

## Review T: Utilities domain and sorting

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# 1 Sorting

Processors can be configured to sort elements. Typical processing includes sorting glossary entries, index entries, list items, and tables based on the contents of cells in specific columns or rows.

Each element to be sorted must have some inherent text on which it will be sorted. This text is the *base sort phrase* for the element. For elements that have titles, the base sort phrase usually is the content of the `<title>` element. For elements that do not have titles, the base sort phrase might be literal content in the DITA source, or it might be generated or constructed based on the semantics of the element involved; for example, it could be constructed from various attribute or metadata values.

001 (11) Processors that perform sorting **SHOULD** explicitly document how the base sort phrase is determined for a given element.

The `<sort-as>` element can be used to specify an effective sort phrase when the base sort phrase is not appropriate for sorting. For index terms, the `<sort-as>` element specifies the effective sort phrase for an index entry.

The details of sorting and grouping are implementation specific. Processors might provide different mechanisms for defining or configuring collation and grouping details. Even where the `<sort-as>` element is specified, two processors might produce different sorted and grouped results because they might use different collation and grouping rules. For example, one processor might be configured to sort English terms before non-English terms, while another might be configured to sort them after.

002 (11) When a `<sort-as>` element is specified, processors that sort the containing element **MUST** construct the effective sort phrase by prepending the content of the `<sort-as>` element to the base sort phrase. This ensures that two items with the same `<sort-as>` element but different base sort phrases will sort in the appropriate order.

For example, if a processor uses the content of the `<title>` element as the base sort phrase, and the title of a topic is "24 Hour Support Hotline" and the value of the `<sort-as>` element is "twenty-four hour", then the effective sort phrase would be "twenty-four hour24 Hour Support Hotline".

## Related reference

### [sort-as \(8\)](#)

The `<sort-as>` element can be used to specify an effective sort phrase when the base sort phrase is not appropriate for sorting, for example, Japanese characters. This element prepends text to the base sort phrase in order to construct an effective sort phrase.

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## 2 Utilities domain elements

The utilities domain elements **are used to** describe image maps and enable sorting.

### 2.1 <area>

The <area> element defines a linkable region in an image map.

#### Usage information

Each area in an image map specifies the shape and coordinates of the linkable region, as well as the link target and its link text.

#### Specialization hierarchy

The <area> element is specialized from <div>. It is defined in the utilities domain module.

#### Attributes

The following attributes are available on this element: [universal attributes](#).

#### Example

The following code sample shows how the <area> element defines the linkable region in an image map. It defines the shape and coordinates of the linkable region, and it specifies the link target and its link text.

```
<area>
  <shape>rect</shape>
  <coords>276, 60, 425, 460</coords>
  <xref format="html" scope="external"
    href="https://en.wikipedia.org/wiki/Willem_van_Ruytenburch">
    Willem van Ruytenburch</xref>
</area>
```

### 2.2 <coords>

The <coords> element specifies the coordinates of a linkable region in an <imagemap>.

#### Usage information

The values for use in the <coords> element are defined by the [HTML5 specification](#). The unit used for coordinates is CSS pixels. The following table provides a summary of the syntax, which depends on the shape of the linkable region:

Shape	Syntax
<b>circle</b>	Three integers, separated by commas: <ol style="list-style-type: none"><li>1. The distance from the left edge of the image to the center of the circle</li><li>2. The distance from the top edge of the image to the center of the circle</li><li>3. The radius of the circle</li></ol>
<b>default</b>	The default shape is the entire image. The <coords> element should be empty.
<b>poly</b>	An even number of at least six integers, separated by commas:

Shape	Syntax
	<ul style="list-style-type: none"> <li>Each pair of integers represents a coordinate given as the distances from the left and the top of the image respectively.</li> <li>The coordinates represent the points of the polygon, in order.</li> </ul>
<b>rect</b>	<p>Four integers, separated by commas:</p> <ol style="list-style-type: none"> <li>The distance from the left edge of the image to the left side of the rectangle</li> <li>The distance from the top edge of the image to the top side of the rectangle</li> <li>The distance from the left edge of the image to the right side of the rectangle</li> <li>The distance from the top edge of the image to the bottom side of the rectangle</li> </ol>

## Specialization hierarchy

The `<coords>` element is specialized from `<ph>`. It is defined in the utilities-domain module.

## Attributes

The following attributes are available on this element: [universal attributes](#) and [@keyref](#).

For this element, the `@translate` attribute has a default value of "no".

## Example

The following code sample shows how the `<coords>` element specifies the coordinates of a polygonal region in an image map:

```
<area>
  <shape>poly</shape>
  <coords>119, 4, 90, 7, 87, 20, 53, 36, 45, 51, 7, 188, 12, 467,
    223, 464, 240, 315, 223, 254, 210, 168, 193, 146, 173, 121, 167,
    87, 169, 70, 181, 57, 189, 35, 164, 24, 140, 4
  </coords>
  <xref format="html" scope="external"
    href="https://en.wikipedia.org/wiki/Frans_Banninck_Cocq">
    Willem van Ruytenburch</xref>
</area>
```

## 2.3 <imagemap>

An image map is an image with areas that are linked to DITA topics, web pages, PDFs, or any other resources that can be targeted by the `@href` attribute.

## Usage information

A DITA image map references the image, followed by a series of `<area>` elements that define the linkable regions of the image. Each `<area>` element specifies the shape and coordinates of the region, as well as the link target and link text.

## Rendering expectations

The rendering expectations for the `<imagemap>` element depends on the output format. For HTML-based formats, it can be rendered as standard HTML images or as an alternate form of navigation, such as table-based image maps. For print-based formats, it can be rendered as an image and a list of the specified link targets.

## Specialization hierarchy

The `<imagemap>` element is specialized from `<div>`. It is defined in the utilities domain module.

## Attributes

The following attributes are available on this element: [display attributes](#) and [universal attributes](#).

## Example

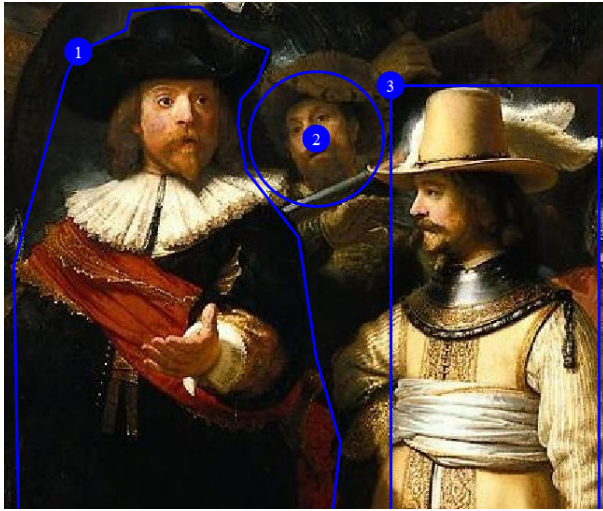
This section contains examples of how the `<imagemap>` element can be used:

### Figure 1: Example: Image map that uses the circle, rectangle, and polygon shapes

The following code sample shows an image map for a detail of Rembrandt's "The Night Watch":

```
<imagemap id="the-night-watch">
  <image href="Detail_from_The_Night_Watch.jpg" id="night_watch">
    <alt>Detail from Rembrandt's The Night Watch</alt>
  </image>
  <!-- Area #1: Frans Banninck Cocq -->
  <area>
    <shape>poly</shape>
    <coords>119, 4, 90, 7, 87, 20, 53, 36, 45, 51, 7, 188, 12, 467,
      223, 464, 240, 315, 223, 254, 210, 168, 193, 146, 173, 121, 167,
      87, 169, 70, 181, 57, 189, 35, 164, 24, 140, 4</coords>
    <xref format="html" scope="external"
      href="https://en.wikipedia.org/wiki/Frans_Banninck_Cocq">
      Frans Banninck Cocq</xref>
  </area>
  <!-- Area #2: A member of the schutterij (the night watch) -->
  <area>
    <shape>circle</shape>
    <coords>223, 98, 48</coords>
    <xref format="html" scope="external"
      href="https://en.wikipedia.org/wiki/Schutterij">A member of the
      schutterij (the night watch)</xref>
  </area>
  <!-- Area #3: Willem van Ruytenburch -->
  <area>
    <shape>rect</shape>
    <coords>276, 60, 425, 460</coords>
    <xref format="html" scope="external"
      href="https://en.wikipedia.org/wiki/Willem_van_Ruytenburch">
      Willem van Ruytenburch</xref>
  </area>
</imagemap>
```

The following image shows the areas that are defined by the image map. Each of the three supported shapes are used.



The following table lists the defined areas, the shape used, alternate text, and link targets:

Area	Shape	Alternate text	Link target
1	Polygon	Frans Banninck Cocq	<a href="#">Wikipedia entry for Frans Banninck Cocq</a>
2	Circle	A member of the schutterij (the night watch)	<a href="#">Wikipedia entry for Schutterij</a>
3	Rectangle	Willem van Ruytenburch	<a href="#">Wikipedia entry for Willem van Ruytenburch</a>

**Figure 2: Example: Image map with the default shape**

The following code sample shows an image map that specifies that the entire image is the linkable region. Because the default shape is specified, the `<coords>` element is empty.

```
<imagemap id="portrait">
  <image keyref="bronte-sisters">
    <alt>Portrait of the Bronte sisters</alt>
  </image>
  <area>
    <shape>default</shape>
    <coords/>
    <xref keyref="wiki-bronte-sisters"/>
  </area>
</imagemap>
```

## 2.4 <shape>

The `<shape>` element defines the shape of a linkable region in an image map.

### Usage information

The values for use in the `<shape>` element are defined by the [HTML5 specification](#). The following values are supported as the content of the `<shape>` element:

#### circle

Indicates that the linkable region is a circle

#### default

Indicates the linkable region is **a rectangle that exactly covers the entire image**

## poly

Indicates that the linkable region is a polygon

## rect

Indicates that the linkable region is a rectangle

If the `<shape>` element is left empty, a rectangular shape is assumed.

## Specialization hierarchy

The `<shape>` element is specialized from `<keyword>`. It is defined in the utilities domain module.

## Attributes

The following attributes are available on this element: [universal attributes](#) and [@keyref](#).

For this element, the `@translate` attribute has a default value of "no".

## Example

See [<imagemap>](#) (5).

## 2.5 <sort-as>

The `<sort-as>` element can be used to specify an effective sort phrase when the base sort phrase is not appropriate for sorting, for example, Japanese characters. This element prepends text to the base sort phrase in order to construct an effective sort phrase.

## Usage information

Sort text can be specified in the content of the `<sort-as>` element or in the `@value` attribute on the `<sort-as>` element. The `<sort-as>` element is also useful for elements where the base sort phrase is inadequate or non-existent, such as an index entry for a Japanese Kanji phrase.

If a `<keyword>` element is used within `<sort-as>`, the `@keyref` attribute can be used to set the sort phrase. If a `<keyword>` uses `@keyref` and would otherwise also act as a navigation link, the link aspect of the `@keyref` attribute is ignored.

Some elements in the base DITA vocabulary are natural candidates for sorting, including topics, definition list entries, index entries, and rows in tables and simple tables. Authors are likely to include `<sort-as>` elements in the following locations:

- For topics, the `<sort-as>` element can be included directly in `<title>` or `<titlealt>` when the different forms of title need different effective sort phrases. If the effective sort phrase is common to all the titles for a topic, the `<sort-as>` element can be included as a direct child of the `<prolog>` element in the topic.
- For topic references, the `<sort-as>` element can be included directly in the `<titlealt>` element with a `@title-role` of navigation, such as `<navtitle>`, within `<topicmeta>` or as a child of `<topicmeta>`.
- For glossary entry topics, the `<sort-as>` element can be included directly in `<glossterm>` or as a direct child of the `<prolog>` element.
- For definition list items, the `<sort-as>` element can be included in the `<dt>` element.
- For index entries, the `<sort-as>` can be included as a child of `<indexterm>`. In a multilevel `<indexterm>` element, the `<sort-as>` element only affects the level in which it occurs.



## Processing expectations

If the @value attribute is not specified and the <sort-as> element does not contain content, then the <sort-as> element has no effect.

As a specialization of <data>, the <sort-as> element is allowed in any context where <data> is allowed. However, the presence of <sort-as> within an element does not necessarily indicate that the containing element should be sorted. Processors can choose to sort any DITA elements for any reason. Likewise, processors are not required to sort any elements.

003 (11)

Processors **SHOULD** expect to encounter <sort-as> elements in the above locations. Processors that sort **SHOULD** use the following precedence rules:

- A <sort-as> element that is specified in a title takes precedence over a <sort-as> element that is specified as a child of the topic prolog.
- Except for instances in the topic prolog, processors only apply <sort-as> elements that are either a direct child of the element to be sorted or a direct child of the title- or label-defining element of the element to be sorted.
- When an element contains multiple, direct-child, <sort-as> elements, the first direct-child <sort-as> element in document order takes precedence.
- It is an error if there is more than one <sort-as> child for a given <indexterm> element.
- Sort phrases are determined after filtering and content reference resolution occur.

004 (11)

When a <sort-as> element is specified, processors that sort the containing element **MUST** construct the effective sort phrase by prepending the content of the <sort-as> element to the base sort phrase. This ensures that two items with the same <sort-as> element but different base sort phrases will sort in the appropriate order.

For example, if a processor uses the content of the <title> element as the base sort phrase, and the title of a topic is "24 Hour Support Hotline" and the value of the <sort-as> element is "twenty-four hour", then the effective sort phrase would be "twenty-four hour24 Hour Support Hotline".

## Specialization hierarchy

The <sort-as> element is specialized from <data>. It is defined in the utilities-domain module.

## Attributes

The following attributes are available on this element: [universal attributes](#), @name, and @value.

For this element,

- The @name attribute has a default value of "sort-as".
- The @value attribute specifies text to combine with the base sort phrase to create an effective sort phrase. When the <sort-as> element has content and the @value attribute is specified, the @value attribute takes precedence.

## Example

The following examples illustrate how a glossary entry for the Chinese ideographic character for "big" might specify an effective sort phrase of "dada" (the Pin-Yin transliteration for Mandarin):

### Figure 3: <sort-as> within <glossterm>

In the following code sample, the <sort-as> element is located within the <glossterm> element:

```
<glossentry id="gloss-dada">
  <glossterm>
    <sort-as value="dada"/>
    &#x5927;&#x5927;
  </glossterm>
  <glossdef>Literally "big big".</glossdef>
</glossentry>
```

### Figure 4: <sort-as> within <prolog>

In the following code sample, the <sort-as> element is located within the <prolog> element of the glossary entry topic:

```
<glossentry id="gloss-dada">
  <glossterm>&#x5927;&#x5927;</glossterm>
  <glossdef>Literally "big big".</glossdef>
  <prolog>
    <sort-as>dada</sort-as>
  </prolog>
</glossentry>
```

## Related concepts

### Sorting (3)

Processors can be configured to sort elements. Typical processing includes sorting glossary entries, index entries, list items, and tables based on the contents of cells in specific columns or rows.

---

## A Aggregated RFC-2119 statements

This appendix contains all the normative statements from the DITA 2.0 specification. They are aggregated here for convenience in this non-normative appendix.

Item	Conformance statement
001 (3)	Processors that perform sorting <b>SHOULD</b> explicitly document how the base sort phrase is determined for a given element.
002 (3)	<p>When a <code>&lt;sort-as&gt;</code> element is specified, processors that sort the containing element <b>MUST</b> construct the effective sort phrase by prepending the content of the <code>&lt;sort-as&gt;</code> element to the base sort phrase. This ensures that two items with the same <code>&lt;sort-as&gt;</code> element but different base sort phrases will sort in the appropriate order.</p> <p>For example, if a processor uses the content of the <code>&lt;title&gt;</code> element as the base sort phrase, and the title of a topic is "24 Hour Support Hotline" and the value of the <code>&lt;sort-as&gt;</code> element is "twenty-four hour", then the effective sort phrase would be "twenty-four hour24 Hour Support Hotline".</p>
003 (9)	<p>Processors <b>SHOULD</b> expect to encounter <code>&lt;sort-as&gt;</code> elements in the above locations. Processors that sort <b>SHOULD</b> use the following precedence rules:</p> <ul style="list-style-type: none"><li>• A <code>&lt;sort-as&gt;</code> element that is specified in a title takes precedence over a <code>&lt;sort-as&gt;</code> element that is specified as a child of the topic prolog.</li><li>• Except for instances in the topic prolog, processors only apply <code>&lt;sort-as&gt;</code> elements that are either a direct child of the element to be sorted or a direct child of the title- or label-defining element of the element to be sorted.</li><li>• When an element contains multiple, direct-child, <code>&lt;sort-as&gt;</code> elements, the first direct-child <code>&lt;sort-as&gt;</code> element in document order takes precedence.</li><li>• It is an error if there is more than one <code>&lt;sort-as&gt;</code> child for a given <code>&lt;indexterm&gt;</code> element.</li><li>• Sort phrases are determined after filtering and content reference resolution occur.</li></ul>
004 (9)	<p>When a <code>&lt;sort-as&gt;</code> element is specified, processors that sort the containing element <b>MUST</b> construct the effective sort phrase by prepending the content of the <code>&lt;sort-as&gt;</code> element to the base sort phrase. This ensures that two items with the same <code>&lt;sort-as&gt;</code> element but different base sort phrases will sort in the appropriate order.</p> <p>For example, if a processor uses the content of the <code>&lt;title&gt;</code> element as the base sort phrase, and the title of a topic is "24 Hour Support Hotline" and the value of the <code>&lt;sort-as&gt;</code> element is "twenty-four hour", then the effective sort phrase would be "twenty-four hour24 Hour Support Hotline".</p>

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