a strange sound, pay attention and react accordingly.</shortdesc>
  <troublebody>
    <diagnostics>
      <diagnostics-general>
        <simpletable frame="all" relcolwidth="1* 1*">
          <sthead>
            <stentry>Symptom</stentry>
            <stentry>Probable cause</stentry>
          </sthead>
          <strow>
            <stentry>Clunking noise on bumps only</stentry>
            <stentry>Struts. See <xref href="#./checkstruts"/>.</stentry>
          </strow>
          <strow>
            <stentry>Continuous clunking noise</stentry>
            <stentry>Ball joints. See <xref href="#./checkballjoints"/>.</stentry>
          </strow>
          <strow>
            <stentry>Ticks when in neutral</stentry>
            <stentry>Exhaust. See <xref href="#./checkexhaust"/>.</stentry>
          </strow>
          <strow>
            <stentry>Ticks only in reverse</stentry>
            <stentry>Brakes. See <xref href="#./checkbrakes"/>.</stentry>
          </strow>
          <strow>
            <stentry>Ticks in turns and curves</stentry>
            <stentry>CV joint. See <xref href="#./checkcvjoint"/>.</stentry>
          </strow>
          <strow>
            <stentry>Ticks only when cold</stentry>
            <stentry>Catalytic converter. See <xref href="#./checkcatalyticconverter"/>.</stentry>
          </strow>
          <strow>
            <stentry>Ticks only at slow speed</stentry>
            <stentry>Wheels. See <xref href="#./checkwheels"/>.</stentry>
          </strow>
        </simpletable>
      </diagnostics-general>
    </diagnostics>
  </troublebody>
</troubleshooting>
```

The table in the `<diagnostics-general>` element might be rendered in the following way. The hyperlinks in the "Probable cause" column resolve to the `<remedy>` elements in the topic.
### 3.2.7.5 `<diagnostics-steps>`

The `<diagnostics-steps>` element includes step-by-step information that can help readers determine the causes of a symptom. Results of the diagnostic steps might link to potential solutions.

#### Usage information

This element is helpful for situations where the reader must perform a series of steps to determine the cause of the problem.

#### Specialization hierarchy

The `<diagnostics-steps>` element is specialized from `<section>`. It is defined in the troubleshooting module.

#### Attributes

The following attributes are available on this element: universal attributes (189).

#### Example

The following code sample shows how the `<diagnostics-steps>` element can provide step-by-step instructions to help someone determine the cause of a problem and the potential solution:

```xml
<troubleshooting id="my-network-isnt-working">
  <title>My network isn't working</title>
  <shortdesc>Users are unable to access network servers, the internet, or other networked devices, such as printers.</shortdesc>
  <troublebody>
    <diagnostics>
      <diagnostics-steps>
        <steps>
          <step>
            <cmd>Open the command prompt and type <userinput>ipconfig</userinput>.</cmd>
            <info>The Default Gateway (listed last) is your router’s IP. Your computer’s IP address is the number next to “IP Address.” If your computer’s IP address starts with 169, the computer is not receiving a valid IP address. See <xref href="#./ipaddress"/></info>.
          </step>
          <step>
            <cmd>If your address does not start with 169, type <userinput>tracert8.8.8.8</userinput> to view each step between your router and the Google DNS servers.</cmd>
            <info>If the error comes up early along the pathway, see <xref href="#./resetnetwork"/></info>.
          </step>
        </steps>
      </diagnostics-steps>
    </diagnostics>
  </troublebody>
</troubleshooting>
```
<step>
  <cmd> If everything is working with Google, use the <cmdname>nslookup</cmdname> command to
determine if there's a problem with the server you are trying to connect to.</cmd>
</step>
</diagnostics-steps>
</diagnostics>

<step>
  <cmd> If you received results such as <msgph>Timed Out</msgph>, <msgph>Server Failure</msgph>,
<msgph>Refused</msgph>, <msgph>No Response from Server</msgph>, or <msgph>Network is
unreachable</msgph>, the problem originates in the DNS server for your destination.</cmd>
</step>

<step>
  <cmd> If the previous steps turn up no problems, contact your ISP to see if they're
having issues.</cmd>
</step>

<diagnostics-steps>
</diagnostics>

<remedy>
<title> Reset the circuit breaker</title>
<responsibleParty>Maintenance technician</responsibleParty>
<steps>
  <step><cmd> Power the system down.</cmd></step>
  <step><cmd> Reset the circuit breaker.</cmd></step>
  <step><cmd> Power the system back up.</cmd></step>
</steps>
</remedy>

3.2.7.6 <remedy>
The <remedy> element contains steps that are a potential solution for a problem. In addition, it also
contain information about the person or team who should perform the task.

Usage information
The <remedy> element is a component of a potential solution. The remedy might be omitted if there is no
known remedy for the cause.

Specialization hierarchy
The <remedy> element is specialized from <section>. It is defined in the troubleshooting module.

Attributes
The following attributes are available on this element: universal attributes (189).

Example
In the following code sample, the <remedy> element contains instructions for how the responsible party
can fix the problem:
3.2.7.7 <responsibleParty>

The <responsibleParty> element identifies the individual or team whose task it is to perform a remedy procedure. It also provides important information, such as the fact that the warranty is voided if the procedure is performed by the wrong person.

Rendering expectations

Implementations might want to consider rendering a label for this element.

Specialization hierarchy

The <responsibleParty> element is specialized from <p>. It is defined in the troubleshooting module.

Attributes

The following attributes are available on this element: universal attributes (189).

Example

The following code sample shows how the <responsibleParty> element can be used to specify the prerequisites for performing a procedure:

```xml
<remedy>
  <responsible-party>You must have administrative privileges to perform this procedure.</responsible-party>
  <steps>
    <step><cmd>Run the following command from the command line:
    <codeph>msiexec.exe /I C:\Windows\Installer\XXXXX.msi</codeph></cmd>
    <step>
</steps>
</remedy>
```

3.2.7.8 <troublebody>

The <troublebody> element contains the main content of the troubleshooting topic. The troubleshooting body can contain information about the condition, how to diagnose the cause, and one or more possible solutions.

Specialization hierarchy

The <troublebody> element is specialized from <body>. It is defined in the troubleshooting module.

Attributes

The following attributes are available on this element: universal attributes (189).

Example

See <troubleshooting> (100).
3.2.7.9 <troubleshooting>
The <troubleshooting> element is the top-level element for a troubleshooting topic. Troubleshooting topics provide information that enables readers to identify a condition, diagnose a cause, and potentially fix the problem.

Usage information
Troubleshooting topics begin with a description of a problem that the reader might want to correct. This can be followed by diagnostic information and possible solutions to the problem.

Specialization hierarchy
The <troubleshooting> element is specialized from <topic>. It is defined in the troubleshooting module.

Attributes
The following attributes are available on this element: architectural attributes (194) and universal attributes (189).
For this element, the @id attribute is required.

Example
The following code sample contains a troubleshooting topic. The troubleshooting topic contains three <troubleSolution> elements that direct the user to perform sequential troubleshooting tasks: Resetting the alarm, reseating the system memory board, and replacing the memory board. Note that some steps are reused from other topics:

```
<troubleshooting id="E247" xml:lang="en-us">
  <title><msgph><msgnum>E247</msgnum>: Memory fault has occurred</msgph></title>
  <shortdesc>The system has detected a memory problem.</shortdesc>
  <troublebody>
    <condition>
      <p>The fault indicator flashes on the front panel, and the error log contains the <msgnum>E247</msgnum> error message.</p>
    </condition>
    <troubleSolution>
      <cause><p>A transient memory fault has occurred.</p></cause>
      <remedy>
        <responsibleParty>System administrator</responsibleParty>
        <steps>
          <step><cmd>From the systems management software, reset the alarm.</cmd></step>
          <step><cmd>Monitor the system periodically to see whether the alarm recurs.</cmd></step>
        </steps>
      </remedy>
    </troubleSolution>
    <troubleSolution>
      <cause><p>A recurring memory fault indicates a possible problem with the system memory board.</p></cause>
      <remedy>
        <responsibleParty>Maintenance technician</responsibleParty>
        <steps conref="boardReseat.dita#boardReseat/steps">
          <step><cmd>Resume the system memory board.</cmd></step>
        </steps>
      </remedy>
    </troubleSolution>
    <troubleSolution>
      <cause><p>The system memory board might be corrupted.</p></cause>
      <remedy>
        <responsibleParty>Maintenance technician</responsibleParty>
      </remedy>
    </troubleSolution>
  </troublebody>
</troubleshooting>
```
3.2.7.10 <troubleSolution>
Each <troubleSolution> element contains information about the cause of a problem and a potential remedy.

Usage information
The troubleshooting topic can contain multiple <troubleSolution> elements. A <troubleSolution> element can contain a cause, a remedy, or a cause and remedy pair. The cause might be omitted if it is implicit or if the remedy is not associated with a cause. The remedy might be omitted if there is no known remedy for the cause.

Specialization hierarchy
The <troubleSolution> element is specialized from <bodydiv>. It is defined in the troubleshooting module.

Attributes
The following attributes are available on this element: universal attributes (189).

Example
In the following code sample, the <troubleSolution> element contains a cause and remedy pair:

```xml
<troubleshooting id="e247">
  <title>E247: Memory fault has occurred</title>
  <troublebody>
    <troubleSolution>
      <cause>The <msgnum>E247</msgnum> error message is generated due to a transient memory fault.</cause>
      <remedy>
        <steps>
          <step><cmd>Reset the alarm.</cmd></step>
          <step><cmd>Monitor the system periodically to see whether the alarm recurs.</cmd></step>
        </steps>
      </remedy>
    </troubleSolution>
  </troublebody>
</troubleshooting>
```
3.3 Domain specializations

Domains in this section include those generally associated with technical content, such as the programming and software domains.

3.3.1 Abbreviated-form domain elements

3.3.1.1 <abbreviated-form>

The <abbreviated-form> element represents a reference to a term that might appear in an abbreviated form (often an acronym).

Usage information

The long and short forms of the term are generally defined in a <glossentry> topic. Processors display the referenced term when rendering an <abbreviated-form> element.

Rendering expectations

The <abbreviated-form> element is intended to reference a <glossentry> topic that contains both a term and an abbreviated form of that term. The topic might also provide a surface form that differs from the original term. The full term or surface form is rendered in introductory contexts where the term might be unfamiliar to a reader or in other contexts where a precise term is appropriate. In other contexts a processor substitutes the abbreviated form of the term. Note that the definition of an introductory context will differ for every deliverable format.

For instance, a process composing a book deliverable might emit the surface form of a term on the first reference to the <glossentry> topic within the book or for every reference within a copyright or a warranty-related warning. A process generating an online page might emit the surface form as a hover tooltip on every instance of the term.

The following rules determine how to render an <abbreviated-form> element.

As described, the definition of "introductory context" will vary based on the rendered format and processor.

1. If the referenced topic is not a <glossentry> topic (or a specialization of <glossentry>), the title of the topic SHOULD be displayed.
2. Otherwise, if <abbreviated-form> is located in an introductory context, and the referenced topic contains a non-empty <glossSurfaceForm> element, processors SHOULD render the contents of the <glossSurfaceForm> element from the referenced <glossentry> topic.
3. Otherwise, if <abbreviated-form> is located in an introductory context, processors SHOULD render the contents of the <glossTerm> element from the referenced <glossentry> topic.
4. Otherwise (in non-introductory contexts), if the referenced <glossentry> topic contains a non-empty <glossAcronym> element, processors SHOULD render the abbreviated form of the term by displaying the contents of the <glossAcronym> element from the referenced <glossentry> topic.

5. Otherwise, processors SHOULD render the contents of the <glossterm> element from the referenced <glossentry> topic.

For instance, if an <abbreviated-form> element with the attribute keyref="abs" provided the first occurrence of the ABS term within a book, the sentence could be rendered as follows:

"The Anti-lock Brake System (ABS) will prevent the car from skidding in adverse weather conditions."

If the ABS term had appeared previously within the book, the same sentence could instead be rendered as follows:

"The ABS will prevent the car from skidding in adverse weather conditions."

Processing expectations

Comment by rodaande on 13 December 2022
Similar to above -- this element has a lot of associated processing, enough for an architectural topic; this section likely should include a link to that topic and leave it at that?
Disposition: Unassigned

Specialization hierarchy

The <abbreviated-form> element is specialized from <term>. It is defined in the abbreviated-form domain module.

Attributes

The following attributes are available on this element: universal attributes (189) and @keyref (200).

Example

The term and acronym can be defined as follows, in a <glossentry> topic. Note that the @id attribute of the topic does not need to match the term or acronym.

```xml
<glossentry id="abs-definition">
  <glossterm>Anti-lock Braking System</glossterm>
  <glossBody>
    <glossSurfaceForm>Anti-lock Braking System (ABS)</glossSurfaceForm>
    <glossAlt>
      <glossAcronym>ABS</glossAcronym>
    </glossAlt>
  </glossBody>
</glossentry>
```

Note that there are three important elements for the purposes of rendering the <abbreviated-form> element.

- The <glossSurfaceForm> element defines the term as it should be displayed in an introductory context.
- The <glossAcronym> element defines the acronym associated with this term.
• The `<glossterm>` element provides a fallback version of the term, which will be displayed in situations where the preferred representation is unavailable.

The `<glossentry>` topic will be added to a map in the following manner. Again, the key (in this case “abs”) does not need to match the term or acronym value.

```xml
<glossref keys="abs" href="antilock.dita"/>
```

An author who wants to reference this topic can do so by using the `<abbreviated-form>` element. The `@keyref` attribute references the value defined on the `@keys` attribute above.

```xml
<section>An <abbreviated-form keyref="abs"/> helps a driver to stop. For this reason many find an <abbreviated-form keyref="abs"/> useful.
</section>
```

When rendered, the introductory usage of “abs” will display the surface form of the referenced term, while the later uses will display the acronym, as demonstrated here.

An Anti-lock Braking System (ABS) helps a driver to stop. For this reason many find an ABS useful.

### 3.3.2 Equation domain

The elements in the equation domain enable authors to clearly distinguish equations from other type of content. These markup distinctions can enable formatting distinctions, numbering of equations, and more. This domain can be used independently of the MathML domain.

The equation domain elements do not attempt to satisfy all possible requirements for representing equations semantically. More sophisticated users of equations might need to further specialize from these elements or provide an alternative vocabulary for semantic equations.

#### 3.3.2.1 `<equation-block>`

The `<equation-block>` element represents an equation that is presented as a separate block within a text flow.

**Usage information**

When an `<equation-block>` element has multiple direct child elements, each child represents an alternative form of the equation.

**Rendering expectations**

Block equations can be numbered.

**Processing expectations**

Processors are free to choose the form or forms that they render. For example, if there is both an image and MathML markup, an HTML-generating processor could generate both the image reference and the MathML with appropriate HTML `@class` or `@id` values to enable dynamic rendering based on browser capability.

**Specialization hierarchy**

The `<equation-block>` element is specialized from `<div>`. It is defined in the equation domain module.
Attributes

The following attributes are available on this element: universal attributes (189).

Example

In the following example, a block equation uses MathML as its content:

```xml
<p>A block equation using MathML:</p>
<equation-block>
 <mathml>
  <m:math>
   <m:semantics>
    <m:mrow>
     <m:msqrt>
      <m:mrow>
       <m:msup><m:mi>a</m:mi><m:mn>2</m:mn></m:msup>
       <m:mo>+</m:mo>
       <m:msup><m:mi>b</m:mi><m:mn>2</m:mn></m:msup>
      </m:mrow>
     </m:msqrt>
    </m:mrow>
   </m:semantics>
  </m:math>
 </mathml>
</equation-block>
```

In the following example, a block equation uses an image as its content:

```xml
<p>A block equation using an image:</p>
<equation-block>
 <image keyref="equation-image-01">
  <alt>a squared plus b squared.</alt>
 </image>
</equation-block>
```

In the following example, the block equation contains two alternative forms of the same equation:

```xml
<equation-block>
 <image keyref="equation-image-01">
  <alt>a squared plus b squared.</alt>
 </image>
 <mathml>
  <m:math>
   <m:semantics>
    <m:mrow>
     <m:msqrt>
      <m:mrow>
       <m:msup><m:mi>a</m:mi><m:mn>2</m:mn></m:msup>
       <m:mo>+</m:mo>
       <m:msup><m:mi>b</m:mi><m:mn>2</m:mn></m:msup>
      </m:mrow>
     </m:msqrt>
    </m:mrow>
   </m:semantics>
  </m:math>
 </mathml>
</equation-block>
```

3.3.2.2 <equation-figure>

The <equation-figure> element represents an equation that functions as a form of figure or display.

Usage information

Display equations can have titles, descriptions, figure groups, and all other figure components. The direct children of <equation-figure> can be the equation content itself (for example, <mathml> or an image
reference), or it can be one or more <equation-block> elements, along with other elements allowed within figures.

When an <equation-figure> element has multiple direct child <mathml>, <image>, or <pre> elements, each child represents an alternative form of the equation.

When the intent is to have equations combined with other commentary within an <equation-figure>, the recommended best practice is to use child <equation-block> elements to contain the equations and clearly distinguish them from the commentary.

Rendering expectations

Display equations are intended to be numbered when numbering is desired.

Comment by robander on 21 may 2021
I'm not sure how to interpret this. Is it an instruction that processors need to give authors a way to indicate that numbering is desired? Or could this be more simply stated as “Display equations might be numbered”? Or, is this based on the presence of equation-number, in which case we should be explicit that it is numbered when equation-number is used?

Disposition: Unassigned

Processing expectations

Processors are free to choose the form or forms that they use in deliverables. For example, if there is both an image and MathML markup, an HTML-generating processor could generate both the image reference and the MathML with appropriate HTML @class or @id values to enable dynamic rendering based on browser capability. All other direct-child elements of <equation-figure> are treated normally.

Comment by robander on 21 may 2021
We say "all other" without explicitly listing what is "other" – only a for-example that has images and mathml, but leaves out the <pre> element described earlier in the topic.

Disposition: Unassigned

Specialization hierarchy

The <equation-figure> element is specialized from <fig>. It is defined in the equation domain module.

Attributes

The following attributes are available on this element: display attributes (194) and universal attributes (189).

Example

In the following code sample, the <equation-figure> element contains a title and MathML:

<equation-figure>
  <title>Display equation with a MathML container</title>
  <mathml>
    <m:math display='block'>
      <m:semantics>
        <m:mrow>
          <m:mfrac>
            <!-- MathML content -->
          </m:mrow>
        </m:semantics>
      </m:math>
    </mathml>
  </equation-figure>
In the following example, the `<equation-figure>` element contains a title and an `<equation-block>` element that contains MathML and commentary:

```xml
<equation-figure>
<title>Display equation with a MathML container</title>
<equation-block>
  <mathml>
    \begin{equation}
      \frac{n!}{r!(n-r)!}
    \end{equation}
  </mathml>
  <p>Where \( r \) is greater than 1.</p>
</equation-block>
</equation-figure>
```

### 3.3.2.3 `<equation-inline>`

The `<equation-inline>` element represents an equation that is presented inline within a paragraph or similar context.

**Usage information**

Inline equations are not intended to be numbered.

When an `<equation-inline>` element has multiple direct child elements, each child represents an alternative form of the equation.

**Processing expectations**

---

Comment by robander on 21 May 2021

Realizing that this same language appears in equation block / figure / inline, we should crisp it up and move it to the TC reuse file.

Disposition: Unassigned
Processors are free to choose the form or forms that they use in deliverables. For example, if there is both an image and MathML markup, an HTML-generating processor could generate both the image reference and the MathML with appropriate HTML @class or @id values to enable dynamic rendering based on browser capability.

Specialization hierarchy
The `<equation-inline>` element is specialized from `<ph>`. It is defined in the equation domain module.

Attributes
The following attributes are available on this element: universal attributes (189) and @keyref (200).

Example
The following example contains a paragraph that contains an `<equation-inline>` element with MathML markup:

```xml
<p>MathML inline: <equation-inline>
  <m:math display='inline'>
    <m:semantics>
      <m:mrow>
        <m:msqrt>
          <m:mrow>
            <m:msup><m:mi>a</m:mi><m:mn>2</m:mn></m:msup>
            +
            <m:msup><m:mi>b</m:mi><m:mn>2</m:mn></m:msup>
          </m:mrow>
        </m:msqrt>
      </m:mrow>
    </m:semantics>
  </m:math>
</equation-inline></p>
```

The following example contains an `<equation-inline>` element that uses an image as its content:

```xml
<p>An inline equation that contains an image: <equation-inline>
  <image keyref="equation-image-01">
    <alt>a squared plus b squared.</alt>
  </image>
</equation-inline></p>
```

3.3.2.4 `<equation-number>`
The `<equation-number>` element indicates that a block equation is numbered and, optionally, specifies the number to use for the block equation.

Usage information
In normal usage a block equation will have at most one number. However, `<equation-number>` can occur multiple times within `<equation-block>`, for example, to allow numbers with different (and exclusive) conditional properties.
Rendering expectations

003 (174) When the `<equation-number>` element has empty or whitespace-only content, the equation number **SHOULD** be generated. When the `<equation-number>` element has non-whitespace-only content the content **SHOULD** be used as the equation number. For explicit numbers the content of the element **SHOULD** be the number value without any surrounding punctuation, for example, "3.2a" rather than "(3.2a)". Processors **SHOULD** add punctuation or decoration to the number as appropriate.

The details of equation numbering and number presentation are processor-specific. However, common practice is to present the equation number to the right of the equation, centered vertically within the vertical extent of the block equation.

Comment by robander on 21 may 2021
Can we rephrase “non-whitespace-only”, maybe as ”element is not empty”? Maybe we could start by stating that white-space only is equivalent to empty, and then we can only talk about empty/not empty?

Seems overboard to say processors **SHOULD** add punctuation "as appropriate", that sort of turns it into a MAY or might?

Do we really need “However” in the common practice?

Disposition: Unassigned

Specialization hierarchy
The `<equation-number>` element is specialized from `<ph>`. It is defined in the equation domain module.

Attributes
The following attributes are available on this element: universal attributes (189).

Example
The following code sample shows an equation with a generated number:

```
<p>A block equation using an image:</p>
<equation-block id="eq-001">
  <equation-number/>
  <image keyref="equation-image-01">
    <alt>a squared plus b squared.</alt>
  </image>
</equation-block>
```

The following code sample shows an equation with an explicit number:

```
<p>A block equation using an image:</p>
<equation-block id="eq-3.2a">
  <equation-number>3.2a</equation-number>
  <image keyref="equation-image-01">
    <alt>a squared plus b squared.</alt>
  </image>
</equation-block>
```
3.3.3 Glossary-reference domain elements

3.3.3.1 <glossref>
The <glossref> element is a convenience element in maps for creating a reference to a glossary topic. It has a required @keys attribute, which forces the author to create a key by which inline terms can reference their definition. For example, when <glossentry> topics are used to define acronyms, this reminds authors to create a key which <abbreviated-form> elements can use to reference the short and expanded versions of that acronym.

Usage information
Note that the key value does not need to match the target term or acronym. In fact, using a more qualified value for the @keyref will reduce conflicts in situations where the same term or acronym might resolve in many ways. For example, an information set could use “cars.abs” as the key for the term Anti-lock Braking System, and “ship.abs” to refer to the term American Bureau of Shipping.

Specialization hierarchy
The <glossref> element is specialized from <topicref>. It is defined in the glossary reference domain module.

Attributes
The following attributes are available on this element: link-relationship attributes (194), universal attributes (189), @chunk (196), @collection-type (196), @keyref (200), @linking (200), @processing-role (202), @search (205), and @toc (205).

For this element:
- The @href attribute is a reference to a glossary definition, typically a <glossentry> topic.
- The @keys attribute is required.
- The @linking attribute has a default value of "none".
- The @toc attribute has a default value of "no".

Example

```xml
<map>
  <!-- ... -->
  <topicref href="car-maintenance.dita"/>
  <!-- ... -->
  <glossref keys="cars.abs" href="antiLockBrake.dita"/>
  <!-- ... key declarations for other referenced acronyms ... -->
</map>
```
3.3.4 Hardware domain
The hardware domain elements are used to document physical devices.

3.3.4.1 <hwcontrol>
A hardware control is a key, button, switch, indicator, or other physical device that controls a piece of hardware.

Specialization hierarchy
The <hwcontrol> element is specialized from <ph>. It is defined in the hardware domain module.

Attributes
The following attributes are available on this element: universal attributes (189) and @keyref (200).

Example
The following code sample shows how the <hwcontrol> element can be used to identify a hardware control:

```xml
<step>
  <cmd>After entering the amount you received, press <hwcontrol>Amt Tend</hwcontrol>.</cmd>
  <stepresult>This opens the cash drawer. The display shows the amount of change to give the customer.</stepresult>
</step>
```

3.3.4.2 <partno>
A part number is a unique identifier that is assigned to a hardware component.

Specialization hierarchy
The <partno> element is specialized from <ph>. It is defined in the hardware domain module.

Attributes
The following attributes are available on this element: universal attributes (189) and @keyref (200).

Example
The following code sample shows how <partno> can be used to identify a part number:

```xml
<p>The basic model, <partno>DB-123-456</partno>, is an entry model. Most users can take advantage of all features with little to no set up. The <partno>DB-123-456</partno> is available with all systems.</p>
```
3.3.5 Markup domain
The markup domain contains an element that can be used for the mention of named components in markup languages.

3.3.5.1 <markupname>
The <markupname> element identifies named markup components, for example, elements or attributes in HTML and SGML, named groups in XSD schemas, and named patterns in RELAX NG schemas.

Usage information
The <markupname> element serves as the specialization basis for the elements in the XML mention domain. When the XML mention domain is present, use its more specific elements instead of <markupname> if appropriate.

Specialization hierarchy
The <markupname> element is specialized from <keyword>. It is defined in the markup domain module.

Attributes
The following attributes are available on this element: universal attributes (189) and @keyref (200).

Example
The following code sample shows how the <markupname> element can be used to tag an attribute group:

```xml
The <markupname>p.attributes</markupname> attribute group defines the allowed attributes for the <xmlelement>p</xmlelement> element.
```

3.3.6 MathML domain
The MathML domain elements enable direct use of MathML markup within DITA documents, as well as use-by-reference of MathML markup that is stored separate, non-DITA documents. MathML is a W3C standard.

For MathML markup that is stored directly in DITA documents that are validated using DTDs, the MathML elements must use a namespace prefix in order to avoid conflict with the DITA-defined elements of the same name. Documents validated using XSD or RELAX NG can default the MathML namespace on the MathML <math> element. MathML elements that are referenced using the <mathmlref> element do not need to have a namespace prefix, because they are parsed separately from the DITA documents that refer to them. By default, the MathML domain is configured to use the namespace prefix "m" for the MathML elements.

Related information
Mathematical Markup Language (MathML), Version 3.0
3.3.6.1 <mathml>
The <mathml> element contains MathML markup or other content that contributes to a semantic equation.

Usage information
MathML element content includes MathML elements, references to MathML elements held in separate, non-DITA documents, or <data> elements.

The <mathml> element is not intended to represent a semantic equation, only content that contributes to a semantic equation. Use the equation domain elements or their equivalent to represent equations semantically, for example, to enable numbering of equations.

The MathML markup must have a root element of <math> within the MathML namespace: "http://www.w3.org/1998/Math/MathML".

Specialization hierarchy
The <mathml> element is specialized from <foreign>. It is defined in the MathML domain module.

Attributes
The following attributes are available on this element: universal attributes (189).

Example
In the following code sample, a <mathml> element contains MathML content:

```xml
<equation-block>
  <mathml>
    <m:math>
      <m:semantics>
        <m:mrow>
          <m:msqrt>
            <m:mrow>
              <m:msup><m:mi>a</m:mi><m:mn>2</m:mn></m:msup>
              <m:mo>+</m:mo>
              <m:msup><m:mi>b</m:mi><m:mn>2</m:mn></m:msup>
            </m:mrow>
          </m:msqrt>
        </m:mrow>
      </m:semantics>
    </m:math>
  </mathml>
</equation-block>
```

3.3.6.2 <mathmlref>
The <mathmlref> element is a reference to a non-DITA XML document that contains MathML markup.

Usage information
The <mathmlref> element enables you to use MathML markup by reference.

The reference must be to a MathML <math> element. The reference can be one of the following:

- A URI that addresses an XML document; the XML document has a MathML <math> element as the root element
• A URI that addresses an XML document and contains a fragment identifier that is the XML ID of a `<math>` element within the document

The reference can be direct, using the `@href` attribute, or indirect, using the `@keyref` attribute. For indirect referencing, specify only the key name. Specify the ID of the `<mathml>` element as part of the value for the `@href` attribute on the key definition.

For example, to refer to the `<math>` element with the `@id` of "equation-02" within a larger document using a key reference, you would define the key in the following way:

```xml
<keydef
   keys="mathml-equation-02"
   href="math/mathml-equations.xml#equation-02"
   format="mathml"
/>
```

You would refer to this key using just the key name:

```xml
<mathml>
   <mathmlref keyref="mathml-equation-02"/>
</mathml>
```

### Processing expectations

**004 (174)** Processors **SHOULD** process the MathML as though the `<m:math>` element had occurred directly in the content of the containing `<mathml>` element.

### Specialization hierarchy

The `<mathmlref>` element is specialized from `<include>`. It is defined in the MathML domain module.

### Attributes

The following attributes are available on this element: inclusion attributes (194), universal attributes (189), `@format` (199), `@href` (199), `@keyref` (200), and `@scope` (204).

For this element:

- The `@format` attribute has a default value of "mml".
- The `@parse` attribute has a default value of "xml".

### Example

The following code sample shows a reference to a `<math>` element that is the root element of its containing document:

```xml
<equation-block>
   <mathml>
      <mathmlref href="../mathml-source/mathml-root-mathml.mml"/>
   </mathml>
</equation-block>
```

The `mathml-root-mathml.mml` file contains the following content. Note that the `<math>` element sets the MathML namespace as the default namespace, so there are no namespace prefixes on the MathML markup:

```xml
<?xml version="1.0" encoding="UTF-8"?>
<math xmlns="http://www.w3.org/1998/Math/MathML"
xmlns:xlink="http://www.w3.org/1999/xlink">
```
The following code sample shows a reference to a specific `<math>` element in a containing XML file:

```xml
<equation-block>
  <mathmlref
    href="../mathml-source/mathml-equation-library.xml#mathfrag-02"/>
</equation-block>
```

The `mathml-equation-library.xml` file contains the following content:

```xml
<root>
  <part>
    <math id="timeinday"
      xmlns="http://www.w3.org/1998/Math/MathML">
      <mi>x</mi>
    </math>
    <math id="mathfrag-02"
      xmlns="http://www.w3.org/1998/Math/MathML">
      <math>
        <mrow>
          <mi>y</mi><mo>=</mo><mn>5</mn><mi>x</mi><mo>+</mo><mn>2</mn>
        </mrow>
      </math>
    </math>
  </part>
  <part>
    <m:math id="mathfrag-03" display="inline" overflow="scroll"
      xmlns:m="http://www.w3.org/1998/Math/MathML">
      <m:mi>y</m:mi><m:mo>=</m:mo><m:mi>m</m:mi><m:mi>x</m:mi><m:mo>+</m:mo><m:mi>b</m:mi>
    </m:math>
  </part>
</root>
```

### 3.3.7 Programming domain

The programming domain elements are used to define the syntax for programming languages. They can also be used to provide examples.

#### 3.3.7.1 `<apiname>`

An API name is the name of an application programming interface (API), such as a Java class name or method name.

**Specialization hierarchy**

The `<apiname>` element is specialized from `<keyword>`. It is defined in the programming domain module.
Attributes

The following attributes are available on this element: universal attributes (189) and @keyref (200).

Example

The following code sample shows how the `<apiname>` element can be used to identify the `document.write` method:

```
<p>Use the `<apiname>`document.write</apiname>` method to create text output in the dynamically constructed view.</p>
```

3.3.7.2 `<codeblock>`

A code block is a set of lines from a program.

Rendering expectations

005 (174) Processors SHOULD preserve line the breaks and spaces that are present in the content of a `<codeblock>` element.

The contents of the `<codeblock>` element is typically rendered in a monospaced font.

Specialization hierarchy

The `<codeblock>` element is specialized from `<pre>`. It is defined in the programming domain module.

Attributes

The following attributes are available on this element: display attributes (194), universal attributes (189), and @xml:space (206).

Example

The following code sample shows how the `<codeblock>` element can be used to tag an excerpt from the code for a program:

```
<codeblock>
/* a long sample program */
Do forever
  Say "Hello, World"
End
</codeblock>
```

3.3.7.3 `<codeph>`

A code phrase is a small portion of source code, machine code, or text that is displayed in-line.

Rendering expectations

The contents of the `<codeph>` element is typically rendered in a monospaced font.

Specialization hierarchy

The `<codeph>` element is specialized from `<ph>`. It is defined in the programming domain module.
Attributes
The following attributes are available on this element: universal attributes (189) and @keyref (200).

Example
In the following code sample, the <codeph> element identifies a code snippet. The code snippet will be rendered in-line in the paragraph.

```xml
<p>The second line of the sample program code, <codeph>Do forever</codeph>, represents the start of a loop construct.</p>
```

3.3.7.4 <coderef>
A code reference is the mechanism for referencing an external text file that contains program code.

Rendering expectations
When evaluated, the <coderef> element causes the target code to be displayed inline. If the target code contains non-XML characters such as '<' or '&', those characters need to be handled so that they can be displayed correctly by the final rendering engine.

Specialization hierarchy
The <coderef> element is specialized from <include>. It is defined in the programming domain module.

Attributes
The following attributes are available on this element: inclusion attributes (194), link-relationship attributes (194), universal attributes (189), and @keyref (200).

For this element, the @parse attribute has a default value of "text".

Example
In the following code sample, the <coderef> element references the content of the process-dita.xsl file. In the rendered output, the XSL code will be presented in a code block.

```xml
<example>
  <title>Processing DITA</title>
  <p>This code is an example of how to process DITA.</p>
  <codeblock>
    <coderef href="process-dita.xsl"/>
  </codeblock>
</example>
```

3.3.7.5 <option>
The <option> element specifies a permitted value for a parameter or configuration.

Specialization hierarchy
The <option> element is specialized from <keyword>. It is defined in the programming domain module.
Attributes
The following attributes are available on this element: universal attributes (189) and @keyref (200).

Example
This section contains examples of how the <option> element can be used.

Figure 15: Parameter values
In the following code sample, the <option> element is used to specify permitted values for a parameter:

```
<p>You can use the <parmname>map-order</parmname> parameter to specify if the order of the frontmatter and backmatter content is retained. The allowed values are <option>keep</option> and <option>trash</option>; the default value is <option>trash</option>.</p>
```

Figure 16: Configuration option
In the following code sample, the <option> element is used to specify an option that modifies a configuration:

```
<p>You can purchase the <option>Sports Model</option> package in order to configure your Mini Cooper with the latest sports suspension, bonnet stripes, a roof spoiler and an aero body kit.</p>
```

3.3.7.6 <parmname>
A parameter name is the name of a parameter that is passed to an API or a command-line interface (CLI).

Specialization hierarchy
The <parmname> element is specialized from <keyword>. It is defined in the programming domain module.

Attributes
The following attributes are available on this element: universal attributes (189) and @keyref (200).

Example
The following code sample shows how the <parmname> element can be used to identify a parameter that is used with the config command:

```
<p>You can use the <parmname>/env</parmname> parameter of the <cmdname>config</cmdname> command to update the field value.</p>
```

3.3.7.7 <parml>
A parameter list is a specialized definition list that is designed for documenting parameters.

Specialization hierarchy
The <parml> element is specialized from <dl>. It is defined in the programming domain module.
Attributes
The following attributes are available on this element: universal attributes (189) and @compact (197).

Example
The following code sample shows how a set of sample code is followed by a parameter list that defines those parameters:

```xml
<p>This code example is a basic method signature:</p>
<codeblock>returnType methodName(pList1, pList2)</codeblock>
<p>The method requires the following parameters:</p>
<parml>
  <plentry>
    <pt>pList1</pt>
    <pd>The first variable declaration that is passed to methodName</pd>
  </plentry>
  <plentry>
    <pt>pList2</pt>
    <pd>The second variable declaration that is passed to methodName</pd>
  </plentry>
</parml>
```

3.3.7.8 <plentry>
A parameter-list entry contains one or more parameter terms and definitions.

Specialization hierarchy
The <plentry> element is specialized from <dlentry>. It is defined in the programming domain module.

Attributes
The following attributes are available on this element: universal attributes (189).

Example
See <parml> (118).

3.3.7.9 <pt>
A parameter term is a term that is defined in a parameter-list entry.

Specialization hierarchy
The <pt> element is specialized from <dt>. It is defined in the programming domain module.

Attributes
The following attributes are available on this element: universal attributes (189) and @keyref (200).

Example
See <parml> (118).
3.3.7.10 <pd>
A parameter definition is a definition of a term that is defined in a parameter-list entry.

Specialization hierarchy
The <pd> element is specialized from <dd>. It is defined in the programming domain module.

Attributes
The following attributes are available on this element: universal attributes (189).

Example
See <parml> (118).

3.3.8 Release management domain
The release-management domain elements contain human-authored information about the changes that have been made to a DITA topic or map. A processor can retrieve this information and use it to assemble documents or topics that contain release note information.

3.3.8.1 <change-completed>
The <change-completed> element specifies the date on which a change was completed.

Usage information
The recommended best practice is to use date strings that conform to the ISO 8601 standard, unless a UNIX-style machine time stamp is used. The string might contain a date and time (for example, 2017-04-05T12:30-02:00) or just a date (for example, 2019-03-04).

Specialization hierarchy
The <change-completed> element is specialized from <data>. It is defined in the release-management domain module.

Attributes
The following attributes are available on this element: universal attributes (189) and @name (202).

Example
The following code sample shows how the <change-completed> element can be used to note when the change was completed:

```xml
<change-historylist>
  <change-item product="productA productB">
    <change-person>Tom Cihak</change-person>
    <change-organization>JEDEC</change-organization>
    <change-started>2019-01-15</change-started>
    <change-completed>2019-03-23</change-completed>
    <change-summary>Made change 1 to both products</change-summary>
    <data>Details of change 1</data>
  </change-item>
</change-historylist>
```
3.3.8.2 <change-historylist>

The <change-historylist> element contains one or more changes that are applicable to a DITA topic or map.

Usage information

The <change-historylist> element appears in the topic <prolog> or the map <topicmeta>.

Specialization hierarchy

The <change-historylist> element is specialized from <metadata>. It is defined in the release-management domain module.

Attributes

The following attributes are available on this element: universal attributes (189).

Example

The following code sample shows how the <change-historylist> element can be used to document one or more changes in a DITA topic or map. This example includes three changes. This topic is used in documentation for two products, A and B.

```
<change-historylist>
  <change-item product="productA productB">
    <change-person>Tom Cihak</change-person>
    <change-organization>JEDEC</change-organization>
    <change-started>2019-01-15</change-started>
    <change-completed>2019-03-23</change-completed>
    <change-summary>Made change 1 to both products</change-summary>
    <data>Details of change 1</data>
  </change-item>
  <change-item product="productA">
    <change-person>Tom Cihak</change-person>
    <change-completed>2019-06-07</change-completed>
    <change-summary>Made change 2 to product A</change-summary>
    <data>Details of change 2</data>
  </change-item>
  <change-item product="productA productB">
    <change-person>Tom Cihak</change-person>
    <change-revisionid>r23.4</change-revisionid>
    <change-request-reference>
      <change-request-system>example.com/my/queue/</change-request-system>
      <change-request-id>TCKT-1313</change-request-id>
    </change-request-reference>
    <change-completed>2019-07-20</change-completed>
    <change-summary>Made change 3 to both products</change-summary>
    <data>Details of change 3</data>
  </change-item>
</change-historylist>
```

3.3.8.3 <change-item>

The <change-item> element represents a record of a single change in a DITA topic or map.

Specialization hierarchy

The <change-item> element is specialized from <data>. It is defined in the release-management domain module.
Attributes

The following attributes are available on this element: universal attributes (189) and @name (202).

Example

The following code sample shows how the <change-item> element can be used to detail a change. This example includes two changes, one that is applicable to products A and B and one that is applicable to only product A.

```xml
<change-historylist>
  <change-item product="productA productB">
    <change-person>Tom Cihak</change-person>
    <change-organization>JEDEC</change-organization>
    <change-started>2019-01-15</change-started>
    <change-completed>2019-03-23</change-completed>
    <change-summary>Made change 1 to both products</change-summary>
    <data>Details of change 1</data>
  </change-item>
  <change-item product="productA">
    <change-person>Tom Cihak</change-person>
    <change-completed>2019-06-07</change-completed>
    <change-summary>Made change 2 to product A</change-summary>
    <data>Details of change 2</data>
  </change-item>
</change-historylist>
```

3.3.8.4 <change-organization>

The <change-organization> element specifies the name of the organization that required the change.

Specialization hierarchy

The <change-organization> element is specialized from <data>. It is defined in the release-management domain module.

Attributes

The following attributes are available on this element: universal attributes (189) and @name (202).

Example

The following code sample shows how the <change-organization> element can be used to specify the company that required the change:

```xml
<change-historylist>
  <change-item product="productA productB">
    <change-person>Tom Cihak</change-person>
    <change-organization>JEDEC</change-organization>
    <change-started>2019-01-15</change-started>
    <change-completed>2019-03-23</change-completed>
    <change-summary>Made change 1 to both products</change-summary>
    <data>Details of change 1</data>
  </change-item>
</change-historylist>
```
3.3.8.5 <change-person>

The <change-person> element specifies the name of the person who made the change.

Specialization hierarchy

The <change-person> element is specialized from <data>. It is defined in the release-management domain module.

Attributes

The following attributes are available on this element: universal attributes (189) and @name (202).

Example

The following code sample shows how the <change-person> element can be used to specify who made the change:

```xml
<change-historylist>
  <change-item product="productA productB">
    <change-person>Tom Cihak</change-person>
    <change-organization>JEDEC</change-organization>
    <change-started>2019-01-15</change-started>
    <change-completed>2019-03-23</change-completed>
    <change-summary>Made change 1 to both products</change-summary>
    <data>Details of change 1</data>
  </change-item>
</change-historylist>
```

3.3.8.6 <change-request-id>

The <change-request-id> element specifies an identifier associated with the change request, such as an issue ID or ticket number.

Specialization hierarchy

The <change-request-id> element is specialized from <data>. It is defined in the release-management domain module.

Attributes

The following attributes are available on this element: universal attributes (189) and @name (202).

Example

The following code sample shows how the <change-request-id> element can be used to specify a ticket ID that is applicable to the change request:

```xml
<change-historylist>
  <change-item product="productA productB">
    <change-request-reference>
      <change-request-system>example.com/my/queue/</change-request-system>
      <change-request-id>TCKT-1313</change-request-id>
    </change-request-reference>
  </change-item>
</change-historylist>
```
3.3.8.7 <change-request-reference>

The <change-request-reference> element contains details about the change request, such as an ID or a reference to the system used to track the request.

Specialization hierarchy

The <change-request-reference> element is specialized from <metadata>. It is defined in the release-management domain module.

Attributes

The following attributes are available on this element: universal attributes (189) and @name (202).

Example

The following code sample shows how the <change-request-reference> element can be used to specify the ticketing system used to manage the change request as well as the applicable ticket ID:

```xml
<change-historylist>
  <change-item product="productA productB">
    <change-request-reference>
      <change-request-system>example.com/my/queue/</change-request-system>
      <change-request-id>TCKT-1313</change-request-id>
    </change-request-reference>
  </change-item>
</change-historylist>
```

3.3.8.8 <change-request-system>

The <change-request-system> element specifies the name of an information system that manages or serves the referenced change request, for example, an issue tracking system.

Specialization hierarchy

The <change-request-system> element is specialized from <data>. It is defined in the release-management domain module.

Attributes

The following attributes are available on this element: universal attributes (189) and @name (202).

Example

The following code sample shows how the <change-request-system> element can be used to specify the ticketing system that manages the change request:

```xml
<change-historylist>
  <change-item product="productA productB">
    <change-request-reference>
      <change-request-system>example.com/my/queue/</change-request-system>
      <change-request-id>TCKT-1313</change-request-id>
    </change-request-reference>
  </change-item>
</change-historylist>
```
3.3.8.9 <change-revisionid>
The <change-revisionid> element specifies a string to identify the change.

Specialization hierarchy
The <change-revisionid> element is specialized from <data>. It is defined in the release-management domain module.

Attributes
The following attributes are available on this element: universal attributes (189) and @name (202).

Example
The following code sample shows how the <change-revisionid> element can be used to identify a particular change. In this example, change revision ID is used to note the release number for which the first change is applicable.

```xml
<change-historylist>
  <change-item product="productA productB">
    <change-person>Tom Cihak</change-person>
    <change-revisionid>r23.4</change-revisionid>
    <change-completed>2019-07-20</change-completed>
    <change-summary>Made change 3 to both products</change-summary>
  </change-item>
  <data>Details of change 3</data>
</change-historylist>
```

3.3.8.10 <change-started>
The <change-started> element specifies the date on which a change was initiated.

Usage information
The recommended best practice is to use date strings that conform to the ISO 8601 standard, unless a UNIX-style machine time stamp is used. The string might contain a date and time (for example, 2017-04-05T12:30-02:00) or just a date (for example, 2019-03-04).

Specialization hierarchy
The <change-started> element is specialized from <data>. It is defined in the release-management domain module.

Attributes
The following attributes are available on this element: universal attributes (189) and @name (202).

Example
The following code sample shows how the <change-started> element can be used to specify the first day a particular change began:

```xml
<change-historylist>
  <change-item product="productA productB">
    <change-person>Tom Cihak</change-person>
    <change-organization>JEDEC</change-organization>
    <change-started>2019-01-15</change-started>
    <change-completed>2019-03-23</change-completed>
  </change-item>
</change-historylist>
```
3.3.8.11 <change-summary>
The <change-summary> element includes a brief description of the change.

Usage information
The <change-summary> element contains the portion of the release note that might appear in a document.

Comment by tammy
How/when would the change-summary appear in a document?
Disposition: Unassigned

Specialization hierarchy
The <change-summary> element is specialized from <data>. It is defined in the release-management domain module.

Attributes
The following attributes are available on this element: universal attributes (189) and @name (202).

Example
The following code sample shows how the <change-summary> element can be used to provide a brief description of a change:

```xml
<change-historylist>
  <change-item product="productA">
    <change-person>Tom Cihak</change-person>
    <change-completed>2019-06-07</change-completed>
    <change-summary>Made change 2 to product A</change-summary>
    <data>Details of change 2</data>
  </change-item>
</change-historylist>
```

3.3.9 Software domain
The software domain elements are used to describe the presentation and operation of a software program.

3.3.9.1 <cmdname>
A command name is the name of a software command.

Specialization hierarchy
The <cmdname> element is specialized from <keyword>. It is defined in the software domain module.

Attributes
The following attributes are available on this element: universal attributes (189) and @keyref (200).
Example
The following code sample shows a `<cmdname>` element that identifies the name of the `rm` command.

```xml
<p>You can use the `<cmdname>`rm</cmdname>` command to permanently delete an object.</p>
```

3.3.9.2 `<filepath>`
The `<filepath>` element identifies file names and system paths.

Specialization hierarchy
The `<filepath>` element is specialized from `<ph>`. It is defined in the software domain module.

Attributes
The following attributes are available on this element: universal attributes (189) and `@keyref` (200).

Example
In the following code sample, the `<filepath>` element is used to tag both file names and system paths:

```xml
<p>Uncompress the `<filepath>`gbbrsh.gz</filepath>` file to the `<filepath>/usr</filepath>` directory. Ensure that the `<filepath>/usr/tools/data.cfg</filepath>` path is listed in the execution path system variable.</p>
```

3.3.9.3 `<msgblock>`
A message block is a multi-line message or set of messages that is produced by an application or device.

Usage information
The `<msgblock>` element can contain multiple message numbers and message descriptions, each enclosed in `<msgnum>` and `<msgph>` elements. It can also contain the message content directly.

Rendering expectations
006 (174)  Processors SHOULD preserve the line breaks and spaces that are present in the content of a `<msgblock>` element.

The contents of the `<msgblock>` element is typically rendered in a monospaced font.

Specialization hierarchy
The `<msgblock>` element is specialized from `<pre>`. It is defined in the software domain module.

Attributes
The following attributes are available on this element: display attributes (194), universal attributes (189), and `@xml:space` (206).
Example
The following code sample shows a `<msgblock>` element that contains a multi-line message that is returned by an application:

```xml
<p>A sequence of failed password attempts generates the following message stream:</p>
<msgblock>
I:0
S:3
I:1
S:3
I:1
S:4
S:99 (lockup)
</msgblock>
```

3.3.9.4 `<msgnum>`
The `<msgnum>` element identifies the number of a message that is produced by an application or program.

Specialization hierarchy
The `<msgnum>` element is specialized from `<keyword>`. It is defined in the software domain module.

Attributes
The following attributes are available on this element: universal attributes (189) and @keyref (200).

Example
The following code sample shows a `<msgnum>` element that identifies the number of the message that is returned by an application:

```xml
<p>A server log entry of `<msgnum>I:0</msgnum>` is equivalent to the text message `<msgph>informational: successful</msgph>`.</p>
```

3.3.9.5 `<msgph>`
A message phrase is the text of a message that is produced by an application or program.

Specialization hierarchy
The `<msgph>` element is specialized from `<ph>`. It is defined in the software domain module.

Attributes
The following attributes are available on this element: universal attributes (189) and @keyref (200).

Example
The following code sample shows how the `<msgph>` element can be used to tag a message that is returned by the server:

```xml
<p>A server log entry of `<msgnum>I:0</msgnum>` is equivalent to the text message, `<msgph>informational: successful</msgph>`.</p>
```
3.3.9.6 `<systemoutput>`
The `<systemoutput>` element identifies computer output or responses to a command or situation.

**Specialization hierarchy**
The `<systemoutput>` element is specialized from `<ph>`. It is defined in the software domain module.

**Attributes**
The following attributes are available on this element: universal attributes (189) and `@keyref` (200).

**Example**
In the following code sample, the `<systemoutput>` element identifies an application response to user input:

```xml
<p>After you type `<userinput>mealplan dinner</userinput>`, the meal planning program will print `<systemoutput>For what day?</systemoutput>`. Reply by typing the day of the week for which you want a meal plan, for example, `<userinput>Thursday</userinput>`.</p>
```

3.3.9.7 `<userinput>`
The `<userinput>` element identifies text that a user types in response to an application or system prompt.

**Specialization hierarchy**
The `<userinput>` element is specialized from `<ph>`. It is defined in the software domain module.

**Attributes**
The following attributes are available on this element: universal attributes (189) and `@keyref` (200).

**Example**
In the following code sample, the `<userinput>` element identifies text that a user should type at the command prompt:

```xml
<p>From a DOS command prompt, type `<userinput>dir</userinput>` to view a list of files in the current directory.</p>
```

3.3.9.8 `<varname>`
The `<varname>` element identifies a variable that is supplied to a software application.

**Rendering expectations**
The contents of the `<varname>` element is typically rendered in an italic font.

**Specialization hierarchy**
The `<varname>` element is specialized from `<keyword>`. It is defined in the software domain module.
Attributes
The following attributes are available on this element: universal attributes (189) and @keyref (200).

Example
The following code sample shows how the <varname> element is used to identify variables that represent the "installation directory," "project directory," and "file name":

```xml
<filepath>
   <varname>install-dir</varname>/projects/working/<varname>project-dir</varname>/source/<varname>filename</varname>.java
</filepath>
```

3.3.10 SVG domain
The SVG domain elements enable direct use of SVG markup within DITA documents, as well as use-by-reference of SVG markup that is stored in separate non-DITA documents. SVG is a W3C standard.

For SVG markup that is stored directly in DITA documents that are validated using DTDs, the SVG elements must use a namespace prefix in order to avoid conflict with DITA-defined elements of the same name. Documents validated using XSD or RELAX NG can default the SVG namespace on the SVG <svg> element. SVG elements that are referenced using the <svgref> element do not need to have a namespace prefix, because they are parsed separately from the DITA documents that refer to them. By default, the SVG domain is configured to use the namespace prefix "svg" for the SVG elements.

Related information
Scalable Vector Graphics (SVG) 1.1 (Second Edition)

3.3.10.1 <svg-container>
The <svg-container> element stores content that contributes to a scalable vector graphic (SVG).

Usage information
<svg-container> content includes SVG elements, references to SVG elements that are stored in separate, non-DITA documents, or <data> elements.

The SVG markup must have a root element of <svg> with the SVG namespace: "http://www.w3.org/2000/svg".

Specialization hierarchy
The <svg-container> is specialized from <foreign>. It is defined in the SVG domain module.

Attributes
The following attributes are available on this element: universal attributes (189).

Example
In the following example, an <svg-container> element contains inline SVG markup:

```xml
<topic id="svg-test-topic-01">
   <title>SVG Domain Test: Namespace Prefixed SVG Elements</title>
   <body>
      <svg inline: <svg-container>
```

Related information
Scalable Vector Graphics (SVG) 1.1 (Second Edition)
In the following example, the `<svgref>` element uses the @keyref attribute to address SVG markup that is stored in a separate, non-DITA document:

```xml
<svgref keyref="svg-fragment-01"/>
</svg-container>
</fig>
```

The key "svg-fragment-01" is declared in the following way:

```xml
<map>
<!-- ... -->
<keydef keys="svg-fragment-01"
       href="media/svg/svg-library.xml#frag-0001"
       format="svg"/>
<!-- ... -->
</map>
```
3.3.10.2 <svgref>
The <svgref> element references a non-DITA XML document that contains scalable vector graphic (SVG) markup.

Usage information
This element enables you to use SVG markup by reference. The reference must be to a SVG <svg> element. The reference can be one of the following:

- A URI that addresses an XML document; the XML document has a SVG <svg> element as the root element
- A URI that addresses an XML document and contains a fragment identifier that is the XML ID of a <svg> element within the document

The reference can be direct, using the @href attribute, or indirect, using the @keyref attribute. For indirect referencing, only the key name should be specified. The ID of the <svg> element must be specified as part of the value for the @href attribute on the key definition.

For example, to refer to the <svg> element with the @id of "svg-fragment-02" within a larger document using a key reference, you would define the key in the following way:

```xml
<keydef
    keys="svg-fragment-0002"
    href="svg/svg-library.xml#svg-fragment-02"
/>
```

You would refer to this key using just the key name:

```xml
<svg-container>
    <svgref keyref="svg-fragment-0002"/>
</svg-container>
```

Processing information
007 (174) Processors SHOULD process the SVG as though the <svg> element had occurred directly in the content of the containing <svg-container> element.

Specialization hierarchy
The <svgref> is specialized from <include>. It is defined in the SVG domain module.

Attributes
The following attributes are available on this element: inclusion attributes (194), link-relationship attributes (194), universal attributes (189), and @keyref (200).

For this element:
- The @format attribute has a default value of "svg".
- The @href attribute is a reference to an SVG document or SVG element. If the <svg> element is the root element of the referenced resource, then no fragment identifier is required, otherwise, a fragment identifier must be specified, where the fragment identifier is the XML ID of the <svg> element to be used.
- The @parse attribute has a default value of "xml".
Example

The following code sample shows a reference to an `<svg>` element that is the root element of its containing document:

```xml
<fig>
  <title>Figure With SVG Container</title>
  <svg-container>
    <svgref href="media/svg/svg-graphic-01.xml"/>
  </svg-container>
</fig>
```

The `svg-graphic-01.xml` file contains the following content. Note that the `<svg>` element sets the SVG namespace as the default namespace, so there are no namespace prefixes on the SVG markup:

```xml
<?xml version="1.0" encoding="UTF-8"?>
<svg xmlns="http://www.w3.org/2000/svg" width="100" height="100">
  <defs>
    <filter id="f1" x="0" y="0">
      <feGaussianBlur in="SourceGraphic" stdDeviation="15"/>
    </filter>
  </defs>
  <rect width="90" height="90" stroke="green" stroke-width="3" fill="yellow" filter="url(#f1)"/>
</svg>
```

The following code sample shows a reference to a specific `<svg>` element in a containing XML file:

```xml
<fig>
  <title>Figure with SVG Container</title>
  <svg-container>
    <svgref href="media/svg/svg-library.xml#frag-0001"/>
  </svg-container>
</fig>
```

The `svg-library.xml` file contains the following content:

```xml
<?xml version="1.0" encoding="UTF-8"?>
<root>
  <part>
    <svg id="frag-0001" xmlns="http://www.w3.org/2000/svg" width="100" height="100">
      <defs>
        <filter id="f1" x="0" y="0">
          <feGaussianBlur in="SourceGraphic" stdDeviation="15"/>
        </filter>
      </defs>
      <rect width="90" height="90" stroke="green" stroke-width="3" fill="yellow" filter="url(#f1)"/>
    </svg>
    <svg id="frag-0002" width="4in" height="6in" version="1.1">
      <circle cx="150" cy="200" r="100" fill="url(#grad_blue)"
             animate attributeName="r" begin="Go.click" end="Stop.click"
             dur="4s" values="100; 0; 100" repeatCount="indefinite"/>
      <radialGradient id="grad_blue" cx="20%" cy="20%" r="100%" fx="30%" fy="30%">
        <stop stop-color="white" offset="0"/>
        <stop stop-color="blue" offset="25%"/>
        <stop stop-color="rgb(0,0,192)" offset="50%"/>
        <stop stop-color="rgb(0,0,127)" offset="75%"/>
        <stop stop-color="rgb(0,0,64)" offset="85%"/>
        <stop stop-color="rgb(0,0,0)" offset="100%"/>
      </radialGradient>
      <g id="Go">
        <rect x="70" y="320" height="40" width="80" fill="aqua"/>
        <text x="90" y="350" font-size="30" fill="green">Go</text>
      </g>
      <g id="Stop">
        <rect x="160" y="320" height="40" width="80" fill="aqua"/>
```

```xml
```
```
3.3.11 Syntax diagram domain

The syntax-diagram domain elements are used to diagram expressions or syntax phrases for programming languages or command line processors.

The syntax diagram domain is specialized from the programming domain, and uses elements from that domain within the content model of syntax phrases.

3.3.11.1 <delim>

A delimiter is a character that marks the beginning or end of a section within a syntax diagram.

Usage information

Typical delimiter characters are parentheses, commas, tabs, vertical bars, or other special characters.

Specialization hierarchy

The <delim> element is specialized from <ph>. It is defined in the syntax-diagram domain module, which is a specialization of the programming domain module.

Attributes

The following attributes are available on this element: universal attributes (189).

For this element, the @importance attribute indicates whether this item in a syntax diagram is optional or required. The attribute value is limited to "optional", "required", or "-dita-use-conref-target".

Example

The following code sample shows how the <delim> element can be used to specify that the equal sign (=) is used to mark the end of the group sequence:

```xml
<syntaxdiagram>
    <title>Integer addition</title>
    <groupseq>
        <var>integer</var>
        <oper>+</oper>
        <var>integer</var>
        <delim>=</delim>
        <var>total</var>
    </groupseq>
</syntaxdiagram>
```

3.3.11.2 <fragment>

The <fragment> element contains a labeled subpart of the syntax within a syntax diagram.

Usage information

The <fragment> element enables breaking out logical chunks of a large syntax diagram into named fragments.
Specialization hierarchy

The `<fragment>` element is specialized from `<figgroup>`. It is defined in the syntax-diagram domain module, which is a specialization of the programming domain module.

Attributes

The following attributes are available on this element: universal attributes (189).

Example

The following code sample shows how the `<fragment>` element can be used to break out a set of related logging options from the larger set of syntax. This allows the logging options to be displayed separately in a titled group, out of the flow of the primary diagram.

```xml
<syntaxdiagram>
  <title>Syntax for runprogram command</title>
  <groupseq>
    <kwd>runprogram</kwd>
    <groupchoice>
      <groupcomp><oper>-</oper><kwd>i</kwd><sep>:</sep><var>program-name.py</var></groupcomp>
      <groupcomp><oper>--</oper><kwd>input</kwd><sep>=</sep><var>program-name.py</var></groupcomp>
    </groupchoice>
  </groupseq>
  <fragment>
    <title>Logging options</title>
    <groupseq importance="optional"><oper>--</oper><kwd>debug</kwd></groupseq>
    <groupseq importance="optional"><oper>--</oper><kwd>verbose</kwd></groupseq>
  </fragment>
</syntaxdiagram>
```

3.3.11.3 `<fragref>`

A fragment reference is the mechanism for referencing a syntax fragment within the same syntax diagram.

Usage information

The `<fragref>` element is used to reference a syntax fragment multiple times or pull a large section of syntax out of line for easier reading.

Specialization hierarchy

The `<fragref>` element is specialized from `<xref>`. It is defined in the syntax-diagram domain module, which is a specialization of the programming domain module.

Attributes

The following attributes are available on this element: universal attributes (189) and @href (199).

For this element:

- The @href attribute is a reference to a syntax diagram `<fragment>`. The referenced `<fragment>` must be in the same diagram as the `<fragref>` element.
- The @importance attribute is limited to the values "optional", "required", or "-dita-use-conref-target".
Example

The following code sample shows how the `<fragref>` element can be used to break out a set of related logging options from the larger set of syntax. The `<fragref>` element is part of the program sequence after an input file, but the syntax for logging is defined outside of the main diagram.

```xml
<syntaxdiagram frame="none">
  <title>CopyFile</title>
  <groupseq><kwd>COPYF</kwd></groupseq>
  <groupcomp><var>input-filename</var><kwd>*INFILE</kwd></groupcomp>
  <groupseq><var>output-filename</var><kwd>*OUTFILE</kwd></groupseq>
  <fragref href="#./overlay"/>
  <groupchoice><var>input-filename</var><kwd>*INFILE</kwd></groupchoice>
  <groupchoice><var>output-filename</var><kwd>*OUTFILE</kwd></groupchoice>
  <fragment id="overlay">
    <title>Overlay</title>
    <groupchoice><kwd>*OVERLAP</kwd><kwd>*Prompt</kwd></groupchoice>
  </fragment>
</syntaxdiagram>
```

3.3.11.4 `<groupchoice>`
The `<groupchoice>` element provides a set of choices between groups of pieces of syntax.

Usage information

Each syntax group is a logical set of pieces of syntax that go together. A group choice specifies that the user must make a choice about which part of the syntax to use. Groups are often nested.

Specialization hierarchy

The `<groupchoice>` element is specialized from `<figgroup>`. It is defined in the syntax-diagram domain module, which is a specialization of the programming domain module.

Attributes

The following attributes are available on this element: universal attributes (189).

For this element, the `@importance` attribute indicates whether this item in a syntax diagram is optional, required, or used by default. The attribute value is limited to "optional", "required", "default", or "-dita-use-conref-target".

Example

The following code sample shows how the `<groupchoice>` element can be used to specify that there are two ways to specify an input file name to a command line program:

```xml
<syntaxdiagram>
  <title>Syntax for runprogram command</title>
  <groupseq>
    <kwd>runprogram</kwd>
    <groupchoice>
      <groupcomp><oper>-</oper><kwd>i</kwd><sep>:</sep><var>program-name.py</var></groupcomp>
      <groupcomp><oper>--</oper><kwd>input</kwd><sep>=</sep><var>program-name.py</var></groupcomp>
    </groupchoice>
  </groupseq>
</syntaxdiagram>
```
3.3.11.5 `<groupcomp>`

The `<groupcomp>` element groups a set of pieces of syntax as a single unit.

Usage information

Each syntax group is a logical set of pieces of syntax that go together. The group composite means that the items that make up the syntax diagram will be rendered close together rather than being separated by a horizontal or vertical line, which is the usual formatting method.

Comment by Frank Wegmann on 19 February 2023

The usage information mentions rendering and formatting in one and the same sentence, while this is only about rendering here, if I'm not mistaken regarding our language use. Please advise whether we should break it out in a section Rendering expectations.

Furthermore, I cannot observe this rendering expectation in the current DITA-OT implementation: I get the same output for the code sample below, when e.g. using `<groupseq>` instead of `<groupcomp>`.

Disposition: Unassigned

Specialization hierarchy

The `<groupcomp>` element is specialized from `<figgroup>`. It is defined in the syntax-diagram domain module, which is a specialization of the programming domain module.

Attributes

The following attributes are available on this element: universal attributes (189).

For this element, the `@importance` attribute indicates whether this item in a syntax diagram is optional, required, or used by default. The attribute value is limited to "optional", "required", "default", or "-dita-use-conref-target".

Example

The following code sample shows how the `<groupcomp>` element can be used to indicate how pieces of syntax are grouped together. Two composite groups represent two alternate ways to specify an input file to a command line program, using either `-i:program-name.py` or `--input=program-name.ph`.

```xml
<syntaxdiagram>
  <title>Syntax for runprogram command</title>
  <kw_repeat runprogram
  <groupchoice>
    <groupcomp><oper>-</oper><kw_repeat i
    <groupcomp><oper>--</oper><kw_repeat input
  </groupchoice>
</syntaxdiagram>
```
3.3.11.6 <groupseq>
The <groupseq> element specifies the sequence of groups with pieces of syntax.

Usage information
Each syntax group is a logical set of pieces of syntax that go together. Within the syntax definition, groups of keywords, delimiters and other syntax units act as a combined unit, and they occur in a specific sequence, as delimited by the <groupseq> element.

Specialization hierarchy
The <groupseq> element is specialized from <figgroup>. It is defined in the syntax-diagram domain module, which is a specialization of the programming domain module.

Attributes
The following attributes are available on this element: universal attributes (189).
For this element, the @importance attribute indicates whether this item in a syntax diagram is optional, required, or used by default. The attribute value is limited to "optional", "required", "default", or "-dita-use-conref-target".

Example
The following code sample shows how the <groupseq> element can be used to indicate that a short set of command line syntax is specified in a sequential order. The runprogram tool name is followed by a choice of how to specify an input file.

```xml
<syntaxdiagram>
  <title>Syntax for runprogram command</title>
  <groupseq>
    <kwd>runprogram</kwd>
    <groupchoice>
      <groupcomp><oper>-</oper><kwd>i</kwd><sep>:</sep><var>program-name.py</var></groupcomp>
      <groupcomp><oper>--</oper><kwd>input</kwd><sep>=</sep><var>program-name.py</var></groupcomp>
    </groupchoice>
  </groupseq>
</syntaxdiagram>
```

3.3.11.7 <kw>
The <kw> element identifies a keyword within a syntax diagram or phrase.

Usage information
A <kw> might be entered by a user typing in the syntax, or rendered by an application as part of a syntax prompt. The keyword value is typed or rendered exactly as specified in the syntax diagram or phrase.

Specialization hierarchy
The <kw> element is specialized from <keyword>. It is defined in the syntax-diagram domain module, which is a specialization of the programming domain module.
Attributes
The following attributes are available on this element: universal attributes (189) and @keyref (200).

For this element, the @importance attribute indicates whether this item in a syntax diagram is optional, required, or used by default. The attribute value is limited to "optional", "required", "default", or "-dita-use-conref-target".

Example
The following code sample shows how the <kwd> element can be used to identify text that must be provided to the application exactly as specified:

```xml
<syntaxdiagram id="validate">
    <title>Validate account setup</title>
    <groupseq>
        <kwd>clicmd</kwd>
        <groupcomp>
            <oper>--</oper>
            <kwd>user</kwd>
            <sep>=</sep><var>userid</var>
        </groupcomp>
        <groupcomp>
            <oper>--</oper><kwd>validate</kwd>
        </groupcomp>
    </groupseq>
</syntaxdiagram>
```

3.3.11.8 <oper>
The <oper> element identifies an operator within a syntax definition.

Usage information
Typical operators are equals (=), plus (+), or multiply (*).

Specialization hierarchy
The <oper> element is specialized from <ph>. It is defined in the syntax-diagram domain module, which is a specialization of the programming domain module.

Attributes
The following attributes are available on this element: universal attributes (189).

For this element, the @importance attribute indicates whether this item in a syntax diagram is optional, required, or used by default. The attribute value is limited to "optional", "required", "default", or "-dita-use-conref-target".

Example
The following code sample shows how the <oper> element can be used to specify that the operator in an operation is plus (+):

```xml
<syntaxdiagram>
    <title>Integer addition</title>
    <groupseq>
        <var>integer</var>
        <oper>+</oper>
        <var>integer</var>
        <delim>=</delim>
        <var>total</var>
    </groupseq>
</syntaxdiagram>
```
3.3.11.9 <repsep>
The <repsep> element identifies a character that indicates that a group of syntax elements can (or should) be repeated in a syntax diagram.

Usage information
If the <repsep> element contains a separator character such as a plus (+), this indicates that the character must be used between repetitions of the syntax elements.

Specialization hierarchy
The <repsep> element is specialized from <ph>. It is defined in the syntax-diagram domain module, which is a specialization of the programming domain module.

Attributes
The following attributes are available on this element: universal attributes (189).
For this element, the @importance attribute indicates whether this item in a syntax diagram is optional or required. The attribute value is limited to "optional", "required", or "-dita-use-conref-target".

Example
In the following code sample, a file listing can be requested for multiple volumes. The <repsep> element identifies that each requested volume can be separated with a comma (,):

```xml
<title>Request file listing</title>
<groupseq>
  <kwd>clicmd</kwd>
  <groupcomp><oper>--</oper><kwd>user</kwd><sep>=</sep><var>userid</var></groupcomp>
  <repsep>,</repsep>
  <groupcomp><oper>--</oper><kwd>filelist</kwd><sep>=</sep><var>volumeid</var></groupcomp>
</groupseq>
</syntaxdiagram>
```

3.3.11.10 <sep>
The <sep> element defines a character that separates pieces of syntax in a syntax diagram.

Usage information
The separator occurs between keywords, operators, or groups in a syntax definition.

Specialization hierarchy
The <sep> element is specialized from <ph>. It is defined in the syntax-diagram domain module, which is a specialization of the programming domain module.

Attributes
The following attributes are available on this element: universal attributes (189).
For this element, the `<importance>` attribute indicates whether this item in a syntax diagram is optional, required, or used by default. The attribute value is limited to "optional", "required", "default", or "-dita-use-conref-target".

**Example**
The following code sample shows how the `<sep>` element can be used to separate a parameter name from a parameter value:

```
<syntaxdiagram id="validate">
  <title>Validate account setup</title>
  <groupseq>
    <kwd>clicmd</kwd>
    <groupcomp>
      <oper>--</oper>
      <kwd>user</kwd>
      <sep>=</sep>
      <var>userid</var>
    </groupcomp>
    <groupcomp>
      <oper>--</oper>
      <kwd>validate</kwd>
    </groupcomp>
  </groupseq>
</syntaxdiagram>
```

3.3.11.11 `<synblk>`
A syntax block organizes small pieces of a syntax definition into a larger piece.

**Specialization hierarchy**
The `<synblk>` element is specialized from `<figgroup>`. It is defined in the syntax-diagram domain module, which is a specialization of the programming domain module.

**Attributes**
The following attributes are available on this element: universal attributes (189).

**Example**
The following code sample shows how `<synblk>` elements can be used to group sets of related options for user profile parameters. These syntax blocks might be used in many different sets of syntax.

```
<synblk id="profileopts">
  <title>Required profile options</title>
  <groupcomp><oper>--</oper><kwd>user</kwd><sep>=</sep><var>userid</var></groupcomp>
  <groupcomp><oper>--</oper><kwd>acctkey</kwd><sep>=</sep><var>keyfile</var></groupcomp>
  <groupcomp><oper>--</oper><kwd>region</kwd><sep>=</sep><var>homeregion</var></groupcomp>
</synblk>
```

This block can now be reused in syntax descriptions that always begin with the three profile parameters described in that syntax block:

```
<syntaxdiagram>
  <title>Request file listing</title>
  <groupseq>
    <kwd>clicmd</kwd>
    <synblk conkeyref="syntax-library/profileopts"/>
    <groupcomp><oper>--</oper><kwd>filelist</kwd><sep>=</sep><var>volumeid</var></groupcomp>
  </groupseq>
</syntaxdiagram>
```
### 3.3.11.12 <synnote>

The syntax note provides additional information within a syntax diagram.

**Usage information**

The syntax note explains aspects of the syntax that cannot be expressed in the markup itself.

**Rendering expectations**

The note typically appears at the bottom of the syntax diagram instead of at the bottom of the page.

**Specialization hierarchy**

The `<synnote>` element is specialized from `<fn>`. It is defined in the syntax-diagram domain module, which is a specialization of the programming domain module.

**Attributes**

The following attributes are available on this element: universal attributes (189) and the attribute defined below.

@callout

- Specifies the character or character string that is used for the footnote link.

**Example**

The following code sample show how the `<synnote>` element can be used to remind the reader where to find information for a required parameter:

```xml
<syntaxdiagram id="validate">
  <title>Validate account setup</title>
  <groupseq>
    <kwd>clicmd</kwd>
    <groupcomp>
      <oper>--</oper><kwd>user</kwd><sep>=</sep><var>userid</var>
      <synnote>Your user ID can be found in your account activation email.</synnote>
    </groupcomp>
    <groupcomp>
      <oper>--</oper><kwd>validate</kwd>
    </groupcomp>
  </groupseq>
</syntaxdiagram>
```

### 3.3.11.13 <synnoteref>

A syntax note reference is the mechanism for referencing a syntax note within the same syntax diagram.

**Usage information**

The same notation can be used in more than one syntax definition.

**Specialization hierarchy**

The `<synnoteref>` element is specialized from `<xref>`. It is defined in the syntax-diagram domain module, which is a specialization of the programming domain module.
Attributes

The following attributes are available on this element: universal attributes (189) and @href (199).

For this element, the @href attribute is a reference to a syntax note within the same syntax diagram.

Example

In the following code sample, a syntax note is reused twice in the sample diagram, instructing the reader how to request a modified user name or password:

```xml
<syntaxdiagram id="validate">
  <title>Validate account setup</title>
  <groupseq>
    <kwd>clicmd</kwd>
    <groupcomp>
      <oper>--</oper><kwd>user</kwd><sep>=</sep><var>account_id</var><synnoteref href="#./reset"/>
    </groupcomp>
    <groupcomp>
      <oper>--</oper><kwd>pwd</kwd><sep>=</sep><var>password_key</var><synnoteref href="#./reset"/>
    </groupcomp>
    <groupcomp>
      <oper>--</oper><kwd>validate</kwd>
    </groupcomp>
  </groupseq>
  <synnote id="reset">If you have forgotten your account ID or password key, please contact customer support.</synnote>
</syntaxdiagram>
```

3.3.11.14 <synph>

A syntax phrase is a small group of pieces of syntax.

Usage information

The <synph> element is used when a complete syntax diagram is not needed, but some of the syntax elements, such as <kwd>, <oper>, or <delim> are used within the text flow of the topic content.

Specialization hierarchy

The <synph> element is specialized from <ph>. It is defined in the syntax-diagram domain module, which is a specialization of the programming domain module.

Attributes

The following attributes are available on this element: universal attributes (189).

Example

The following code sample shows how the <synph> element can be used to identify a syntax phrase that must be run before a task:

```xml
<task id="setup-volume">
  <title>Setting up a new volume</title>
  <shortdesc>This task will help you set up a new volume for your account.</shortdesc>
  <taskbody>
    <prereq>Before starting this procedure, ensure that you have requested the volume using the <synph><kwd>request</kwd><var>volumename</var></synph> command.</prereq>
  </taskbody>
</task>
```
3.3.11.15 <syntaxdiagram>
A syntax diagram represents the syntax of a command, function call, or programming language statement.

Rendering expectations
Traditionally, the syntax diagram is formatted with "railroad tracks" that connect the units of the syntax together, but the presentation might vary depending on the output media.

Specialization hierarchy
The <syntaxdiagram> element is specialized from <fig>. It is defined in the syntax-diagram domain module, which is a specialization of the programming domain module.

Attributes
The following attributes are available on this element: display attributes (194) and universal attributes (189).

Example
The following code sample shows how a <syntaxdiagram> can be used to illustrate the syntax of a basic file-copy command. The initial COPYF command is followed by the input directory and file name. The input is followed by a choice of either an output directory (and optional file name) or a file name.

```
<syntaxdiagram>
<title>CopyFile</title>
<groupseq><kwd>COPYF</kwd></groupseq>
<groupcomp><var>input-directory</var><kwd>*INFILE</kwd></groupcomp>
<groupchoice>
    <groupcomp><var>output-directory</var><kwd importance="optional">*OUTFILE</kwd></groupcomp>
    <groupcomp><kwd>*OUTFILE</kwd></groupcomp>
</groupchoice>
</syntaxdiagram>
```

3.3.11.16 <var>
The <var> element identifies a variable within a syntax diagram or phrase.

Specialization hierarchy
The <var> element is specialized from <ph>. It is defined in the syntax-diagram domain module, which is a specialization of the programming domain module.

Attributes
The following attributes are available on this element: universal attributes (189).

For this element, the @importance attribute indicates whether this item in a syntax diagram is optional, required, or used by default. The attribute value is limited to "optional", "required", "default", or "-dita-use-conref-target".
Example
The following code sample shows how the `<var>` element can be used to identify variables for which the user will substitute the names of the input and output files:

```xml
<example>
<syntaxdiagram frame="bottom">
  <title>CopyFile</title>
  <groupseq><kwd>COPYF</kwd></groupseq>
  <groupcomp>
    <var>input-filename</var><kwd>*INFILE</kwd></groupcomp>
  <groupseq>
    <var>output-filename</var><kwd>*OUTFILE</kwd></groupseq>
</syntaxdiagram>
</example>

3.3.12 User interface domain
The user-interface domain elements are used to describe the graphical user interface of a software program.

3.3.12.1 `<menucascade>`
A menu cascade is a sequence of menu choices in a nested menu, such as File > New.

Rendering expectations
008 (174) Processors SHOULD separate the contents of the `<uicontrol>` elements with a character to represent the menu cascade.

Specialization hierarchy
The `<menucascade>` element is specialized from `<ph>`. It is defined in the user-interface domain module.

Attributes
The following attributes are available on this element: universal attributes (189) and `<keyref>` (200).

Example
The following code sample shows how the `<menucascade>` element can be used to identify a series of menu choices that enable users to launch the Notepad application:

```xml
<example>
<menucascade>
  <uicontrol>Start</uicontrol>
  <uicontrol>Programs</uicontrol>
  <uicontrol>Accessories</uicontrol>
  <uicontrol>Notepad</uicontrol>
</menucascade>
</example>

3.3.12.2 `<screen>`
The `<screen>` element contains a textual representation of a terminal console or other text-based computer interface.

Rendering expectations
009 (174) Processors SHOULD preserve the line breaks and spaces that are present in the content of a `<screen>` element.
The contents of the `<screen>` element is typically enclosed within a box to suggest a computer display screen. It also is typically rendered in a monospaced font.

### Specialization hierarchy

The `<screen>` element is specialized from `<pre>`. It is defined in the user-interface domain module.

### Attributes

The following attributes are available on this element: `display attributes` (194), `universal attributes` (189), and `@xml:space` (206).

### Example

In the following code sample, the `<screen>` element is used to provide a representation of a DOS window:

```xml
<screen>
  File  Edit  Search  View  Options  Help
  +--------------------------------- UNTITLED1 ----------------------------------+
  |                                                                              |
  |                                                                              |
  |                                                                              |
  |                                                                              |
  |  Line:1    Col:1  F1=Help                                                    |
  +------------------------------------------------------------------------------+
</screen>
```

3.3.12.3 `<shortcut>`

The `<shortcut>` element identifies a keyboard shortcut for a menu or window action.

### Rendering expectations

The contents of the `<shortcut>` element is typically underlined.

### Specialization hierarchy

The `<shortcut>` element is specialized from `<keyword>`. It is defined in the user-interface domain module.

### Attributes

The following attributes are available on this element: `universal attributes` (189) and `@keyref` (200).

### Example

In the following code sample, the `<shortcut>` element identifies the keyboard shortcut for the "Start Programs" menu action:

```xml
<menucascade>
  <uicontrol>Start</uicontrol>
  <uicontrol><shortcut>P</shortcut>rograms</uicontrol>
</menucascade>
```
3.3.12.4 <uicontrol>
The <uicontrol> element identifies user interface controls, such as names of buttons, fields, menu items, and other objects that enable users to control an interface.

Usage information
The <uicontrol> element is also used inside a <menucascade> element to identify a sequence of menu choices in a nested menu, such as File > New.

Specialization hierarchy
The <uicontrol> element is specialized from <ph>. It is defined in the user-interface domain module.

Attributes
The following attributes are available on this element: universal attributes (189) and @keyref (200).

Example
The following code sample shows how the <uicontrol> element can be used to identify a button that a user is directed to press:

```xml
<p>Press <uicontrol>OK</uicontrol> to continue.</p>
```

3.3.12.5 <wintitle>
The <wintitle> element identifies named windows and dialogs.

Specialization hierarchy
The <wintitle> element is specialized from <keyword>. It is defined in the user-interface domain module.

Attributes
The following attributes are available on this element: universal attributes (189) and @keyref (200).

Example
The following code sample shows how the <wintitle> element can be used to tag the name of the "Configuration Options" window:

```xml
<step>
  <cmd>Click <uicontrol>Configure</uicontrol>.</cmd>
  <stepresult>The <wintitle>Configuration Options</wintitle> window opens with your last set of selections highlighted.</stepresult>
</step>
```

3.3.13 XML mention domain
The XML-mention domain elements are used to describe and document XML document types and applications. They also can enable typographic styling, search and retrieval, and automatic indexing for XML constructs.

Note Although the original XML 1.0 Recommendation reserved element names beginning with "xml" or "XML" for the use of the XML standard itself, the subsequent introduction of
namespaces made the restriction unnecessary. The restriction was formally removed in the XML 1.0 Fifth Edition Specification Errata. The OASIS DITA Technical Committee acknowledges this revised policy in its use of the prefix "xml" for the XML mention domain.

3.3.13.1 <numcharref>
A numeric character reference is a common markup construction that is used in markup languages such as HTML, SGML, and XML. It consists of a short sequence of characters that represents a single character.

**Usage information**
The content of the `<numcharref>` element should be the numeric value without any leading or trailing characters, for example, "10" or "x0a".

**Rendering expectations**
The contents of the `<numcharref>` element is typically rendered with a leading ampersand (&) and a trailing semi-colon (;).

**Specialization hierarchy**
The `<numcharref>` element is specialized from `<markupname>`, the `<numcharref>` element is defined in the XML-mention domain module. The `<markupname>` element is specialized from `<keyword>`, and the `<markupname>` element is defined in the markup-name domain module.

**Attributes**
The following attributes are available on this element: universal attributes (189) and @keyref (200).

**Example**
The following code sample shows how a `<numcharref>` element can be used to tag the numeric character reference for the a-acute Unicode character:

<pre class="example"><p>Numeric character references represent characters from the Universal Character Set (UCS) of Unicode. They are used to reference characters that cannot easily be directly encoded in a document, such as a copyright symbol. When a markup-aware processor encounters a numeric character reference, for example, `<numcharref>225</numcharref>`, it renders the reference as the Unicode character that it represents: lower-case a with acute.</p></pre>

3.3.13.2 <parameterentity>
A parameter entity is a syntactic construction that names a collection of elements, attributes, and attribute values. This enables reuse of the collection in grammar files.

**Usage information**
The content of the `<parameterentity>` element should be the entity name without a leading percentage sign or trailing semi-colon, for example, "keyword.content".

**Rendering expectations**
The contents of the `<parameterentity>` element is typically rendered with a leading percentage sign (%) and a trailing semi-colon (;).
Specialization hierarchy

The `<parameterentity>` element is specialized from `<markupname>`; the `<parameterentity>` element is defined in the XML-mention domain module. The `<markupname>` element is specialized from `<keyword>`, and the `<markupname>` element is defined in the markup-name domain module.

Attributes

The following attributes are available on this element: universal attributes (189) and `@keyref` (200).

Examples

The following code sample shows how the `<parameterentity>` element can be used to tag the name of the `%xml-d-dec; parameter entity:

```<p>...To include the XML-mention domain in a DTD document-type shell, declare and reference the `<parameterentity>xml-d-dec</parameterentity>` parameter entity.</p>```

3.3.13.3 `<textentity>`

A text entity is an XML construction that resolves to another value when the document is parsed.

Usage information

The content of the `<textentity>` element should be the entity name without the ampersand and semi-colon delimiters, for example, "hi-d-att".

Rendering expectations

The contents of the `<textentity>` element is typically rendered with a leading ampersand (&) and a trailing semi-colon (;).

Specialization hierarchy

The `<textentity>` element is specialized from `<markupname>`; the `<textentity>` element is defined in the XML-mention domain module. The `<markupname>` element is specialized from `<keyword>`, and the `<markupname>` element is defined in the markup-name domain module.

Attributes

The following attributes are available on this element: universal attributes (189) and `@keyref` (200).

Example

The following code sample shows how the `<textentity>` element is used to tag the token that the `@deliveryTarget attribute domain contributes to the @specializations attribute:

```<p>...The `<textentity>deliveryTargetAtt-d-att</textentity>` entity holds the contribution for the `<xmlatt>specializations</xmlatt> attribute.</p>```
3.3.13.4 `<xmlatt>`
An XML attribute is a name and value pair that is associated with an XML element. It defines properties of
the XML element.

Usage information
The content of the `<xmlatt>` element should be the attribute name without the at symbol (@), for example,
`processing-role`.

Rendering expectations
The contents of the `<xmlatt>` element is typically rendered with a preceding at symbol (@).

Specialization hierarchy
The `<xmlatt>` element is specialized from `<markupname>`; the `<xmlatt>` element is defined in the
XML-mention domain module. The `<markupname>` element is specialized from `<keyword>`, and the
`<markupname>` element is defined in the markup-name domain module.

Attributes
The following attributes are available on this element: universal attributes (189) and `@keyref` (200).

Example
The following code sample shows how the `<xmlatt>` element can be used to tag mentions of the
`@collection-type` and `@linking` attributes:

```xml
<p>The `<xmlatt>collection-type</xmlatt>` and `<xmlatt>linking</xmlatt>` attributes affect how related links are generated for topics that are referenced in the DITA map.</p>
```

3.3.13.5 `<xmlelement>`
An XML element is the basic building block of an XML document. It can contain text, other elements,
processing instructions, and more.

Usage information
The content of the `<xmlelement>` element should be the element type name without leading or trailing
angle brackets.

Rendering expectations
The contents of the `<xmlelement>` element is typically rendered with leading (<) and trailing (>) angle
brackets.

Specialization hierarchy
The `<xmlelement>` element is specialized from `<markupname>`; the `<xmlelement>` element is
defined in the XML-mention domain module. The `<markupname>` element is specialized from
`<keyword>`, and the `<markupname>` element is defined in the markup-name domain module.
Attributes
The following attributes are available on this element: universal attributes (189) and @keyref (200).

Example
The following code sample shows how the <xmlelement> element can be used to tag the <uicontrol> element from the user-interface domain.

```xml
<p>Use the <xmlelement>uicontrol</xmlelement> element to indicate the names of buttons, entry fields, menu items, or other objects that enable a user to interact with a graphical user interface.</p>
```

3.3.13.6 <xmlnsname>
The <xmlnsname> element identifies mentions of namespace names.

Specialization hierarchy
The <xmlnsname> element is specialized from <markupname>; the <xmlnsname> element is defined in the XML-mention domain module. The <markupname> element is specialized from <keyword>, and the <markupname> element is defined in the markup-name domain module.

Attributes
The following attributes are available on this element: universal attributes (189) and @keyref (200).

Example
The following code sample shows how an <xmlnsname> element can be used to tag the namespace for SVG:

```xml
<p>SVG markup is specified in an <xmlelement>svg</xmlelement> element with the namespace <xmlnamespace>http://www.w3.org/2000/svg</xmlnamespace>.</p>
```

3.3.13.7 <xmlpi>
The <xmlpi> element identifies mentions of processing instruction names.

Specialization hierarchy
The <xmlpi> element is specialized from <markupname>; the <xmlpi> element is defined in the XML-mention domain module. The <markupname> element is specialized from <keyword>, and the <markupname> element is defined in the markup-name domain module.

Attributes
The following attributes are available on this element: universal attributes (189) and @keyref (200).
Example

The following code sample shows how an `<xmlpi>` element can be used to tag the name of a processing instruction:

```xml
<xmlpi>dbhtmlbgcolor</xmlpi>
```

While DITA does not define any processing instructions, applications might use some DocBook processing instructions, such as `<xmlpi>dbhtmlbgcolor</xmlpi>`.

3.3.14 xNAL domain

The xNAL domain elements represent a subset of the Extensible Name and Address Standard. It is used to encode information about the author or authors of DITA information. The domain can be included in any DITA document type shell that requires additional metadata for names and addresses, although the implementations provided by OASIS only include it in the bookmap document type.

Comment by robander on 24 may 2021

General question about elements in this section:

- Should many of the examples just be referring to the example in `<authorinformation>`, rather than repeating? If yes - need to make the update; if no - need to add prose around the samples, and bold the relevant elements.
- Short descriptions often refer to “the person” or “the author” or “the organization” but that rarely makes sense in the context of a single element definition. Should it be a person / an author / etc? See 3.3.14.9 `firstname` (157) for specific example

Disposition: Unassigned

3.3.14.1 `<authorinformation>`

The `<authorinformation>` element specifies detailed information about an author or authoring organization.

Specialization hierarchy

The `<authorinformation>` element is specialized from `<author>`. It is defined in the XNAL domain module.

Attributes

The following attributes are available on this element: link-relationship attributes (194), universal attributes (189), and `@keyref` (200).

Example

The following code sample shows how the `<authorinformation>` element can be used to provide detailed information about an author:

```xml
<bookmeta>
  <authorinformation>
    <personinfo>
      <namedetails><personname>
        <firstname>Derek</firstname><middlename>L.</middlename><lastname>Singleton</lastname><generationidentifier>Jr.</generationidentifier><otherinfo>noted psychologist</otherinfo>
      </namedetails>
      <addressdetails>
        ...
      </addressdetails>
    </personinfo>
  </authorinformation>
</bookmeta>
```
3.3.14.2 <addressdetails>
The <addressdetails> element specifies information about the address of an author or authoring group.

Specialization hierarchy
The <addressdetails> element is specialized from <ph>. It is defined in the XNAL domain module.

Attributes
The following attributes are available on this element: universal attributes (189) and @keyref (200).

Example
Comment by robander on 24 May 2021
Can this and most of the XNAL examples just be a link to authorinformation?
Disposition: Unassigned

The following code sample shows how the <addressdetails> element can be used to provide detailed information about the address of an author:

```xml
<bookmeta>
  <authorinformation>
    <personinfo>
      <namedetails><personname>
        <firstname>Derek</firstname>
        <middlename>L.</middlename>
        <lastname>Singleton</lastname>
        <generationidentifier>Jr.</generationidentifier>
        <otherinfo>noted psychologist</otherinfo>
      </personname></namedetails>
      <addressdetails>
        <thoroughfare>123 Yellow Brick Road</thoroughfare>
        <locality>Emerald City</locality>
        <administrativearea>Kansas</administrativearea>
        <country>USA</country>
      </addressdetails>
      <contactnumbers><contactnumber>123-555-4678</contactnumber></contactnumbers>
      <emailaddresses><emailaddress>wizard@example.org</emailaddress></emailaddresses>
    </personinfo>
  </authorinformation>
</bookmeta>
```
3.3.14.3 <administrativearea>
The <administrativearea> element specifies information about a county, state, or province.

Specialization hierarchy
The <administrativearea> element is specialized from <ph>. It is defined in the XNAL domain module.

Attributes
The following attributes are available on this element: universal attributes (189) and @keyref (200).

The following code sample shows how the <administrativearea> element can be used to provide detailed information about a county, state, or province:

Example

```
<bookmeta>
  <authorinformation>
    <personinfo>
      <namedetails>
        <personname>
          <firstname>Derek</firstname>
          <middlename>L.</middlename>
          <lastname>Singleton</lastname>
          <generationidentifier>Jr.</generationidentifier>
          <otherinfo>noted psychologist</otherinfo>
        </personname>
      </namedetails>
      <addressdetails>
        <thoroughfare>123 Yellow Brick Road</thoroughfare>
        <locality>Emerald City</locality>
        <administrativearea>Kansas</administrativearea>
        <country>USA</country>
      </addressdetails>
      <contactnumbers>
        <contactnumber>123-555-4678</contactnumber>
      </contactnumbers>
      <emailaddresses>
        <emailaddress>wizard@example.org</emailaddress>
      </emailaddresses>
    </personinfo>
  </authorinformation>
</bookmeta>
```

3.3.14.4 <contactnumber>
The <contactnumber> element specifies a contact number for an author or authoring organization, such as a telephone number.

Specialization hierarchy
The <contactnumber> element is specialized from <data>. It is defined in the XNAL domain module.

Attributes
The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

Example
The following code sample shows how the <contactnumber> element can be used to provide a contact number for an author or authoring organization, such as a telephone number:

```
<bookmeta>
  <authorinformation>
```

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3.3.14.5 <contactnumbers>

The <contactnumbers> element provides a list of contact numbers.

Specialization hierarchy

The <contactnumbers> element is specialized from <data>. It is defined in the XNAL domain module.

Attributes

The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

Example

The following code sample shows how the <contactnumbers> element can be used to provide a list of contact numbers:

```xml
<bookmeta>
  <authorinformation>
    <personinfo>
      <namedetails><personname>
        <firstname>Derek</firstname>
        <middlename>L.</middlename>
        <lastname>Singleton</lastname>
        <generationidentifier>Jr.</generationidentifier>
        <otherinfo>noted psychologist</otherinfo>
      </personname></namedetails>
      <addressdetails>
        <thoroughfare>123 Yellow Brick Road</thoroughfare>
        <locality>Emerald City</locality>
        <administrativearea>Kansas</administrativearea>
        <country>USA</country>
      </addressdetails>
      <contactnumbers><contactnumber>123-555-4678</contactnumber></contactnumbers>
      <emailaddresses><emailaddress>wizard@example.org</emailaddress></emailaddresses>
    </personinfo>
  </authorinformation>
</bookmeta>
```
3.3.14.6 <country>

The <country> element specifies the name of a country.

Specialization hierarchy

The <country> element is specialized from <ph>. It is defined in the XNAL domain module.

Attributes

The following attributes are available on this element: universal attributes (189) and @keyref (200).

Example

The following code sample shows how the <country> element can be used to specify the name of a country:

```xml
<bookmeta>
  <authorinformation>
    <personinfo>
      <namedetails><personname>
        <firstname>Derek</firstname>
        <middlename>L.</middlename>
        <lastname>Singleton</lastname>
        <generationidentifier>Jr.</generationidentifier>
        <otherinfo>noted psychologist</otherinfo>
      </personname></namedetails>
      <addressdetails>
        <thoroughfare>123 Yellow Brick Road</thoroughfare>
        <locality>Emerald City</locality>
        <administrativearea>Kansas</administrativearea>
        <country>USA</country>
      </addressdetails>
      <contactnumbers><contactnumber>123-555-4678</contactnumber></contactnumbers>
      <emailaddresses><emailaddress>wizard@example.org</emailaddress></emailaddresses>
    </personinfo>
  </authorinformation>
</bookmeta>
```

3.3.14.7 <emailaddress>

The <emailaddress> element specifies an e-mail address for an author or authoring organization.

Specialization hierarchy

The <emailaddress> element is specialized from <data>. It is defined in the XNAL domain module.

Attributes

The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

Example

The following code sample shows how the <emailaddress> element can be used to provide an email address for an author or authoring organization:

```xml
<bookmeta>
  <authorinformation>
    <personinfo>
      <namedetails><personname>
        <firstname>Derek</firstname>
      </personname></namedetails>
    </personinfo>
  </authorinformation>
</bookmeta>
```
3.3.14.8 <emailaddresses>
The <emailaddresses> element provides one or more e-mail addresses for an author or authoring organization.

Specialization hierarchy
The <emailaddresses> element is specialized from <data>. It is defined in the XNAL domain module.

Attributes
The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

Example
The following code sample shows how the <emailaddresses> element can be used to provide one or more e-mail addresses for an author or authoring organization:

```xml
<bookmeta>
  <authorinformation>
    <personinfo>
      <namedetails>
        <personname>
          <firstname>Derek</firstname>
          <middlename>L.</middlename>
          <lastname>Singleton</lastname>
          <generationidentifier>Jr.</generationidentifier>
          <otherinfo>noted psychologist</otherinfo>
        </personname>
      </namedetails>
      <addressdetails>
        <thoroughfare>123 Yellow Brick Road</thoroughfare>
        <locality>Emerald City</locality>
        <administrativearea>Kansas</administrativearea>
        <country>USA</country>
      </addressdetails>
      <contactnumbers><contactnumber>123-555-4678</contactnumber></contactnumbers>
      <emailaddresses><emailaddress>wizard@example.org</emailaddress></emailaddresses>
    </personinfo>
  </authorinformation>
</bookmeta>
```

3.3.14.9 <firstname>
The <firstname> element specifies the first name of an author.
Specialization hierarchy

The `<firstname>` element is specialized from `<data>`. It is defined in the XNAL domain module.

Attributes

The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

Example

The following code sample shows how the `<firstname>` element can be used to specify the first name of an author:

```xml
<bookmeta>
  <authorinformation>
    <personinfo>
      <namedetails><personname>
        <firstname>Derek</firstname>
        <middlename>L.</middlename>
        <lastname>Singleton</lastname>
        <generationidentifier>Jr.</generationidentifier>
      </personname></namedetails>
      <addressdetails>
        <thoroughfare>123 Yellow Brick Road</thoroughfare>
        <locality>Emerald City</locality>
        <administrativearea>Kansas</administrativearea>
        <country>USA</country>
      </addressdetails>
      <contactnumbers><contactnumber>123-555-4678</contactnumber></contactnumbers>
      <emailaddresses><emailaddress>wizard@example.org</emailaddress></emailaddresses>
    </personinfo>
  </authorinformation>
</bookmeta>
```

3.3.14.10 `<generationidentifier>`

The `<generationidentifier>` element specifies information about the generation of an author's name, for example Jr, III, or VIII.

Specialization hierarchy

The `<generationidentifier>` element is specialized from `<data>`. It is defined in the XNAL domain module.

Attributes

The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).
Example
The following code sample shows how the `<generationidentifier>` element can be used to provide information about the generation of an author’s name:

```xml
<bookmeta>
  <authorinformation>
    <personinfo>
      <namedetails><personname>
        <firstname>Derek</firstname>
        <middlename>L.</middlename>
        <lastname>Singleton</lastname>
        <generationidentifier>Jr.</generationidentifier>
        <otherinfo>noted psychologist</otherinfo>
      </personname>
      <addressdetails>
        <thoroughfare>123 Yellow Brick Road</thoroughfare>
        <locality>Emerald City</locality>
        <administrativearea>Kansas</administrativearea>
        <country>USA</country>
      </addressdetails>
      <contactnumbers><contactnumber>123-555-4678</contactnumber></contactnumbers>
      <emailaddresses><emailaddress>wizard@example.org</emailaddress></emailaddresses>
    </namedetails>
  </personinfo>
</authorinformation>
</bookmeta>
```

3.3.14.11 `<honorific>`
The `<honorific>` element specifies an author’s title, such as Dr., Mr., or Ms..

Specialization hierarchy
The `<honorific>` element is specialized from `<data>`. It is defined in the XNAL domain module.

Attributes
The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

Example
The following code sample shows how the `<honorific>` element can be used to specify a title for an author:

```xml
<bookmeta>
  <authorinformation>
    <personinfo>
      <namedetails><personname>
        <honorific>Dr.</honorific>
        <firstname>Derek</firstname>
        <middlename>L.</middlename>
        <lastname>Singleton</lastname>
        <generationidentifier>Jr.</generationidentifier>
        <otherinfo>noted psychologist</otherinfo>
      </personname>
      <addressdetails>
        <thoroughfare>123 Yellow Brick Road</thoroughfare>
        <locality>Emerald City</locality>
        <administrativearea>Kansas</administrativearea>
        <country>USA</country>
      </addressdetails>
      <contactnumbers><contactnumber>123-555-4678</contactnumber></contactnumbers>
      <emailaddresses><emailaddress>wizard@example.org</emailaddress></emailaddresses>
    </namedetails>
  </personinfo>
</authorinformation>
</bookmeta>
```
3.3.14.12 <lastname>
The <lastname> element specifies the last name of an author.

Specialization hierarchy
The <lastname> element is specialized from <data>. It is defined in the XNAL domain module.

Attributes
The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

Example
The following code sample shows how the <lastname> element can be used to specify the last name of an author:

```xml
<bookmeta>
  <authorinformation>
    <personinfo>
      <namedetails>
        <personname>
          <firstname>Derek</firstname>
          <middlename>L.</middlename>
          <lastname>Singleton</lastname>
          <generationidentifier>Jr.</generationidentifier>
          <otherinfo>noted psychologist</otherinfo>
        </personname>
      </namedetails>
      <addressdetails>
        <thoroughfare>123 Yellow Brick Road</thoroughfare>
        <locality>Emerald City</locality>
        <administrativearea>Kansas</administrativearea>
        <country>USA</country>
      </addressdetails>
      <contactnumbers>
        <contactnumber>123-555-4678</contactnumber>
      </contactnumbers>
      <emailaddresses>
        <emailaddress>wizard@example.org</emailaddress>
      </emailaddresses>
    </personinfo>
  </authorinformation>
</bookmeta>
```

3.3.14.13 <locality>
The <locality> element specifies information about a city, postal code, or ZIP code.

Specialization hierarchy
The <locality> element is specialized from <ph>. It is defined in the XNAL domain module.

Attributes
The following attributes are available on this element: universal attributes (189) and @keyref (200).
Example
The following code sample shows how the `<locality>` element can be used to provide detailed information about a city, postal code, or ZIP code:

```xml
<bookmeta>
  <authorinformation>
    <personinfo>
      <namedetails><personname>
        <firstname>Derek</firstname>
        <middlename>L.</middlename>
        <lastname>Singleton</lastname>
        <generationidentifier>Jr.</generationidentifier>
        <otherinfo>noted psychologist</otherinfo>
      </personname>
      <addressdetails>
        <thoroughfare>123 Yellow Brick Road</thoroughfare>
        <locality>Emerald City</locality>
        <administrativearea>Kansas</administrativearea>
        <country>USA</country>
      </addressdetails>
    </personinfo>
  </authorinformation>
</bookmeta>
```

3.3.14.14 `<localityname>`
The `<localityname>` element specifies the name of a locality or city.

Specialization hierarchy
The `<localityname>` element is specialized from `<ph>`. It is defined in the XNAL domain module.

Attributes
The following attributes are available on this element: universal attributes (189) and `<keyref>` (200).

Example
The following code sample shows how the `<localityname>` element can be used to provide information about the name of a locality or city:

```xml
<bookmeta>
  <authorinformation>
    <personinfo>
      <namedetails><personname>
        <firstname>Derek</firstname>
        <middlename>L.</middlename>
        <lastname>Singleton</lastname>
        <generationidentifier>Jr.</generationidentifier>
        <otherinfo>noted psychologist</otherinfo>
      </personname>
      <addressdetails>
        <thoroughfare>123 Yellow Brick Road</thoroughfare>
        <locality>Emerald City</locality>
        <postalcode>66780</postalcode>
      </addressdetails>
    </personinfo>
  </authorinformation>
</bookmeta>
```
3.3.14.15 <middlename>
The <middlename> element specifies information about the middle name or middle initial of an author.

Specialization hierarchy
The <middlename> element is specialized from <data>. It is defined in the XNAL domain module.

Attributes
The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

Example
The following code sample shows how the <middlename> element can be used to specify the middle name or middle initial of an author:

```
<bookmeta>
  <authorinformation>
    <personinfo>
      <namedetails><personname>
        <firstname>Derek</firstname><middlename>L.</middlename><lastname>Singleton</lastname><generationidentifier>Jr.</generationidentifier><otherinfo>noted psychologist</otherinfo>
      </personname></namedetails>
    <addressdetails>
      <thoroughfare>123 Yellow Brick Road</thoroughfare><locality>Emerald City</locality><administrativearea>Kansas</administrativearea><country>USA</country>
    </addressdetails>
    <contactnumbers><contactnumber>123-555-4678</contactnumber></contactnumbers>
    <emailaddresses><emailaddress>wizard@example.org</emailaddress></emailaddresses>
  </personinfo>
</authorinformation>
</bookmeta>
```

3.3.14.16 <namedetails>
The <namedetails> element specifies detailed information about the name of an author or authoring organization.

Specialization hierarchy
The <namedetails> element is specialized from <data>. It is defined in the XNAL domain module.

Attributes
The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).
Example
The following code sample shows how the `<namedetails>` element can be used to specify detailed information about the name of an author or authoring organization:

```xml
<bookmeta>
  <authorinformation>
    <personinfo>
      <namedetails>
        <personname>
          <firstname>Derek</firstname>
          <middlename>L.</middlename>
          <lastname>Singleton</lastname>
          <generationidentifier>Jr.</generationidentifier>
          <otherinfo>noted psychologist</otherinfo>
        </personname>
      </namedetails>
      <addressdetails>
        <thoroughfare>123 Yellow Brick Road</thoroughfare>
        <locality>Emerald City</locality>
        <administrativearea>Kansas</administrativearea>
        <country>USA</country>
      </addressdetails>
      <contactnumbers><contactnumber>123-555-4678</contactnumber></contactnumbers>
      <emailaddresses><emailaddress>wizard@example.org</emailaddress></emailaddresses>
    </personinfo>
  </authorinformation>
</bookmeta>
```

3.3.14.17 `<organizationinfo>`
The `<organizationinfo>` element specifies detailed information about an authoring organization.

Specialization hierarchy
The `<organizationinfo>` element is specialized from `<data>`. It is defined in the XNAL domain module.

Attributes
The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

Example
The following code sample shows how the `<organizationinfo>` element can be used to provide detailed information about an authoring organization:

```xml
<bookmeta>
  <authorinformation>
    <organizationinfo>
      <organizationnamedetails>
        <organizationname>WizardWorks, Inc.</organizationname>
        <otherinfo>'Best wizard in Oz'</otherinfo>
      </organizationnamedetails>
      <addressdetails>
        <thoroughfare>123 Yellow Brick Road</thoroughfare>
        <locality>Emerald City</locality>
        <administrativearea>Kansas</administrativearea>
        <country>USA</country>
      </addressdetails>
      <contactnumbers><contactnumber>123-555-4678</contactnumber></contactnumbers>
      <emailaddresses><emailaddress>wizard@example.org</emailaddress></emailaddresses>
      <urls><url>www.wizardworks.example.org</url></urls>
    </organizationinfo>
  </authorinformation>
</bookmeta>
```
3.3.14.18 <organizationname>

The <organizationname> element specifies information about the name of an authoring organization.

Specialization hierarchy

The <organizationname> element is specialized from <ph>. It is defined in the XNAL domain module.

Attributes

The following attributes are available on this element: universal attributes (189) and @keyref (200).

Example

The following code sample shows how the <organizationname> element can be used to provide detailed information about the authoring organization:

```xml
<bookmeta>
  <authorinformation>
    <organizationinfo>
      <namedetails>
        <organizationnamedetails>
          <organizationname>WizardWorks, Inc.</organizationname>
          <otherinfo>'Best wizard in Oz'</otherinfo>
        </organizationnamedetails>
      </namedetails>
      <addressdetails>
        <thoroughfare>123 Yellow Brick Road</thoroughfare>
        <locality>Emerald City</locality>
        <administrativearea>Kansas</administrativearea>
        <country>USA</country>
      </addressdetails>
      <contactnumbers><contactnumber>123-555-4678</contactnumber></contactnumbers>
      <emailaddresses><emailaddress>wizard@example.org</emailaddress></emailaddresses>
      <urls><url>www.wizardworks.example.org</url></urls>
    </organizationinfo>
  </authorinformation>
</bookmeta>
```

3.3.14.19 <organizationnamedetails>

The <organizationnamedetails> element specifies detailed information about the name of an authoring organization.

Specialization hierarchy

The <organizationnamedetails> element is specialized from <ph>. It is defined in the XNAL domain module.

Attributes

The following attributes are available on this element: universal attributes (189) and @keyref (200).
Example

The following code sample shows how the `<organizationnamedetails>` element can be used to provide detailed information about the name of an authoring organization:

```xml
<bookmeta>
  <authorinformation>
    <organizationinfo>
      <namedetails>
        <organizationnamedetails>
          <organizationname>WizardWorks, Inc.</organizationname>
          <otherinfo>'Best wizard in Oz'</otherinfo>
        </organizationnamedetails>
      </namedetails>
      <addressdetails>
        <thoroughfare>123 Yellow Brick Road</thoroughfare>
        <administrativearea>Kansas</administrativearea>
        <country>USA</country>
      </addressdetails>
      <contactnumbers><contactnumber>123-555-4678</contactnumber></contactnumbers>
      <emailaddresses><emailaddress>wizard@example.org</emailaddress></emailaddresses>
      <urls><url>www.wizardworks.example.org</url></urls>
    </organizationinfo>
  </authorinformation>
</bookmeta>
```

3.3.14.20 <otherinfo>

The `<otherinfo>` element specifies additional detailed information about the name of an author or authoring organization.

Specialization hierarchy

The `<otherinfo>` element is specialized from `<data>`. It is defined in the XNAL domain module.

Attributes

The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

Example

The following code sample shows how the `<otherinfo>` element can be used to provide detailed information about the name of an author (<`personinfo`>) or the name of an authoring organization (<`organizationinfo`>):

```xml
<bookmeta>
  <authorinformation>
    <personinfo>
      <namedetails>
        <personname>
          <firstname>Derek</firstname>
          <middlename>L.</middlename>
          <lastname>Singleton</lastname>
          <generationidentifier>Jr.</generationidentifier>
          <otherinfo>noted psychologist</otherinfo>
        </personname>
      </namedetails>
      <addressdetails>
        <thoroughfare>123 Yellow Brick Road</thoroughfare>
        <administrativearea>Kansas</administrativearea>
        <country>USA</country>
      </addressdetails>
      <contactnumbers><contactnumber>123-555-4678</contactnumber></contactnumbers>
      <emailaddresses><emailaddress>wizard@example.org</emailaddress></emailaddresses>
    </personinfo>
  </authorinformation>
</bookmeta>
```
3.3.14.21 <personinfo>
The <personinfo> element specifies detailed information about an author, including name, address, and contact information.

Specialization hierarchy
The <personinfo> element is specialized from <data>. It is defined in the XNAL domain module.

Attributes
The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

Example
The following code sample shows how the <personinfo> element can be used to provide detailed information about an author:

```xml
<bookmeta>
  <authorinformation>
    <personinfo>
      <namedetails><personname>
        <firstname>Derek</firstname>
        <middlename>L.</middlename>
        <lastname>Singleton</lastname>
        <generationidentifier>Jr.</generationidentifier>
        <otherinfo>noted psychologist</otherinfo>
      </personname></namedetails>
      <addressdetails>
        <thoroughfare>123 Yellow Brick Road</thoroughfare>
        <locality>Emerald City</locality>
        <administrativearea>Kansas</administrativearea>
        <country>USA</country>
      </addressdetails>
      <contactnumbers><contactnumber>123-555-4678</contactnumber></contactnumbers>
      <emailaddresses><emailaddress>wizard@example.org</emailaddress></emailaddresses>
      <urls><url>www.wizardworks.example.org</url></urls>
    </personinfo>
  </authorinformation>
</bookmeta>
```
3.3.14.22 <personname>
The <personname> element specifies detailed information about the name of an author.

Specialization hierarchy
The <personname> element is specialized from <data>. It is defined in the XNAL domain module.

Attributes
The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

Example
The following code sample shows how the <personname> element can be used to provide detailed information about the name of an author:

```xml
<bookmeta>
  <authorinformation>
    <personinfo>
      <namedetails>
        <personname>
          <firstname>Derek</firstname>
          <middlename>L.</middlename>
          <lastname>Singleton</lastname>
          <generationidentifier>Jr.</generationidentifier>
          <otherinfo>noted psychologist</otherinfo>
        </personname>
      </namedetails>
    </personinfo>
    <addressdetails>
      <thoroughfare>123 Yellow Brick Road</thoroughfare>
      <locality>Emerald City</locality>
      <administrativearea>Kansas</administrativearea>
      <country>USA</country>
    </addressdetails>
    <contactnumbers><contactnumber>123-555-4678</contactnumber></contactnumbers>
    <emailaddresses><emailaddress>wizard@example.org</emailaddress></emailaddresses>
  </authorinformation>
</bookmeta>
```

3.3.14.23 <postalcode>
The <postalcode> element specifies information about a postal code or ZIP code for an author or authoring organization.

Specialization hierarchy
The <postalcode> element is specialized from <ph>. It is defined in the XNAL domain module.

Attributes
The following attributes are available on this element: universal attributes (189) and @keyref (200).

Example
The following code sample shows how the <postalcode> element can be used to provide information about a postal code or ZIP code for an author or authoring organization:

```xml
<bookmeta>
  <authorinformation>
    <personinfo>
      <namedetails>
        <postalcode>123-555-4678</postalcode>
      </namedetails>
    </personinfo>
  </authorinformation>
</bookmeta>
```
3.3.14.24 <thoroughfare>

The <thoroughfare> element specifies for an author or authoring organization information about the thoroughfare, for example the street, avenue, or boulevard on which an address is located.

Specialization hierarchy

The <thoroughfare> element is specialized from <ph>. It is defined in the XNAL domain module.

Attributes

The following attributes are available on this element: universal attributes (189) and @keyref (200).

Example

The following code sample shows how the <thoroughfare> element can be used to provide detailed information about a thoroughfare, for example the street, avenue, or boulevard on which an address is located:

```xml
<bookmeta>
  <authorinformation>
    <personinfo>
      <namedetails><personname>
        <firstname>Derek</firstname>
      </personname></namedetails>
      <addressdetails>
        <thoroughfare>123 Yellow Brick Road</thoroughfare>
        <locality>
          <localityname>Emerald City</localityname>
        </locality>
        <postalcode>66780</postalcode>
      </addressdetails>
      <contactnumbers><contactnumber>123-555-4678</contactnumber></contactnumbers>
      <emailaddresses><emailaddress>wizard@example.org</emailaddress></emailaddresses>
    </personinfo>
    <organizationinfo>
      <namedetails>
        <organizationnamedetails>
          <organizationname>WizardWorks, Inc.</organizationname>
          <otherinfo>'Best wizard in Oz'</otherinfo>
        </organizationnamedetails>
        <addressdetails>
          <thoroughfare>123 Yellow Brick Road</thoroughfare>
          <locality>
            <localityname>Emerald City</localityname>
          </locality>
          <postalcode>66780</postalcode>
        </addressdetails>
        <contactnumbers><contactnumber>123-555-4678</contactnumber></contactnumbers>
        <emailaddresses><emailaddress>wizard@example.org</emailaddress></emailaddresses>
      </organizationinfo>
    </authorinformation>
  </bookmeta>
```
3.3.14.25 <url>
The <url> element specifies a Uniform Resource Locator (URL) for an authoring organization.

Specialization hierarchy
The <url> element is specialized from <data>. It is defined in the XNAL domain module.

Attributes
The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

Example
The following code sample shows how the <url> element can be used to specify a Uniform Resource Locator (URL) for an authoring organization:

```xml
<authorinformation>
    <personinfo>
        <namedetails>
            <personname>
                <firstname>Derek</firstname>
                <middlename>L.</middlename>
                <lastname>Singleton</lastname>
                <generationidentifier>Jr.</generationidentifier>
                <otherinfo>noted psychologist</otherinfo>
            </personname>
        </namedetails>
        <addressdetails>
            <thoroughfare>123 Yellow Brick Road</thoroughfare>
            <localityname>Emerald City</localityname>
            <postalcode>66780</postalcode>
            <administrativearea>Kansas</administrativearea>
            <country>USA</country>
        </addressdetails>
        <contactnumbers>
            <contactnumber>123-555-4678</contactnumber>
        </contactnumbers>
        <emailaddresses>
            <emailaddress>wizard@example.org</emailaddress>
        </emailaddresses>
    </personinfo>
    <organizationinfo>
        <namedetails>
            <organizationname>WizardWorks, Inc.</organizationname>
            <otherinfo>noted psychologist</otherinfo>
        </namedetails>
        <addressdetails>
            <thoroughfare>123 Yellow Brick Road</thoroughfare>
            <localityname>Emerald City</localityname>
            <postalcode>66780</postalcode>
            <administrativearea>Kansas</administrativearea>
            <country>USA</country>
        </addressdetails>
        <contactnumbers>
            <contactnumber>123-555-4678</contactnumber>
        </contactnumbers>
        <emailaddresses>
            <emailaddress>wizard@example.org</emailaddress>
        </emailaddresses>
        <urls>
            <url>www.wizardworks.example.org</url>
        </urls>
    </organizationinfo>
</authorinformation>
</authorinformation>
```
3.3.14.26 <urls>
The <urls> element specifies one or more Uniform Resource Locators (URLs) for an authoring organization.

Specialization hierarchy
The <urls> element is specialized from <data>. It is defined in the XNAL domain module.

Attributes
The following attributes are available on this element: data-element attributes (194), link-relationship attributes (194), and universal attributes (189).

Example
The following code sample shows how the <urls> element can be used to list one or more Uniform Resource Locators (URLs) for an authoring organization:

```xml
<bookmeta>
  <authorinformation>
    <personinfo>
      <namedetails><personname>
        <firstname>Derek</firstname>
        <middlename>L.</middlename>
        <lastname>Singleton</lastname>
        <generationidentifier>Jr.</generationidentifier>
        <otherinfo>noted psychologist</otherinfo>
      </personname></namedetails>
      <addressdetails>
        <thoroughfare>123 Yellow Brick Road</thoroughfare>
        <locality><localityname>Emerald City</localityname>
          <postalcode>66780</postalcode>
        </locality>
        <administrativearea>Kansas</administrativearea>
        <country>USA</country>
      </addressdetails>
      <contactnumbers><contactnumber>123-555-4678</contactnumber></contactnumbers>
      <emailaddresses><emailaddress>wizard@example.org</emailaddress></emailaddresses>
      <organizationinfo>
        <namedetails>
          <organizationnamedetails>
            <organizationname>WizardWorks, Inc.</organizationname>
            <otherinfo>noted psychologist</otherinfo>
          </organizationnamedetails>
        </namedetails>
        <addressdetails>
          <thoroughfare>123 Yellow Brick Road</thoroughfare>
          <locality><localityname>Emerald City</localityname>
            <postalcode>66780</postalcode>
          </locality>
          <administrativearea>Kansas</administrativearea>
          <country>USA</country>
        </addressdetails>
        <contactnumbers><contactnumber>123-555-4678</contactnumber></contactnumbers>
        <emailaddresses><emailaddress>wizard@example.org</emailaddress></emailaddresses>
        <urls><url>www.wizardworks.example.org</url></urls>
      </organizationinfo>
    </personinfo>
  </authorinformation>
</bookmeta>
```
4 Conformance

Comment by BobThomas
Conformance statements to technical content will go in this topic.
Disposition: Unassigned
A Acknowledgments

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Robert D. Anderson, Oracle
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Bill Burns, HP Inc.
Kristen James Eberlein, Eberlein Consulting LLC
Nancy Harrison, Individual member
Alan Houser, Individual member
Scott Hudson, ServiceNow
Eliot Kimber, ServiceNow
Zoe Lawson, Synopsys, Inc.
Chris Nitchie, Individual member
Eric Sirois, IXIASOFT
Keith Schengili-Roberts, Individual member
Dawn Stevens, Comtech Services, Inc.
Bob Thomas, Individual member
Frank Wegmann, Individual member
# B Aggregated RFC-2119 statements

This appendix contains all the normative statements from the DITA for Technical Content 2.0 specification. They are aggregated here for convenience in this non-normative appendix.

<table>
<thead>
<tr>
<th>Item</th>
<th>Conformance statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>001  (86)</td>
<td>Processors which render the content of <code>&lt;stepsection&gt;</code> elements among the <code>&lt;step&gt;</code> elements <strong>MUST NOT</strong> number the <code>&lt;stepsection&gt;</code> elements.</td>
</tr>
<tr>
<td>002  (102)</td>
<td>The following rules determine how to render an <code>&lt;abbreviated-form&gt;</code> element. As described, the definition of &quot;introductory context&quot; will vary based on the rendered format and processor. &lt;br&gt;1. If the referenced topic is not a <code>&lt;glossentry&gt;</code> topic (or a specialization of <code>&lt;glossentry&gt;</code>), the title of the topic <strong>SHOULD</strong> be displayed. &lt;br&gt;2. Otherwise, if <code>&lt;abbreviated-form&gt;</code> is located in an introductory context, and the referenced topic contains a non-empty <code>&lt;glossSurfaceForm&gt;</code> element, processors <strong>SHOULD</strong> render the contents of the <code>&lt;glossSurfaceForm&gt;</code> element from the referenced <code>&lt;glossentry&gt;</code> topic. &lt;br&gt;3. Otherwise, if <code>&lt;abbreviated-form&gt;</code> is located in an introductory context, processors <strong>SHOULD</strong> render the contents of the <code>&lt;glossterm&gt;</code> element from the referenced <code>&lt;glossentry&gt;</code> topic. &lt;br&gt;4. Otherwise (in non-introductory contexts), if the referenced <code>&lt;glossentry&gt;</code> topic contains a non-empty <code>&lt;glossAcronym&gt;</code> element, processors <strong>SHOULD</strong> render the abbreviated form of the term by displaying the contents of the <code>&lt;glossAcronym&gt;</code> element from the referenced <code>&lt;glossentry&gt;</code> topic. &lt;br&gt;5. Otherwise, processors <strong>SHOULD</strong> render the contents of the <code>&lt;glossterm&gt;</code> element from the referenced <code>&lt;glossentry&gt;</code> topic.</td>
</tr>
<tr>
<td>003  (109)</td>
<td>When the <code>&lt;equation-number&gt;</code> element has empty or whitespace-only content, the equation number <strong>SHOULD</strong> be generated. When the <code>&lt;equation-number&gt;</code> element has non-whitespace-only content the content <strong>SHOULD</strong> be used as the equation number. For explicit numbers the content of the element <strong>SHOULD</strong> be the number value without any surrounding punctuation, for example, &quot;3.2a&quot; rather than &quot;(3.2a)&quot;. Processors <strong>SHOULD</strong> add punctuation or decoration to the number as appropriate.</td>
</tr>
<tr>
<td>004  (114)</td>
<td>Processors <strong>SHOULD</strong> process the MathML as though the <code>&lt;m:math&gt;</code> element had occurred directly in the content of the containing <code>&lt;mathml&gt;</code> element.</td>
</tr>
<tr>
<td>005  (116)</td>
<td>Processors <strong>SHOULD</strong> preserve line breaks and spaces that are present in the content of a <code>&lt;codeblock&gt;</code> element.</td>
</tr>
<tr>
<td>006  (127)</td>
<td>Processors <strong>SHOULD</strong> preserve the line breaks and spaces that are present in the content of a <code>&lt;msgblock&gt;</code> element.</td>
</tr>
<tr>
<td>007  (132)</td>
<td>Processors <strong>SHOULD</strong> process the SVG as though the <code>&lt;svg&gt;</code> element had occurred directly in the content of the containing <code>&lt;svg-container&gt;</code> element.</td>
</tr>
<tr>
<td>008  (145)</td>
<td>Processors <strong>SHOULD</strong> separate the contents of the <code>&lt;uicontrol&gt;</code> elements with a character to represent the menu cascade.</td>
</tr>
<tr>
<td>009  (145)</td>
<td>Processors <strong>SHOULD</strong> preserve the line breaks and spaces that are present in the content of a <code>&lt;screen&gt;</code> element.</td>
</tr>
</tbody>
</table>
C Attributes

This section contains definitions for commonly-used attributes. If an attribute is defined differently on a specific element, that information is covered in the topic for the specific element.

Comment by Kristen J Eberlein on 29 December 2021

Add a brief overview of the fact that some specific attributes are overloaded – and have different meanings depending on what element they are specified upon.

Disposition: Unassigned

C.1 Attribute groups

Many of the attributes used on DITA elements are defined in attribute groups. These attribute groups are used both in the grammar files and the specification.

Architectural attributes

This group contains a set of attributes that are defined for document-level elements such as `<topic>` and `<map>`.

@DITAArchVersion (architectural attributes)

Specifies the version of the DITA architecture that is in use. This attribute is in the namespace http://dita.oasis-open.org/architecture/2005/. This attribute is specified in the topic and map modules, and it uses a default value of the current version of DITA. The current default is "2.0".

@specializations (architectural attributes)

Specifies the attribute-domain specializations that are included in the document-type shell. This attribute is set as a default within the document-type shell. The value varies depending on what domains are integrated into the document-type shell. For example, a grammar file that includes the specialized attributes @audience, @deliveryTarget, and @newBaseAtt would set the value to @props/audience @props/deliveryTarget @base/newBaseAtt.

@xmlns:ditaarch (architectural attributes)

Declares the default DITA namespace. This namespace is declared as such in the RNG modules for `<topic>` and `<map>`, but it is specified as an attribute in the equivalent DTD-based modules. The value is fixed to "http://dita.oasis-open.org/architecture/2005/".

Common map attributes

This group contains attributes that are frequently used on map elements.

Comment by Kristen J Eberlein on 28 September 2022

I've added draft comments to the attribute definitions in this section that explain how the attribute is defined in the "DITA map attributes" topic.

Disposition: Unassigned

@cascade (common map attributes)

Specifies how metadata attributes cascade within a map. The specification defines the following values:
merge Indicates that the metadata attributes cascade, and that the values of the metadata attributes are additive. This is the processing default for the @cascade attribute.

nomerge Indicates that the metadata attributes cascade, but that they are not additive for <topicref> elements that specify a different value for a specific metadata attribute. If the cascading value for an attribute is already merged based on multiple ancestor elements, that merged value continues to cascade until a new value is encountered. That is, setting cascade="nomerge" does not undo merging that took place on ancestor elements.

Processors can also define custom, implementation-specific tokens for this attribute.

See Cascading of metadata attributes in a DITA map for more information about how this attribute interacts with metadata attributes.

@chunk (common map attributes)
Specifies how a processor should render a map or branch of a map. For example, it can be used to specify that individual topic documents should be rendered as a single document, or that a single document with multiple topics should be rendered as multiple documents.

The following values are valid:

combine Instructs a processor to combine the referenced source documents for rendering purposes. This is intended for cases where a publishing process normally results in a single output artifact for each source XML document.

split Instructs a processor to split each topic from the referenced source document into its own document for rendering purposes. This is intended for cases where a publishing process normally results in a single output artifact for each source XML document, regardless of how many DITA topics exist within each source document.

Processors can also define custom, implementation-specific tokens for this attribute.

For a detailed description of the @chunk attribute and its usage, see Chunking.

@collection-type (common map attributes)
Specifies how topics or links relate to each other. The processing default is "unordered", although no default is specified in the OASIS-provided grammar files. The following values are valid:

unordered Indicates that the order of the child topics is not significant.

sequence Indicates that the order of the child topics is significant. Output processors will typically link between them in order.

choice Indicates that one of the children should be selected.

family Indicates a tight grouping in which each of the referenced topics not only relates to the current topic but also relate to each other.
@collection-type
The @collection-type attribute specifies how the children of a <topicref> element relate to their parent and to each other. This attribute, which is set on the parent element, typically is used by processors to determine how to generate navigation links in the rendered topics. For example, a @collection-type value of "sequence" indicates that children of the specifying <topicref> element represent an ordered sequence of topics; processors might add numbers to the list of child topics or generate next/previous links for online presentation. This attribute is available in topics on the <linklist> and <linkpool> elements, where it has the same behavior. Where the @collection-type attribute is available on elements that cannot directly contain elements, the behavior of the attribute is undefined.

Disposition: Unassigned

Comment by Kristen J Eberlein on 28 September 2022
In the definitions of the supported values, do we want to refer to "resources" instead of "topics"? Since we specify that @collection-type specifies "how topics or links relate to each other" ...

Disposition: Unassigned

@keyscope (common map attributes)
Specifies that the element marks the boundaries of a key scope.

See C.4 STUB CONTENT (206) for information on using this attribute.

Comment by Kristen J Eberlein on 28 September 2022
Here is the content from the "DITA map attributes" topic:

@keyscope
- Defines a new scope for key definition and resolution, and gives the scope one or more names. For more information about key scopes, see Indirect key-based addressing.

Disposition: Unassigned

@linking (common map attributes)
Specifies linking characteristics of a topic specific to the location of this reference in a map. If the value is not specified locally, the value might cascade from another element in the map (for cascade rules, see Cascading of metadata attributes in a DITA map).

Comment by robander on Dec 28 2021
The text below matches 1.3 spec text but I'm nervous about "cannot link" type definition. It's describing how to generate links based on the current context in the map - it's not describing what the topic itself is allowed to link to, which is how I interpret "can".

Disposition: Unassigned

The following values are valid:

- targetonly
  A topic can only be linked to and cannot link to other topics.

- sourceonly
  A topic cannot be linked to but can link to other topics.
A topic can be linked to and can link to other topics. Use this to override the linking value of a parent topic.

A topic cannot be linked to or link to other topics.

- `linking`  
  
  By default, the relationships between the topics that are referenced in a map are reciprocal:
  
  - Child topics link to parent topics and vice versa.
  - Next and previous topics in a sequence link to each other.
  - Topics in a family link to their sibling topics.
  - Topics referenced in the table cells of the same row in a relationship table link to each other. A topic referenced within a table cell does not (by default) link to other topics referenced in the same table cell.

  This behavior can be modified by using the `linking` attribute, which enables an author or information architect to specify how a topic participates in a relationship. The following values are valid:

  - `linking="normal"`  
    Specifies that linking will be reciprocal (the topic will link to related topics, and they will link back to it).

  - `linking="sourceonly"`  
    Specifies that the topic will link to its related topics but not vice versa.

  - `linking="targetonly"`  
    Specifies that the related topics will link to it but not vice versa.

  - `linking="none"`  
    Specifies that the topic does not exist in the map for the purposes of calculating links.

Authors also can create links directly in a topic by using the `<xref>` or `<link>` elements, but in most cases map-based linking is preferable, because links in topics create dependencies between topics that can hinder reuse.

Note that while the relationships between the topics that are referenced in a map are reciprocal, the relationships merely imply reciprocal links in generated output that includes links. The rendered navigation links are a function of the presentation style that is determined by the processor.

Disposition: Unassigned

Specifies whether the referenced resource is processed normally or treated as a resource that is only included in order to resolve references, such as key or content references. The following values are valid:
normal
Indicates that the resource is a readable part of the information set. It is included in navigation and search results. This is the default value for the `<topicref>` element.

resource-only
Indicates that the resource should be used only for processing purposes. It is not included in navigation or search results, nor is it rendered as a topic. This is the default value for the `<keydef>` element.

-dita-use-conref-target
See Using the -dita-use-conref-target value for more information.

If no value is specified but the attribute is specified on a containing element within a map or within the related-links section, the value cascades from the closest containing element.

@search (common map attributes)
Specifies whether the target is available for searching. If the value is not specified locally, the value might cascade from another element in the map (for cascade rules, see Cascading of metadata attributes in a DITA map). The following values are valid: "yes", "no", and "-dita-use-conref-target".

Comment by Kristen J Eberlein on 28 September 2022
Here is the content from the "DITA map attributes" topic:
@search
Specifies whether the topic is included in search indexes.
Disposition: Unassigned

@subjectrefs (common map attributes)
Specifies one or more keys that are each defined by a subject definition in a subject scheme map. Multiple values are separated by white space.

@toc (common map attributes)
Specifies whether a topic appears in the table of contents (TOC) based on the current map context. If the value is not specified locally, the value might cascade from another element in the map (for cascade rules, see Cascading of metadata attributes in a DITA map). The following values are valid:

yes
The topic appears in a generated TOC.

no
The topic does not appear in a generated TOC.

-dita-use-conref-target
See C.4 STUB CONTENT (206) for more information.

Comment by Kristen J Eberlein on 28 September 2022
Here is the content from the "DITA map attributes" topic:
@toc
Specifies whether topics are excluded from navigation output, such as a Web site map or an online table of contents. By default, `<topicref>` hierarchies are included in navigation output; relationship tables are excluded.
Disposition: Unassigned
Complex table attributes

This group includes attributes that are defined on complex table elements. Unless other noted, these attributes are part of the OASIS Exchange Table Model. Complex table elements typically use only a subset of the attributes that are defined in this group.

@align (complex table attributes)
Specifies the horizontal alignment of text in table entries. The following values are valid:

- left
  Indicates left alignment of the text.
- right
  Indicates right alignment of the text.
- center
  Indicates center alignment of the text.
- justify
  Justifies the contents to both the left and the right.
- char
  Indicates character alignment. The text is aligned with the first occurrence of the character specified by the @char attribute.

@dita-use-conref-target
See Using the -dita-use-conref-target value for more information.

The @align attribute is available on the following table elements: <colspec>, <entry>, and <tgroup>.

@char (complex table attributes)
Specifies the alignment character, which is the character that is used for aligning the text in table entries. This attribute applies when align="char". A value of "" (the null string) means there is no aligning character.

For example, if align="char" and char="." are specified, then text in the table entry aligns with the first occurrence of the period within the entry. This might be useful if decimal alignment is required.

The @char attribute is available on the following table elements: <colspec> and <entry>.

@charoff (complex table attributes)
Specifies the horizontal offset of the alignment character that is specified by the @char attribute. The value is a greater-than-zero number that is less than or equal to 100. It represents the percentage of the current column width by which the text is offset to the left of the alignment character.

For example, if align="char", char=".", and charoff="50" are all specified, then text in the table entry is aligned 50% of the distance to the left of the first occurrence of the period character within the table entry.

The @charoff attribute is available on the following table elements: <colspec> and <entry>.

@colsep (complex table attributes)
Specifies whether to render column separators between table entries. The following values are valid: "0" (no separators) and "1" (separators).

The @colsep attribute is available on the following table elements: <colspec>, <entry>, <table>, and <tgroup>. 
@rowheader (complex table attributes)
   Specifies whether the entries in the respective column are row headers. The following values are valid:

   firstcol
      Indicates that entries in the first column of the table are row headers. This applies when the
      @rowheader attribute is specified on the <table> element.

   headers
      Indicates that entries of the column that is described using the <colspec> element are row
      headers. This applies when the @rowheader attribute is specified on the <colspec> element.

   norowheader
      Indicates that entries in the first column are not row headers. This applies when the
      @rowheader attribute is specified on the <table> element.

-dita-use-conref-target
   See Using the -dita-use-conref-target value for more information.

Note   This attribute is not part of the OASIS Exchange Table Model upon which DITA tables are
   based. Some processors or output formats might not support all values.

The @rowheader attribute is available on the following table elements: <table> and <colspec>.

@rowsep (complex table attributes)
   Specifies whether to render row separators between table entries. The following values are valid: "0"
   (no separators) and "1" (separators).

   The @rowsep attribute is available on the following table elements: <colspec>, <entry>, <row>,
   <table>, and <tgroup>.

@valign (complex table attributes)
   Specifies the vertical alignment of text in table entries. The following values are valid:

   bottom
      Indicates that text is aligned with the bottom of the table entry.

   middle
      Indicates that text is aligned with the middle of the table entry.

   top
      Indicates that text is aligned with the top of the table entry.

-dita-use-conref-target
   See Using the -dita-use-conref-target value for more information.

   The @valign attribute is available on the following table elements: <entry>, <tbody>, <thead>,
   and <row>.

Data-element attributes

This group contains attributes that are defined on the <data> element and its specializations.

@datatypenew (data-element attributes)
   Specifies the type of data contained in the @value attribute or within the <data> element. A typical
   use of @datatypenew will be the identifying URI for an XML Schema datatype.

@name (data-element attributes)
   Defines a unique name for the object.
Do we need to specify the scope of "unique" here?
Disposition: Unassigned

@value (data-element attributes)
Specifies a value associated with the current property or element.

Date attributes
This group contains attributes that take date values. They are defined on metadata elements that work with date information:

@expiry (date attributes)
Specifies the date when the information should be retired or refreshed. The date is specified using the ISO 8601 format: YYYY-MM-DD, where YYYY is the year, MM is the month (01 to 12), and DD is the day (01-31).

@golive (date attributes)
Specifies the publication or general availability (GA) date. The date is specified using the ISO 8601 format: YYYY-MM-DD, where YYYY is the year, MM is the month (01 to 12), and DD is the day (01-31).

Display attributes
This group contains attributes that affect the rendering of many elements.

@expanse (display attributes)
Specifies the horizontal placement of the element. The following values are valid:

  column
  Indicates that the element is aligned with the current column margin.

  page
  Indicates that the element is placed on the left page margin for left-to-right presentation or the right page margin for right-to-left presentation.

  spread
  Indicates that the object is rendered across a multi-page spread. If the output format does not have anything that corresponds to spreads, then "spread" has the same meaning as "page".

  textline
  Indicates that the element is aligned with the left (for left-to-right presentation) or right (for right-to-left presentation) margin of the current text line and takes indentation into account.

@dita-use-conref-target
See Using the -dita-use-conref-target value for more information.

For <table>, in place of the @expanse attribute that is used by other DITA elements, the @pgwide attribute is used in order to conform to the OASIS Exchange Table Model.

Some processors or output formats might not support all values.

@frame (display attributes)
Specifies which portion of a border surrounds the element. The following values are valid:

  all
  Indicates that a line is rendered at the top, bottom, left, and right of the containing element.

  bottom
  Indicates that a line is rendered at the bottom of the containing element.
none
    Indicates that no lines are rendered.

sides
    Indicates that a line is rendered at the left and right of the containing element.

top
    Indicates that a line is rendered at the top of the containing element.

topbot
    Indicates that a line is rendered at the top and bottom of the containing element.

@dita-use-conref-target
    See Using the -dita-use-conref-target value for more information.

Some processors or output formats might not support all values.

@scale (display attributes)
    Specifies the percentage by which fonts are resized in relation to the normal text size. The value of this attribute is a positive integer. When used on <table> or <simpletable>, the following values are valid: "50", "60", "70", "80", "90", "100", "110", "120", "140", "160", "180", "200", and -dita-use-conref-target (206).

    This attribute is primarily useful for print-oriented display. Some processors might not support all values.

    If the @scale attribute is specified on an element that contains an image, the image is not scaled. The image is scaled only if a scaling property is explicitly specified for the <image> element.

ID and conref attributes

This group contains the attributes that enable the naming and referencing of elements.

@conaction
    Specifies how the element content will be pushed into a new location. The following values are valid:

mark
    The element acts as a marker when pushing content before or after the target, to help ensure that the push action is valid. The element with conaction="mark" also specifies the target of the push action with @conref. Content inside of the element with conaction="mark" is not pushed to the new location.

pushafter
    Content from this element is pushed after the location specified by @conref on the element with conaction="mark". The element with conaction="pushafter" is the first sibling element after the element with conaction="mark".

pushbefore
    Content from this element is pushed before the location specified by @conref on the element with conaction="mark". The element with conaction="pushbefore" is the first sibling element before the element with conaction="mark".

pushreplace
    Content from this element replaces any content from the element referenced by the @conref attribute. A second element with conaction="mark" is not used when using conaction="pushreplace".

@dita-use-conref-target
    See Using the -dita-use-conref-target value for more information.
See C.4 STUB CONTENT (206) for examples and details about the syntax.

@conkeyref
Specifies a key name or a key name with an element ID that acts as an indirect reference to reusable content. The referenced content is used in place of the content of the current element. See C.4 STUB CONTENT (206) for more details about the syntax and behaviors.

@conref
Specifies a URI that references a DITA element. The referenced content is used in place of the content of the current element. See C.4 STUB CONTENT (206) for examples and details about the syntax.

@conrefend
Specifies a URI that references the last element in a sequence of elements, with the first element of the sequence specified by @conref. The referenced sequence of elements is used in place of the content of the current element. See C.4 STUB CONTENT (206) for examples and details about the syntax.

@id
Specifies an identifier for the current element. This ID is the target for references by @href and @conref attributes and for external applications that refer to DITA or LwDITA content. This attribute is defined with the XML data type NMTOKEN, except where noted for specific elements within the language reference.

See id attribute for more details.

Inclusion attributes
This group includes attributes defined on <include> and its specializations:

Comment by Kristen J Eberlein on 28 September 2002
What is specialized from <include>? Both base (if any) and technical content ...
Disposition: Unassigned

@encoding (inclusion attributes)

Comment by Kristen J Eberlein on 29 April 2019
Can we replace "should" in the following definition?
Disposition: Unassigned

Specifies the character encoding to use when translating the character data from the referenced content. The value should be a valid encoding name. If not specified, processors may make attempts to automatically determine the correct encoding, for example using HTTP headers, through analysis of the binary structure of the referenced data, or the <?xml?> processing instruction when including XML as text. The resource should be treated as UTF-8 if no other encoding information can be determined.

When parse="xml", standard XML parsing rules apply for the detection of character encoding. The necessity and uses of @encoding for non-standard values of @parse are implementation-dependent.

@parse (inclusion attributes)
Specifies the processing expectations for the referenced resource. Processors must support the following values:
The contents should be treated as plain text. Reserved XML characters should be displayed, and not interpreted as XML markup.

The contents of the referenced resource should be treated as an XML document, and the referenced element should be inserted at the location of the `<include>` element. If a fragment identifier is included in the address of the content, processors must select the element with the specified ID. If no fragment identifier is included, the root element of the referenced XML document is selected. Any grammar processing should be performed during resolution, such that default attribute values are explicitly populated. Prolog content must be discarded.

It is an error to use `parse="xml"` anywhere other than within `<foreign>` or a specialization thereof.

Processors may support other values for the `@parse` attribute with proprietary processing semantics. Processors should issue warnings and use `<fallback>` when they encounter unsupported `@parse` values. Non-standard `@parse` instructions should be expressed as URIs.

**Note** Proprietary `@parse` values will likely limit the portability and interoperability of DITA content, so should be used with care.

**Link relationship attributes**

This group contains attributes whose values can be used for representing navigational relationships.

**@format (link-relationship attributes)**

Specifies the format of the resource that is referenced. See C.4 STUB CONTENT (206) for detailed information on supported values and processing implications.

**@href (link-relationship attributes)**

Specifies a reference to a resource. See C.4 STUB CONTENT (206) for detailed information on supported values and processing implications.

**@scope (link-relationship attributes)**

Specifies the closeness of the relationship between the current document and the referenced resource. The following values are valid: "local", "peer", "external", and "-dita-use-conref-target". See C.4 STUB CONTENT (206) for detailed information on supported values and processing implications.

**@type (link-relationship attributes)**

Describes the target of a reference. See C.4 STUB CONTENT (206) for detailed information on supported values and processing implications.

**Localization attributes**

Comment by Kristen J Eberlein on 29 September 2022

The definition of the localizations attribute matches how they are described in the architectural topics. Wherever possible, the definition is reused. Where it is not reused (because the definition in the archSpec topics is in a shortdesc), I've checked to ensure that wording is identical.

**Disposition: Unassigned**

This group contains the attributes that are related to translation and localization.
@dir

Identifies or overrides the text directionality. The following values are valid:

- lro
  Indicates an override of the Unicode Bidirectional Algorithm, forcing the element into left-to-right mode.

- ltr
  Indicates left-to-right.

- rlo
  Indicates an override of the Unicode Bidirectional Algorithm, forcing the element into right-to-left mode.

- rtl
  Indicates right-to-left.

@dita-use-conref-target

See Using the -dita-use-conref-target value for more information.

See The dir attribute for more information.

@translate

Specifies whether the content of the element should be translated. The following values are valid: "yes", "no", and "-dita-use-conref-target".

See Element-by-element recommendations for translators for suggested processing defaults for each element.

Comment by Kristen J Eberlein on 31 December 2021

Does Element-by-element recommendations for translators really provide suggested processing defaults for each element? I thought it covered whether an element was block or in-line and whether there were considerations that translators needed to be aware of.

Disposition: Unassigned

@xml:lang

Specifies the language and optional locale of the content that is contained in an element. Valid values are language tokens or the null string. The @xml:lang attribute and its values are described in the Extensible Markup Language 1.0 specification, fifth edition.

Comment by Kristen J Eberlein on 29 September 2022

Do we also want to direct readers to the architectural topics about the @xml:lang attribute?

Disposition: Unassigned

Metadata attributes

This group contains common metadata attributes: @base, @importance, @props, @rev, and @status. The @base and @props attributes can be specialized.

@base

Specifies metadata about the element. It is often used as a base for specialized attributes that have a simple syntax for values, but which are not conditional processing attributes.
The @base attribute takes a space-delimited set of values. However, when serving as a container for generalized attributes, the attribute values will be more complex. See Attribute generalization for more details.

@importance
Specifies the importance or priority that is assigned to an element. The following values are valid: "default", "deprecated", "high", "low", "normal", "obsolete", "optional", "recommended", "required", "urgent", and "-dita-use-conref-target". This attribute is not used for conditional processing, although applications might use the value of the @importance attribute to highlight elements. For example, in steps of a task topic, the value of the @importance attribute indicates whether a step is optional or required.

Comment by Kristen J Eberlein on 29 September 2022
I think the phrase “to highlight elements” is a little off. Maybe “render generated text”? And how about adding "Processors often add text or images to ensure that readers of the generated content understand whether the step is optional or required." to the end of the example?

Disposition: Unassigned

@props
Specifies metadata about the element. New attributes can be specialized from the @props attribute. This attribute supports conditional processing. If no value is specified but the attribute is specified on a containing element within a map or within the related-links section, the value cascades from the closest containing element.

The @props attribute takes a space-delimited set of values. However, when serving as a container for generalized attributes, the attribute values will be more complex. See Attribute generalization for more details.

@rev
Specifies a revision level of an element that identifies when the element was added or modified. It can be used to flag outputs when it matches a run-time parameter. It cannot be used for filtering nor is it sufficient to be used for version control. If no value is specified but the attribute is specified on a containing element within a map or within the related-links section, the value cascades from the closest containing element.

Comment by Kristen J Eberlein on 29 September 2022
I want to tweak this. How about the following? Also, neither definition describes what values are permitted.

Specifies metadata that identifies when the element was added or the content of the element was modified. The @rev attribute can be used for flagging. It cannot be used for filtering nor is it sufficient to be used for version control. If no value is specified but the attribute is specified on a containing element within a map or within the related-links section, the value cascades from the closest containing element.

Disposition: Unassigned

@status
Specifies the modification status of the element. The following values are valid: "new", "changed", "deleted", "unchanged", and "-dita-use-conref-target."
Simple table attributes

This group includes attributes that are defined only on the `<simpletable>` element: `@keycol` and `@relcolwidth`. These attributes are listed in a group because the `<simpletable>` element is frequently used as a specialization base.

`@keycol` (simpletable attributes)

Specifies the column that contains the content that represents the key to the tabular structure. If `@keycol` is present and assigned a numerical value, the specified column is treated as a vertical header.

`@relcolwidth` (simpletable attributes)

Specifies the width of each column in relationship to the width of the other columns. The value is a space-separated list of relative column widths. Each column width is specified as a positive integer or decimal number followed by an asterisk character.

For example, the value `relcolwidth="1* 2* 3*"` gives a total of 6 units across three columns. The relative widths are 1/6, 2/6, and 3/6 (16.7%, 33.3%, and 50%). Similarly, the value `relcolwidth="90* 150*"` causes relative widths of 90/240 and 150/240 (37.5% and 62.5%).

Table accessibility attributes

This group defines a set of attributes that promote table accessibility:

`@headers`

Specifies which entries in the current table provide headers for this cell. The `@headers` attribute contains an unordered set of unique, space-separated tokens, each of which is an ID reference of an entry from the same table.

`@scope`

Specifies that the current entry is a header for other table entries. The following values are valid:

- `col` Indicates that the current entry is a header for all cells in the column.
- `colgroup` Indicates that the current entry is a header for all cells in the columns that are spanned by this entry.
- `row` Indicates that the current entry is a header for all cells in the row.
- `rowgroup` Indicates that the current entry is a header for all cells in the rows that are spanned by this entry.

-dita-use-conref-target

See Using the -dita-use-conref-target value for more information.

Universal attributes

This group defines a set of attributes that are available on almost all DITA elements. It includes all elements in the ID, localization, and metadata attribute groups, as well as the following attributes:

`@class` (not for use by authors)

This attribute is not for use by authors. If an editor displays `@class` attribute values, do not edit them. Specifies a default value that defines the specialization ancestry of the element. Its predefined values allow DITA tools to work correctly with specialized elements. In a generalized DITA document the `@class` attribute value in the generalized instance might differ from the default value for the `@class` attribute for the element as given in the DTD or schema. See The class attribute rules and
syntax for more information. This attribute is specified on every element except for the <dita> container element. It is always specified with a default value, which varies for each element.

@outputclass
Specifies a role that the element is playing. The role must be consistent with the basic semantic and expectations for the element. In particular, the @outputclass attribute can be used for styling during output processing; HTML output will typically preserve @outputclass for CSS processing.

Comment by robander
I don't like "The role must be consistent...", that seems like best practice that cannot be normative – and I could easily say outputclass="flashy" which makes my element show up with sparkles, and has nothing to do with "the basic semantic and expectations for the element".
Disposition: Unassigned

C.2 Universal attribute group
The universal attribute group defines a set of common attributes that are available on almost every DITA element. The universal attribute group includes all attributes from the ID, localization, and metadata attribute groups, plus the @class and @outputclass attributes.

Comment by Kristen J Eberlein on 29 December 2021
This is something wrong with the organizational structure of this topic ... Look at it in outline form, and check that the sections, titles, and content all make logical sense with the topic title of "Universal attribute group".
Disposition: Unassigned

Common attribute groups
The following attribute groups are referenced in this specification. They are also used in the grammar files when the element attributes are defined.

Universal attributes
Includes @class and @outputclass, along with every attribute in the ID, localization, and metadata attribute groups.

ID attributes
This group includes the attributes that enable the naming and referencing of elements: @conaction, @conkeyref, @conref, @conrefend, and @id.

Localization attributes
This group includes attributes that are related to translation and localization: @dir, @translate, and @xml:lang.

Metadata attributes
Comment by Kristen J Eberlein on 31 December 2021
Why do we need to mention that two attributes are available for specialization here? I think it makes the paragraph hard to read.
Disposition: Unassigned

This group includes common metadata attributes, two of which are available for specialization: @base, @importance, @props, @rev, and @status.
The base DITA vocabulary from OASIS includes several specializations of @props: @audience, @deliveryTarget, @otherprops, @platform, and @product. These attributes are defined as attribute-extension domains. By default, they are integrated into all OASIS-provided document-type shells, but they can be made unavailable by implementing custom document-type shells.

Comment by Kristen J Eberlein on 29 December 2021

Why do we provide information about specialization and custom document-type shells here? I think that information could be removed.

Disposition: Unassigned

Universal attribute definitions

The universal attributes for OASIS DITA elements are defined below. Specialized attributes, which are part of the OASIS distribution but are only available when explicitly included in a shell, are noted in the list.

@audience (specialized attribute)
Indicates the intended audience for the element. If no value is specified but the attribute is specified on a containing element within a map or within the related-links section, the value cascades from the closest containing element.

@base
Specifies metadata about the element. It is often used as a base for specialized attributes that have a simple syntax for values, but which are not conditional processing attributes.

The @base attribute takes a space-delimited set of values. However, when serving as a container for generalized attributes, the attribute values will be more complex. See Attribute generalization for more details.

@class (not for use by authors)
This attribute is not for use by authors. If an editor displays @class attribute values, do not edit them. Specifies a default value that defines the specialization ancestry of the element. Its predefined values allow DITA tools to work correctly with specialized elements. In a generalized DITA document the @class attribute value in the generalized instance might differ from the default value for the @class attribute for the element as given in the DTD or schema. See The class attribute rules and syntax for more information. This attribute is specified on every element except for the <dita> container element. It is always specified with a default value, which varies for each element.

@conaction
Specifies how the element content will be pushed into a new location. The following values are valid:

mark
The element acts as a marker when pushing content before or after the target, to help ensure that the push action is valid. The element with conaction="mark" also specifies the target of the push action with @conref. Content inside of the element with conaction="mark" is not pushed to the new location.

pushafter
Content from this element is pushed after the location specified by @conref on the element with conaction="mark". The element with conaction="pushafter" is the first sibling element after the element with conaction="mark".
pushbefore
Content from this element is pushed before the location specified by @conref on the element with conaction="mark". The element with conaction="pushbefore" is the first sibling element before the element with conaction="mark".

pushreplace
Content from this element replaces any content from the element referenced by the @conref attribute. A second element with conaction="mark" is not used when using conaction="pushreplace".

@dita-use-conref-target
See Using the -dita-use-conref-target value for more information.

See C.4 STUB CONTENT (206) for examples and details about the syntax.

@conkeyref
Specifies a key name or a key name with an element ID that acts as an indirect reference to reusable content. The referenced content is used in place of the content of the current element. See C.4 STUB CONTENT (206) for more details about the syntax and behaviors.

@conref
Specifies a URI that references a DITA element. The referenced content is used in place of the content of the current element. See C.4 STUB CONTENT (206) for examples and details about the syntax.

@conrefend
Specifies a URI that references the last element in a sequence of elements, with the first element of the sequence specified by @conref. The referenced sequence of elements is used in place of the content of the current element. See C.4 STUB CONTENT (206) for examples and details about the syntax.

@deliveryTarget (specialized attribute)
Specifies the intended delivery target of the content, for example, "html", "pdf", or "epub". If no value is specified but the attribute is specified on a containing element within a map or within the related-links section, the value cascades from the closest containing element.

@dir
Identifies or overrides the text directionality. The following values are valid:

lro
Indicates an override of the Unicode Bidirectional Algorithm, forcing the element into left-to-right mode.

ltr
Indicates left-to-right.

rlo
Indicates an override of the Unicode Bidirectional Algorithm, forcing the element into right-to-left mode.

rtl
Indicates right-to-left.

@dita-use-conref-target
See Using the -dita-use-conref-target value for more information.

See The dir attribute for more information.

@id
Specifies an identifier for the current element. This ID is the target for references by @href and @conref attributes and for external applications that refer to DITA or LwDITA content. This attribute
is defined with the XML data type NMTOKEN, except where noted for specific elements within the language reference.

See id attribute for more details.

@importance
Specifies the importance or priority that is assigned to an element. The following values are valid: "default", "deprecated", "high", "low", "normal", "obsolete", "optional", "recommended", "required", "urgent", and "-dita-use-conref-target". This attribute is not used for conditional processing, although applications might use the value of the @importance attribute to highlight elements. For example, in steps of a task topic, the value of the @importance attribute indicates whether a step is optional or required.

Comment by Kristen J Eberlein on 29 September 2022
I think the phrase "to highlight elements" is a little off. Maybe "render generated text"? And how about adding "Processors often add text or images to ensure that readers of the generated content understand whether the step is optional or required." to the end of the example?

Disposition: Unassigned

@otherprops (specialized attribute)
Specifies a property or properties that provide selection criteria for the element. Alternatively, the @props attribute can be specialized to provide a new metadata attribute instead of using the general @otherprops attribute. If no value is specified but the attribute is specified on a containing element within a map or within the related-links section, the value cascades from the closest containing element.

Comment by robander
I don't like "The role must be consistent...", that seems like best practice that cannot be normative — and I could easily say outputclass=flashy which makes my element show up with sparkles, and has nothing to do with "the basic semantic and expectations for the element".

Disposition: Unassigned

@outputclass
Specifies a role that the element is playing. The role must be consistent with the basic semantic and expectations for the element. In particular, the @outputclass attribute can be used for styling during output processing; HTML output will typically preserve @outputclass for CSS processing.

Comment by robander
I think this could specify a platform that is not an operating system or hardware, right? The current definition explicitly limits platform to those two … maybe " Specifies a platform or platforms to which the element applies, such as the operating system or hardware relevant to a task."

Disposition: Unassigned

@platform (specialized attribute)
Indicates operating system and hardware. If no value is specified but the attribute is specified on a containing element within a map or within the related-links section, the value cascades from the closest containing element.

Comment by robander
I think this could specify a platform that is not an operating system or hardware, right? The current definition explicitly limits platform to those two … maybe " Specifies a platform or platforms to which the element applies, such as the operating system or hardware relevant to a task."

Disposition: Unassigned

@product (specialized attribute)
Specifies the name of the product to which the element applies. If no value is specified but the attribute is specified on a containing element within a map or within the related-links section, the value cascades from the closest containing element.
@props
Specifies metadata about the element. New attributes can be specialized from the @props attribute. This attribute supports conditional processing. If no value is specified but the attribute is specified on a containing element within a map or within the related-links section, the value cascades from the closest containing element.

The @props attribute takes a space-delimited set of values. However, when serving as a container for generalized attributes, the attribute values will be more complex. See Attribute generalization for more details.

@rev
Specifies a revision level of an element that identifies when the element was added or modified. It can be used to flag outputs when it matches a run-time parameter. It cannot be used for filtering nor is it sufficient to be used for version control. If no value is specified but the attribute is specified on a containing element within a map or within the related-links section, the value cascades from the closest containing element.

Comment by Kristen J Eberlein on 29 September 2022
I want to tweak this. How about the following? Also, neither definition describes what values are permitted.

Specifies metadata that identifies when the element was added or the content of the element was modified. The @rev attribute can be used for flagging. It cannot be used for filtering nor is it sufficient to be used for version control. If no value is specified but the attribute is specified on a containing element within a map or within the related-links section, the value cascades from the closest containing element.

Disposition: Unassigned

@status
Specifies the modification status of the element. The following values are valid: "new", "changed", "deleted", "unchanged", and "-dita-use-conref-target".

@translate
Specifies whether the content of the element should be translated. The following values are valid: "yes", "no", and "-dita-use-conref-target".

See Element-by-element recommendations for translators for suggested processing defaults for each element.

Comment by Kristen J Eberlein on 31 December 2021
Does Element-by-element recommendations for translators really provide suggested processing defaults for each element? I thought it covered whether an element was block or in-line and whether there were considerations that translators needed to be aware of.

Disposition: Unassigned

@xml:lang
Specifies the language and optional locale of the content that is contained in an element. Valid values are language tokens or the null string. The @xml:lang attribute and its values are described in the Extensible Markup Language 1.0 specification, fifth edition.

Comment by Kristen J Eberlein on 29 September 2022
Do we also want to direct readers to the architectural topics about the @xml:lang attribute?

Disposition: Unassigned
C.3 Common attributes
The common attributes topic collects defines most of the attributes that are used on more than one base element.

Common attribute groups
The following groups are referenced in this specification, and they are also used in grammar files when defining attributes for elements.

Architectural attributes
This group includes a set of attributes that are defined for document-level elements such as `<topic>` and `<map>`: @DITAArchVersion, @specializations, and @xmlns:ditaarch.

Common map attributes
This group includes attributes that are frequently used on map elements: @cascade, @chunk, @collection-type, @keyscope, @linking, @processing-role, @search, @toc, and @subjectrefs.

Complex table attributes
This group includes attributes that are defined on table elements but not simple table elements. These attributes are part of the OASIS Exchange Table Model, unless otherwise noted. Table elements generally use only a subset of the attributes that are defined in this group. This group contains the following attributes: @align, @char, @charoff, @colsep, @rowheader, @rowsep, and @valign.

Data-element attributes
Includes attributes defined on `<data>` and its many specializations: @datatype, @name, and @value

Date attributes
Includes attributes that take date values, and are defined on metadata elements that work with date information: @expiry and @golive

Display attributes
This group includes attributes that affect the rendering of many elements: @expanse, @frame, and @scale.

Inclusion attributes
Includes attributes defined on `<include>` and its specializations: @encoding and @parse.

Link-relationship attributes
This group includes attributes whose values can be used for representing navigational relationships: @format, @href, @type, and @scope.

Simple table attributes

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Comment by Kristen J Eberlein on 29 December 2021
If I have jumped to this place in a document from the element-reference topic, I want the attributes listed here in the "Simple table group" to be hyperlinked to the actual definition.

Disposition: Unassigned
This group includes attributes that are defined only on the `<simpletable>` element: `@keycol` and `@relcolwidth`. These attributes are listed in a group because the `<simpletable>` element is frequently used as a specialization base.

**Table accessibility attributes**

This group contains attributes that are defined on the `<stentry>` element and its specializations: `@headers` (199) and `@scope` (as defined on `<stentry>`) (204).

**Other attributes (not in a group)**

These are attributes that are used in the same way on more than one base element, but they are not formally grouped together: `@compact`, `@duplicates`, `@impose-role`, `@otherrole`, `@role`, and `@title-role`.

**Common attribute definitions**

Common attributes, including those in the groups listed above, are defined as follows.

**@align (complex table attributes)**

Specifies the **horizontal** alignment of text in table **entries**. The following values are valid:

- **left**
  
  Indicates left alignment of the text.

- **right**
  
  Indicates right alignment of the text.

- **center**
  
  Indicates center alignment of the text.

- **justify**
  
  Justifies the contents to both the left and the right.

- **char**
  
  Indicates character alignment. The text is aligned with the first occurrence of the character specified by the `@char` attribute.

- **-dita-use-conref-target**
  
  See Using the `-dita-use-conref-target` value for more information.

The `@align` attribute is available on the following table elements: `<colspec>`, `<entry>`, and `<tgroup>`.

**@cascade (common map attributes)**

Specifies how metadata attributes cascade within a map. The specification defines the following values:

- **merge**
  
  Indicates that the metadata attributes cascade, and that the values of the metadata attributes are additive. This is the processing default for the `@cascade` attribute.

- **nomerge**
  
  Indicates that the metadata attributes cascade, but that they are not additive for `<topicref>` elements that specify a different value for a specific metadata attribute. If the cascading value for an attribute is already merged based on multiple ancestor elements, that merged value continues to cascade until a new value is encountered. That is, setting `cascade="nomerge"` does not undo merging that took place on ancestor elements.

Processors can also define custom, implementation-specific tokens for this attribute.
See Cascading of metadata attributes in a DITA map for more information about how this attribute interacts with metadata attributes.

@char (complex table attributes)
Specifies the alignment character, which is the character that is used for aligning the text in table entries. This attribute applies when `align="char"`. A value of "" (the null string) means there is no aligning character.

For example, if `align="char"` and `char="."` are specified, then text in the table entry aligns with the first occurrence of the period within the entry. This might be useful if decimal alignment is required.

The `@char` attribute is available on the following table elements: `<colspec>` and `<entry>`.

@charoff (complex table attributes)
Specifies the horizontal offset of the alignment character that is specified by the `@char` attribute. The value is a greater-than-zero number that is less than or equal to 100. It represents the percentage of the current column width by which the text is offset to the left of the alignment character.

For example, if `align="char"`, `char="."`, and `charoff="50"` are all specified, then text in the table entry is aligned 50% of the distance to the left of the first occurrence of the period character within the table entry.

The `@charoff` attribute is available on the following table elements: `<colspec>` and `<entry>`.

@chunk (common map attributes)
Specifies how a processor should render a map or branch of a map. For example, it can be used to specify that individual topic documents should be rendered as a single document, or that a single document with multiple topics should be rendered as multiple documents.

The following values are valid:

- **combine**
  - Instructs a processor to combine the referenced source documents for rendering purposes. This is intended for cases where a publishing process normally results in a single output artifact for each source XML document.

- **split**
  - Instructs a processor to split each topic from the referenced source document into its own document for rendering purposes. This is intended for cases where a publishing process normally results in a single output artifact for each source XML document, regardless of how many DITA topics exist within each source document.

Processors can also define custom, implementation-specific tokens for this attribute.

For a detailed description of the `@chunk` attribute and its usage, see Chunking.

@collection-type (common map attributes)
Specifies how topics or links relate to each other. The processing default is "unordered", although no default is specified in the OASIS-provided grammar files. The following values are valid:

- **unordered**
  - Indicates that the order of the child topics is not significant.

- **sequence**
  - Indicates that the order of the child topics is significant. Output processors will typically link between them in order.

- **choice**
  - Indicates that one of the children should be selected.
family
Indicates a tight grouping in which each of the referenced topics not only relates to the current topic but also relate to each other.

Comment by Kristen J Eberlein on 28 September 2022

Here is the content from the "DITA map attributes" topic:

@collection-type
The @collection-type attribute specifies how the children of a <topicref> element relate to their parent and to each other. This attribute, which is set on the parent element, typically is used by processors to determine how to generate navigation links in the rendered topics. For example, a @collection-type value of "sequence" indicates that children of the specifying <topicref> element represent an ordered sequence of topics; processors might add numbers to the list of child topics or generate next/previous links for online presentation. This attribute is available in topics on the <linklist> and <linkpool> elements, where it has the same behavior. Where the @collection-type attribute is available on elements that cannot directly contain elements, the behavior of the attribute is undefined.

Disposition: Unassigned

Comment by Kristen J Eberlein on 28 September 2022

In the definitions of the supported values, do we want to refer to "resources" instead of "topics"? Since we specify that @collection-type specifies "how topics or links relate to each other" ...

Disposition: Unassigned

@colsep (complex table attributes)
Specifies whether to render column separators between table entries. The following values are valid: "0" (no separators) and "1" (separators).

The @colsep attribute is available on the following table elements: <colspec>, <entry>, <table>, and <tgroup>.

@compact
Specifies whether the vertical spacing between list items is tightened. The following values are valid: "yes", "no", and "dita-use-conref-target". Some DITA processors or output formats might not support the @compact attribute.

@datatype (data-element attributes)
Specifies the type of data contained in the @value attribute or within the <data> element. A typical use of @datatype will be the identifying URI for an XML Schema datatype.

@DITAArchVersion (architectural attributes)
Specifies the version of the DITA architecture that is in use. This attribute is in the namespace http://dita.oasis-open.org/architecture/2005/. This attribute is specified in the topic and map modules, and it uses a default value of the current version of DITA. The current default is "2.0".

@duplicates
Specifies whether duplicate links are removed from a group of links. Duplicate links are links that address the same resource using the same properties, such as link text and link role. How duplicate links are determined is processor-specific. The following values are valid:
yes
  Specifies that duplicate links are retained.

no
  Specifies that duplicate links are removed.

-dita-use-conref-target
  See Using the -dita-use-conref-target value for more information.

The suggested processing default is "yes" within <linklist> elements and "no" for other links.

Comment by robander on Dec 28 2021
"How duplicate links are determined is processor-specific" ==> this should be included in any updates to standardize language around "implementation dependent".
Disposition: Unassigned

@encoding (inclusion attributes)

Comment by Kristen J Eberlein on 29 April 2019
Can we replace "should" in the following definition?
Disposition: Unassigned

Specifies the character encoding to use when translating the character data from the referenced content. The value should be a valid encoding name. If not specified, processors may make attempts to automatically determine the correct encoding, for example using HTTP headers, through analysis of the binary structure of the referenced data, or the <?xml?> processing instruction when including XML as text. The resource should be treated as UTF-8 if no other encoding information can be determined.

When parse="xml", standard XML parsing rules apply for the detection of character encoding. The necessity and uses of @encoding for non-standard values of @parse are implementation-dependent.

@expanse (display attributes)
  Specifies the horizontal placement of the element. The following values are valid:

  column
    Indicates that the element is aligned with the current column margin.

  page
    Indicates that the element is placed on the left page margin for left-to-right presentation or the right page margin for right-to-left presentation.

  spread
    Indicates that the object is rendered across a multi-page spread. If the output format does not have anything that corresponds to spreads, then "spread" has the same meaning as "page".

  textline
    Indicates that the element is aligned with the left (for left-to-right presentation) or right (for right-to-left presentation) margin of the current text line and takes indentation into account.

-dita-use-conref-target
  See Using the -dita-use-conref-target value for more information.

For <table>, in place of the @expanse attribute that is used by other DITA elements, the @pgwide attribute is used in order to conform to the OASIS Exchange Table Model.

Some processors or output formats might not support all values.
@expiry (date attributes)
Specifies the date when the information should be retired or refreshed. The date is specified using the ISO 8601 format: YYYY-MM-DD, where YYYY is the year, MM is the month (01 to 12), and DD is the day (01-31).

@format (link-relationship attributes)
Specifies the format of the resource that is referenced. See C.4 STUB CONTENT (206) for detailed information on supported values and processing implications.

@frame (display attributes)
Specifies which portion of a border surrounds the element. The following values are valid:

- all
  Indicates that a line is rendered at the top, bottom, left, and right of the containing element.
- bottom
  Indicates that a line is rendered at the bottom of the containing element.
- none
  Indicates that no lines are rendered.
- sides
  Indicates that a line is rendered at the left and right of the containing element.
- top
  Indicates that a line is rendered at the top of the containing element.
- topbot
  Indicates that a line is rendered at the top and bottom of the containing element.

@dita-use-conref-target
See Using the -dita-use-conref-target value for more information.

Some processors or output formats might not support all values.

@golive (date attributes)
Specifies the publication or general availability (GA) date. The date is specified using the ISO 8601 format: YYYY-MM-DD, where YYYY is the year, MM is the month (01 to 12), and DD is the day (01-31).

@headers
Specifies which entries in the current table provide headers for this cell. The @headers attribute contains an unordered set of unique, space-separated tokens, each of which is an ID reference of an entry from the same table.

@href (link-relationship attributes)
Specifies a reference to a resource. See C.4 STUB CONTENT (206) for detailed information on supported values and processing implications.

@impose-role
Specifies whether this element will impose its role on elements in a referenced map. The attribute is ignored if the target of the reference is not a map or branch of a map. The following values are valid:

- keeptarget
  The role of the current reference is not imposed on the target of the reference. This is the default for the unspecialized <topicref> element and for many convenience elements such as <keydef>.
The role of the current reference is imposed on the target of the reference. For example, if a specialized topic reference `<chapter>` uses this value and references a map, a topic reference that resolves in place of the `<chapter>` will be treated as if it were a chapter.

-dita-use-conref-target
See Using the -dita-use-conref-target value for more information.

See C.4 STUB CONTENT (206) for detailed information on supported values and processing implications.

@keycol (simpletable attributes)
Specifies the column that contains the content that represents the key to the tabular structure. If @keycol is present and assigned a numerical value, the specified column is treated as a vertical header.

@keyref
Specifies a key name that acts as a redirectable reference based on a key definition within a map. See C.4 STUB CONTENT (206) for information on using this attribute.

For HDITA, the equivalent of @keyref is @data-keyref

Comment by robander
The definition above for @keyref should be synchronized with the definition in the linked section on keys.
Disposition: Unassigned

@keys
Specifies one or more names for a resource. See C.4 STUB CONTENT (206) for information on using this attribute.

For HDITA, the equivalent of @keys is @data-keys

@keyscope (common map attributes)
Specifies that the element marks the boundaries of a key scope.
See C.4 STUB CONTENT (206) for information on using this attribute.

Comment by Kristen J Eberlein on 28 September 2022
Here is the content from the "DITA map attributes" topic:

@keyscope
Defines a new scope for key definition and resolution, and gives the scope one or more names. For more information about key scopes, see Indirect key-based addressing.

Disposition: Unassigned

@linking (common map attributes)
Specifies linking characteristics of a topic specific to the location of this reference in a map. If the value is not specified locally, the value might cascade from another element in the map (for cascade rules, see Cascading of metadata attributes in a DITA map).

Comment by robander on Dec 28 2021
The text below matches 1.3 spec text but I’m nervous about "cannot link" type definition. It’s describing how to generate links based on the current context in the map - it’s not describing what the topic itself is allowed to link to, which is how I interpret "can".

Disposition: Unassigned
The following values are valid:

**targetonly**
A topic can only be linked to and cannot link to other topics.

**sourceonly**
A topic cannot be linked to but can link to other topics.

**normal**
A topic can be linked to and can link to other topics. Use this to override the linking value of a parent topic.

**none**
A topic cannot be linked to or link to other topics.

**-dita-use-conref-target**
See Using the `-dita-use-conref-target value` for more information.

---

Comment by Kristen J Eberlein on 28 September 2022
Here is the content from the "DITA map attributes" topic:

```@linking```
By default, the relationships between the topics that are referenced in a map are reciprocal:

- Child topics link to parent topics and vice versa.
- Next and previous topics in a sequence link to each other.
- Topics in a family link to their sibling topics.
- Topics referenced in the table cells of the same row in a relationship table link to each other. A topic referenced within a table cell does not (by default) link to other topics referenced in the same table cell.

This behavior can be modified by using the `@linking` attribute, which enables an author or information architect to specify how a topic participates in a relationship. The following values are valid:

- **linking="none"**
  Specifies that the topic does not exist in the map for the purposes of calculating links.

- **linking="sourceonly"**
  Specifies that the topic will link to its related topics but not vice versa.

- **linking="targetonly"**
  Specifies that the related topics will link to it but not vice versa.

- **linking="normal"**
  Default value. It specifies that linking will be reciprocal (the topic will link to related topics, and they will link back to it).

Authors also can create links directly in a topic by using the `<xref>` or `<link>` elements, but in most cases map-based linking is preferable, because links in topics create dependencies between topics that can hinder reuse.

Note that while the relationships between the topics that are referenced in a map are reciprocal, the relationships merely *imply* reciprocal links in generated output that includes links. The rendered navigation links are a function of the presentation style that is determined by the processor.

**Disposition: Unassigned**
@name (data-element attributes)
Defines a unique name for the object.

Comment by robander
Do we need to specify the scope of "unique" here?
Disposition: Unassigned

@otherrole
Specifies an alternate role for a link relationship when the @role attribute is set to "other".

@parse (inclusion attributes)
Specifies the processing expectations for the referenced resource. Processors must support the following values:

text
The contents should be treated as plain text. Reserved XML characters should be displayed, and not interpreted as XML markup.

xml
The contents of the referenced resource should be treated as an XML document, and the referenced element should be inserted at the location of the <include> element. If a fragment identifier is included in the address of the content, processors must select the element with the specified ID. If no fragment identifier is included, the root element of the referenced XML document is selected. Any grammar processing should be performed during resolution, such that default attribute values are explicitly populated. Prolog content must be discarded.

It is an error to use parse="xml" anywhere other than within <foreign> or a specialization thereof.

Processors may support other values for the @parse attribute with proprietary processing semantics. Processors should issue warnings and use <fallback> when they encounter unsupported @parse values. Non-standard @parse instructions should be expressed as URIs.

Note Proprietary @parse values will likely limit the portability and interoperability of DITA content, so should be used with care.

@processing-role (common map attributes)
Specifies whether the referenced resource is processed normally or treated as a resource that is only included in order to resolve references, such as key or content references. The following values are valid:

normal
Indicates that the resource is a readable part of the information set. It is included in navigation and search results. This is the default value for the <topicref> element.

resource-only
Indicates that the resource should be used only for processing purposes. It is not included in navigation or search results, nor is it rendered as a topic. This is the default value for the <keydef> element.

-dita-use-conref-target
See Using the -dita-use-conref-target value for more information.

If no value is specified but the attribute is specified on a containing element within a map or within the related-links section, the value cascades from the closest containing element.
@relcolwidth (simpletable attributes)
Specifies the width of each column in relationship to the width of the other columns. The value is a space-separated list of relative column widths. Each column width is specified as a positive integer or decimal number followed by an asterisk character.

For example, the value relcolwidth="1* 2* 3*" gives a total of 6 units across three columns. The relative widths are 1/6, 2/6, and 3/6 (16.7%, 33.3%, and 50%). Similarly, the value relcolwidth="90* 150*" causes relative widths of 90/240 and 150/240 (37.5% and 62.5%).

@role
Specifies the role that a linked topic plays in relationship with the current topic.

For example, in a parent/child relationship, the role would be “parent” when the target is the parent of the current topic, and “child” when the target is the child of the current topic. This can be used to sort and classify links when rendering.

The following values are valid:

ancestor
Indicates a link to a topic above the parent topic.

child
Indicates a link to a direct child such as a directly nested or dependent topic.

cousin
Indicates a link to another topic in the same hierarchy that is not a parent, child, sibling, next, or previous.

descendant
Indicates a link to a topic below a child topic.

friend
Indicates a link to a similar topic that is not necessarily part of the same hierarchy.

next
Indicates a link to the next topic in a sequence.

other
Indicates any other kind of relationship or role. The type of role is specified as the value for the @otherrole attribute.

parent
Indicates a link to a topic that is a parent of the current topic.

previous
Indicates a link to the previous topic in a sequence.

sibling
Indicates a link between two children of the same parent topic.

-dita-use-conref-target
See Using the -dita-use-conref-target value for more information.

@rowheader (complex table attributes)
Specifies whether the entries in the respective column are row headers. The following values are valid:

firstcol
Indicates that entries in the first column of the table are row headers. This applies when the @rowheader attribute is specified on the <table> element.
headers
Indicates that entries of the column that is described using the `<colspec>` element are row headers. This applies when the `@rowheader` attribute is specified on the `<colspec>` element.

norowheader
Indicates that entries in the first column are not row headers. This applies when the `@rowheader` attribute is specified on the `<table>` element.

-dita-use-conref-target
See Using the `-dita-use-conref-target` value for more information.

Note This attribute is not part of the OASIS Exchange Table Model upon which DITA tables are based. Some processors or output formats might not support all values.

The `@rowheader` attribute is available on the following table elements: `<table>` and `<colspec>`.

@rowsep (complex table attributes)
Specifies whether to render row separators between table entries. The following values are valid: "0" (no separators) and "1" (separators).

The `@rowsep` attribute is available on the following table elements: `<colspec>`, `<entry>`, `<row>`, `<table>`, and `<tgroup>`.

@scale (display attributes)
Specifies the percentage by which fonts are resized in relation to the normal text size. The value of this attribute is a positive integer. When used on `<table>` or `<simpletable>`, the following values are valid: "50", "60", "70", "80", "90", "100", "110", "120", "140", "160", "180", "200", and `-dita-use-conref-target` (206).

This attribute is primarily useful for print-oriented display. Some processors might not support all values.

If the `@scale` attribute is specified on an element that contains an image, the image is not scaled. The image is scaled only if a scaling property is explicitly specified for the `<image>` element.

@scope (link-relationship attributes)
Specifies the closeness of the relationship between the current document and the referenced resource. The following values are valid: "local", "peer", "external", and "-dita-use-conref-target".

See C.4 STUB CONTENT (206) for detailed information on supported values and processing implications.

@scope
Specifies that the current entry is a header for other table entries. The following values are valid:

- col
  Indicates that the current entry is a header for all cells in the column.

- colgroup
  Indicates that the current entry is a header for all cells in the columns that are spanned by this entry.

- row
  Indicates that the current entry is a header for all cells in the row.

- rowgroup
  Indicates that the current entry is a header for all cells in the rows that are spanned by this entry.

-dita-use-conref-target
See Using the `-dita-use-conref-target` value for more information.
@search (common map attributes)
Specifies whether the target is available for searching. If the value is not specified locally, the value might cascade from another element in the map (for cascade rules, see Cascading of metadata attributes in a DITA map). The following values are valid: "yes", "no", and "-dita-use-conref-target".

Comment by Kristen J Eberlein on 28 September 2022
Here is the content from the "DITA map attributes" topic:

@search
  Specifies whether the topic is included in search indexes.

Disposition: Unassigned

@specializations (architectural attributes)
Specifies the attribute-domain specializations that are included in the document-type shell. This attribute is set as a default within the document-type shell. The value varies depending on what domains are integrated into the document-type shell. For example, a grammar file that includes the specialized attributes @audience, @deliveryTarget, and @newBaseAtt would set the value to @props/audience @props/deliveryTarget @base/newBaseAtt.

@subjectrefs (common map attributes)
Specifies one or more keys that are each defined by a subject definition in a subject scheme map. Multiple values are separated by white space.

@title-role (REQUIRED)
Specifies the role that the alternative title serves. Multiple roles are separated by white space. The following roles are defined in the specification: "linking", "navigation", "search", "subtitle", and "hint".

Processors can define custom values for the @title-role attribute.

@toc (common map attributes)
Specifies whether a topic appears in the table of contents (TOC) based on the current map context. If the value is not specified locally, the value might cascade from another element in the map (for cascade rules, see Cascading of metadata attributes in a DITA map). The following values are valid:

yes
  The topic appears in a generated TOC.

no
  The topic does not appear in a generated TOC.

-dita-use-conref-target
  See C.4 STUB CONTENT (206) for more information.

Comment by Kristen J Eberlein on 28 September 2022
Here is the content from the "DITA map attributes" topic:

@toc
  Specifies whether topics are excluded from navigation output, such as a Web site map or an online table of contents. By default, <topicref> hierarchies are included in navigation output; relationship tables are excluded.

Disposition: Unassigned

@type (link-relationship attributes)
Describes the target of a reference. See C.4 STUB CONTENT (206) for detailed information on supported values and processing implications.
@value (data-element attributes)
   Specifies a value associated with the current property or element.

@valign (complex table attributes)
   Specifies the vertical alignment of text in table entries. The following values are valid:
   
   **bottom**
   Indicates that text is aligned with the bottom of the table entry.

   **middle**
   Indicates that text is aligned with the middle of the table entry.

   **top**
   Indicates that text is aligned with the top of the table entry.

@dita-use-conref-target
   See Using the -dita-use-conref-target value for more information.

The @valign attribute is available on the following table elements: <entry>, <tbody>, <thead>, and <row>.

@xml:space
   Specifies how to handle white space in the current element. This attribute is provided on <pre>,
   <lines>, and on elements specialized from those. It ensures that parsers respect white space that
   is part of the data in those elements, including line-end characters. When defined, it has a fixed value
   of "preserve", making it a default property of the element that cannot be changed or deleted by
   authors.

@xmlns:ditaarch (architectural attributes)
   Declares the default DITA namespace. This namespace is declared as such in the RNG modules for
   <topic> and <map>, but it is specified as an attribute in the equivalent DTD-based modules. The
   value is fixed to "http://dita.oasis-open.org/architecture/2005/".

C.4 STUB CONTENT

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D Element-by-element recommendations for translators

This topic contains a list of all OASIS DITA elements that are available in the edition. It includes recommendations on whether the element contents are likely to be suitable for translation and whether the element has attributes whose values are likely to be suitable for translation. Examples of content that is not suitable for translation include code fragments and mailing addresses.

Notes on the tables below

- Note that an element might be a block element in one context and an inline element in another. In addition, specialized element types might be rendered in a way that varies from their specialization base. Accordingly, the distinctions presented in the tables are provided only as a guide to known behavior with the base DITA. For element specializations that are not distributed by OASIS, the suggested default is to fall back to the closest ancestor element that is part of the OASIS distribution.
- For all elements, the @translate attribute overrides the suggested defaults specified in the tables below.
- Certain block-level elements might appear in the middle of a translation segment. They are considered subflow elements in regard to translation. When located in the middle of a translation segment, these element should not be translated as part of that segment. Whenever possible, such elements should be placed only at sentence boundaries in order to aid translation. The subflow elements in base DITA are <draft-comment>, <fn>, <idex-see>, <index-see-also>, <indexterm>, and <required-cleanup>
- The <keyword> element (as well as specializations of <keyword>) is an inline, phrase-like element when it appears in the body of a document. It can also appear in the <keywords> element in <topicmeta> (for maps) or in the <prolog> (for topic). When it appears in the <keywords> element, each <keyword> represents an individual segment. In that location, <keyword> is considered a subflow element.

Explanation of column headers

The following list explains the headers for the columns:

**Element name**

The name of the element.

**Specialization base**

The element from which the current element is specialized. This column only appears in tables for the domain elements.

**Same behavior as specialization base?**

Indicates whether the element has the same behaviors in regard to translation as its specialization base. The behaviors are whether the element is formatted as a single block or as an inline element, whether the element represents a complete translatable segment, and whether the element contains translatable content. This column only appears in tables for the domain elements.

**Block/inline translation**

Indicates whether the element represents a complete translatable segment.

**Translatable content?**

Whether the element contains one or both of the following:
- Text content that can be translated
- Child elements that contain content that can be translated

Notes
This column contains any additional information, including the following items. This column only appears in tables when it is needed.

- Whether the element has any attributes with values that might need translation
- If specializations of the element might need translation,
- If the element is a “subflow” element for the purposes of translation

Bookmap elements
The following table contains information about the bookmap specialization. There are no translatable attributes.

<table>
<thead>
<tr>
<th>Element name</th>
<th>Specialization</th>
<th>Same behavior as special base?</th>
<th>Block/inline (translation)</th>
<th>Translatable content?</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;abbrevlist&gt;</td>
<td>&lt;topicref&gt;</td>
<td>yes</td>
<td>block</td>
<td>yes</td>
</tr>
<tr>
<td>&lt;amendments&gt;</td>
<td>&lt;topicref&gt;</td>
<td>yes</td>
<td>block</td>
<td>yes</td>
</tr>
<tr>
<td>&lt;appendix&gt;</td>
<td>&lt;topicref&gt;</td>
<td>yes</td>
<td>block</td>
<td>yes</td>
</tr>
<tr>
<td>&lt;approved&gt;</td>
<td>&lt;data&gt;</td>
<td>yes</td>
<td>block</td>
<td>no</td>
</tr>
<tr>
<td>&lt;backmatter&gt;</td>
<td>&lt;topicref&gt;</td>
<td>yes</td>
<td>block</td>
<td>yes</td>
</tr>
<tr>
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<td>&lt;topicref&gt;</td>
<td>yes</td>
<td>block</td>
<td>yes</td>
</tr>
<tr>
<td>&lt;bookabstract&gt;</td>
<td>&lt;topicref&gt;</td>
<td>yes</td>
<td>block</td>
<td>yes</td>
</tr>
<tr>
<td>&lt;bookchangehistory&gt;</td>
<td>&lt;data&gt;</td>
<td>yes</td>
<td>block</td>
<td>no</td>
</tr>
<tr>
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<td>block</td>
<td>no</td>
</tr>
<tr>
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<td>yes</td>
<td>block</td>
<td>no</td>
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<td>&lt;data&gt;</td>
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<td>block</td>
<td>no</td>
</tr>
<tr>
<td>&lt;booklibrary&gt;</td>
<td>&lt;ph&gt;</td>
<td>yes</td>
<td>inline</td>
<td>yes</td>
</tr>
<tr>
<td>&lt;booklist&gt;</td>
<td>&lt;topicref&gt;</td>
<td>yes</td>
<td>block</td>
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<tr>
<td>&lt;booklists&gt;</td>
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<td>block</td>
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</tr>
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<td>&lt;booknumber&gt;</td>
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<td>block</td>
<td>no</td>
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<tr>
<td>&lt;bookowner&gt;</td>
<td>&lt;data&gt;</td>
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<td>block</td>
<td>no</td>
</tr>
<tr>
<td>&lt;bookpartno&gt;</td>
<td>&lt;data&gt;</td>
<td>yes</td>
<td>block</td>
<td>no</td>
</tr>
<tr>
<td>&lt;bookrestriction&gt;</td>
<td>&lt;data&gt;</td>
<td>yes</td>
<td>block</td>
<td>no</td>
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<tr>
<td>&lt;bookrights&gt;</td>
<td>&lt;data&gt;</td>
<td>yes</td>
<td>block</td>
<td>no</td>
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<tr>
<td>&lt;booktitle&gt;</td>
<td>&lt;title&gt;</td>
<td>yes</td>
<td>block</td>
<td>yes</td>
</tr>
<tr>
<td>&lt;booktitlealt&gt;</td>
<td>&lt;ph&gt;</td>
<td>yes</td>
<td>inline</td>
<td>yes</td>
</tr>
<tr>
<td>Element name</td>
<td>Specialization base</td>
<td>Same behavior as specialization base?</td>
<td>Block/inline (translation)</td>
<td>Translatable content?</td>
</tr>
<tr>
<td>--------------</td>
<td>---------------------</td>
<td>----------------------------------------</td>
<td>---------------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>&lt;chapter&gt;</td>
<td>&lt;topicref&gt;</td>
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<td>block</td>
<td>yes</td>
</tr>
<tr>
<td>&lt;colophon&gt;</td>
<td>&lt;topicref&gt;</td>
<td>yes</td>
<td>block</td>
<td>yes</td>
</tr>
<tr>
<td>&lt;completed&gt;</td>
<td>&lt;ph&gt;</td>
<td>no</td>
<td>inline</td>
<td>no</td>
</tr>
<tr>
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<td>&lt;data&gt;</td>
<td>yes</td>
<td>block</td>
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<td>&lt;data&gt;</td>
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<td>no</td>
</tr>
<tr>
<td>&lt;day&gt;</td>
<td>&lt;ph&gt;</td>
<td>no</td>
<td>inline</td>
<td>no</td>
</tr>
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<td>yes</td>
<td>block</td>
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</tr>
<tr>
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<td>block</td>
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<td>&lt;topicref&gt;</td>
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</tr>
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<td>&lt;topicref&gt;</td>
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<td>block</td>
<td>yes</td>
</tr>
<tr>
<td>&lt;glossarylist&gt;</td>
<td>&lt;topicref&gt;</td>
<td>yes</td>
<td>block</td>
<td>yes</td>
</tr>
<tr>
<td>&lt;indexlist&gt;</td>
<td>&lt;topicref&gt;</td>
<td>yes</td>
<td>block</td>
<td>yes</td>
</tr>
<tr>
<td>&lt;isbn&gt;</td>
<td>&lt;data&gt;</td>
<td>yes</td>
<td>block</td>
<td>no</td>
</tr>
<tr>
<td>&lt;mainbooktitle&gt;</td>
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<td>yes</td>
<td>inline</td>
<td>yes</td>
</tr>
<tr>
<td>&lt;maintainer&gt;</td>
<td>&lt;data&gt;</td>
<td>yes</td>
<td>block</td>
<td>no</td>
</tr>
<tr>
<td>&lt;month&gt;</td>
<td>&lt;ph&gt;</td>
<td>no</td>
<td>inline</td>
<td>no</td>
</tr>
<tr>
<td>&lt;notices&gt;</td>
<td>&lt;topicref&gt;</td>
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<td>block</td>
<td>yes</td>
</tr>
<tr>
<td>&lt;organization&gt;</td>
<td>&lt;data&gt;</td>
<td>yes</td>
<td>block</td>
<td>no</td>
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<tr>
<td>&lt;part&gt;</td>
<td>&lt;topicref&gt;</td>
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<td>block</td>
<td>yes</td>
</tr>
<tr>
<td>&lt;person&gt;</td>
<td>&lt;data&gt;</td>
<td>yes</td>
<td>block</td>
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<td>&lt;preface&gt;</td>
<td>&lt;topicref&gt;</td>
<td>yes</td>
<td>block</td>
<td>yes</td>
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<td>&lt;data&gt;</td>
<td>yes</td>
<td>block</td>
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<td>&lt;data&gt;</td>
<td>yes</td>
<td>block</td>
<td>no</td>
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<td>&lt;publisherinformation&gt;</td>
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<td>yes</td>
<td>block</td>
<td>yes</td>
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<td>&lt;data&gt;</td>
<td>yes</td>
<td>block</td>
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<td>&lt;data&gt;</td>
<td>yes</td>
<td>block</td>
<td>no</td>
</tr>
<tr>
<td>&lt;revisionid&gt;</td>
<td>&lt;ph&gt;</td>
<td>no</td>
<td>inline</td>
<td>no</td>
</tr>
<tr>
<td>&lt;started&gt;</td>
<td>&lt;ph&gt;</td>
<td>no</td>
<td>inline</td>
<td>no</td>
</tr>
<tr>
<td>&lt;summary&gt;</td>
<td>&lt;ph&gt;</td>
<td>yes</td>
<td>inline</td>
<td>yes</td>
</tr>
<tr>
<td>&lt;tablelist&gt;</td>
<td>&lt;topicref&gt;</td>
<td>yes</td>
<td>block</td>
<td>yes</td>
</tr>
<tr>
<td>&lt;tested&gt;</td>
<td>&lt;data&gt;</td>
<td>yes</td>
<td>block</td>
<td>no</td>
</tr>
</tbody>
</table>
Concept elements

The following table contains information about the concept specialization. There are no translatable attributes.

<table>
<thead>
<tr>
<th>Element name</th>
<th>Specialization base</th>
<th>Same behavior as specialization base?</th>
<th>Block/inline (translation)</th>
<th>Translatable content?</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;toc&gt;</td>
<td>&lt;topicref&gt;</td>
<td>yes</td>
<td>block</td>
<td>yes</td>
</tr>
<tr>
<td>&lt;trademarklist&gt;</td>
<td>&lt;topicref&gt;</td>
<td>yes</td>
<td>block</td>
<td>yes</td>
</tr>
<tr>
<td>&lt;volume&gt;</td>
<td>&lt;data&gt;</td>
<td>yes</td>
<td>block</td>
<td>no</td>
</tr>
<tr>
<td>&lt;year&gt;</td>
<td>&lt;ph&gt;</td>
<td>no</td>
<td>inline</td>
<td>no</td>
</tr>
</tbody>
</table>

Glossary entry elements

The following table contains information about the glossary entry specialization.

<table>
<thead>
<tr>
<th>Element name</th>
<th>Specialization base</th>
<th>Same behavior as specialization base?</th>
<th>Block/inline (translation)</th>
<th>Translatable content?</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;glossAbbreviation&gt;</td>
<td>&lt;title&gt;</td>
<td>yes</td>
<td>block</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>&lt;glossAcronym&gt;</td>
<td>&lt;title&gt;</td>
<td>yes</td>
<td>block</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>&lt;glossAlt&gt;</td>
<td>&lt;section&gt;</td>
<td>yes</td>
<td>block</td>
<td>yes</td>
<td></td>
</tr>
<tr>
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Task elements

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Troubleshooting elements

The following table contains information about the troubleshooting specialization. There are no translatable attributes.
### Abbreviated form domain (abbrev-d)

The following table contains information about the abbreviated form domain. There are no translatable attributes in this domain.

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### Glossary reference domain (glossref-d)

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### Hardware domain (hw-d)

The following table contains information about the hardware domain. There are no translatable attributes in this domain.
### Markup domain (markup-d)

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### MathML domain (mathml-d)

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### Programming domain (pr-d)

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**Release management domain (relmgmt-d)**

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**Software domain (sw-d)**

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**SVG domain (svg-d)**

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### User interface domain (ui-d)

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### XML mention domain (xml-d)

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### XNAL domain (xnal-d)

The XNAL information is all metadata, so it generally does not need to be translated. Exceptions might be needed when selections from this metadata are used for display purposes. The standard behavior might need to change based on local business rules. For example, in some cases it might be appropriate to translate the honorific, country, or organizationname elements. There are no translatable attributes.

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<th>Specialization base</th>
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# E Revision history

The following table contains information about revisions to this document.

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<td>17 October 2022</td>
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<td>- Updated navigation structure concerning placement of <code>&lt;abbreviated-form&gt;</code>,</td>
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<td><code>&lt;glossgroup&gt;</code>, and <code>&lt;glossref&gt;</code> element-reference topics</td>
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