
Stage 2: #257 Add Hardware domain

Provide a new domain to support documenting content associated with documenting hardware. (Formerly “Provide a new element to semantically tag things you press on keyboards or other input devices.”)

Date and version information

This proposal contains the following information:

Date that this feature proposal was completed

June 28, 2020

Champion of the proposal

Zoë Lawson

Links to any previous versions of the proposal

Original email: <https://lists.oasis-open.org/archives/dita/201906/msg00033.html>

Draft 3: <https://www.oasis-open.org/apps/org/workgroup/dita/email/archives/202003/msg00025.html>

Draft 4: <https://www.oasis-open.org/apps/org/workgroup/dita/email/archives/202005/msg00013.html>

Draft 6: <https://www.oasis-open.org/apps/org/workgroup/dita/email/archives/202006/msg00018.html>

Links to minutes where this proposal was discussed at stage 1 and moved to stage 2

<https://lists.oasis-open.org/archives/dita/201906/msg00068.html>

Reviewers for Stage 2 proposal

- Bill Burns
- Kris Eberlein
- Keith Schengilli-Roberts

Links to e-mail discussion that resulted in new versions of the proposal

Draft 4:

- <https://www.oasis-open.org/apps/org/workgroup/dita/email/archives/202005/msg00013.html>
- <https://www.oasis-open.org/apps/org/workgroup/dita/email/archives/202005/msg00014.html>

Draft 3:

- <https://www.oasis-open.org/apps/org/workgroup/dita/download.php/66383/minutes20191203.txt>
- https://dita-users.groups.io/g/main/topic/any_interest_in_a_hardware/72542815

Links to meeting minutes that resulted in new versions of the proposal

- 17 March 2020 — <https://lists.oasis-open.org/archives/dita/202003/msg00039.html>
- 24 March 2020 — <https://www.oasis-open.org/apps/org/workgroup/dita/download.php/66958/minutes20200324.txt>
- 7 April 2020 — <https://www.oasis-open.org/apps/org/workgroup/dita/email/archives/202004/msg00001.html>
- 19 May 2020 — <https://www.oasis-open.org/apps/org/workgroup/dita/email/archives/202005/msg00023.html>
- 23 June 2020 — <https://www.oasis-open.org/apps/org/workgroup/dita/email/archives/202006/msg00020.html>

Link to the GitHub issue

<https://github.com/oasis-tcs/dita/issues/257>

Original requirement or use case

Writers often want to add special formatting for things a user presses or types, such as CTRL+Z or ALT+0235 or “Press the Start button”. The element `<userinput>` exists, but that generally seems to be intended for strings a user enters into fields, not button or key names. Many style guides recommend different formatting for things a user presses on a keyboard vs text a user needs to enter.

Currently, you can work around this limitation using specializations or `@outputclass` such as `<userinput outputclass="keyboard">CTRL+S</userinput>` in processing. It would be convenient to trim this down to something like `<kbd>CTRL+S</kbd>`.

We considered adding an element to the software domain.

After further discussion with the Technical Committee, it was decided to instead create a new domain for elements associated with documenting hardware.

Use cases

There is a need for a semantic tag to indicate "things you press" on a keyboard or other physical devices.

The original intention is for keys on a keyboard such as "ENTER", "PRINT SCREEN", or "CTRL+Z". These are different than the intention of a shortcut. There may not be a software UI equivalent, such as using CTRL+C to stop a process in a command window.

This could also be used in the hardware world for any physical button, switch, knob, or other control. For example, "Amt Tend" on a register, "Start" on a copier, or any "On/Off" switch.

The types of physical buttons, switches, knobs, sliders, and other physical controls are many and varied. Instead of trying to make numerous elements for all the various options, this domain will include elements that intended for specialization.

New terminology

None.

Proposed solution

Create a new hardware domain (hw-d) to include elements germane to documenting hardware information.

Add the following new elements:

- `<hwcontrol>`
- `<partno>`

The `<hwcontrol>` element would inherit from `topic/ph` and be defined as follows:

The `<hwcontrol>` element represents the name of a key, button, switch, or other physical control on a device. This element is part of the DITA hardware domain, a special set of DITA elements designed to document hardware information.

The `<partno>` element would inherit from `topic/keyword` and be defined as follows:

The `<partno>` element represents a part number. This element is part of the DITA hardware domain, a special set of DITA elements designed to document hardware information.

Benefits

Address the following questions:

Who will benefit from this feature?

Writers can semantically mark the difference between text users should enter and buttons users need to press without configuring outputclass or otherwise extending DITA. These writers will generally be either software or hardware writers.

What is the expected benefit?

The ability to distinguish between special formatting for buttons to press without the overhead of working with outputclass or extending DITA.

How many people probably will make use of this feature?

Many - Software writers often need to refer to keys in ways that are not shortcuts. Many people want to have special formatting for keyboard key names that is different from text a user needs to type into a text field, for example. Hardware authors often have special button names they need to use.

How much of a positive impact is expected for the users who will make use of the feature?

Minor - It's relatively easy to work around this using outputclass, but it would be very nice to have.

Additional positive impacts could include:

- generating lists of buttons
- assisting terminology management for translation
- special processing or formatting

Technical requirements

This proposal involves the following changes:

Adding new elements or attributes

Adding a topic or map specialization

N/A

Adding a domain

Adding a new domain, hw-d to the technical content specialization.

Adding an element

`<hwcontrol>`

- Attributes: Universal attribute group, outputclass, @keyref (Same as `<ph>`, no changes)
- The `<hwcontrol>` element represents the name of a key, button, switch, or other physical control on a device. This element is part of the DITA hardware domain, a special set of DITA elements designed to document hardware information.
- Content model:

Contains:

text data, `<data>`, `<data-about>`, `<foreign>`, `<image>`, `<indexterm>`, `<keyword>`, `<partno>`, `<ph>`, `<sort-as>`, `<text>`, `<unknown>`

The `<hwcontrol>` element will be constrained to reduce the number of domain elements specialized from `<ph>` that are available within `<hwcontrol>`. Ideally, the constraint would exclude the following domains and elements:

- Equation domain
- Highlight domain
- Markup domain
- MathML domain
- Programming domain
- Software domain
- XML mention domain
- `<abbreviated-form>`, `<term>`, and `<hw-control>`

Such a constraint would be difficult to implement and will only apply to the document-type shells that OASIS ships for out-of-the-box use. The stage 3 proposal will include details about what constraint can be implemented, what document-type shells will incorporate the constraint, and whether additional constraint examples will be added to the DITA 2.0 specification.

Contained by:

<abstract>, <alt>, , <bodydiv>, <consequence>, <data>, <dd>, <ddhd>, <desc>, <div>, <draft-comment>, <dt>, <dthd>, <entry>, <example>, <figgroup>, <fn>, <howtoavoid>, <i>, <index-see>, <index-see-also>, <indexterm>, <itemgroup>, , <line-through>, <lines>, <linkinfo>, <linktext>, <lq>, <navtitle>, <note>, <overline>, <p>, <ph>, <pre>, <q>, <searchtitle>, <section>, <sectiondiv>, <shortdesc>, <sli>, <source>, <stentry>, <title>, <tt>, <typeofhazard>, <u>, <xref>

As well as any elements included due to inheritance.

- Yes, this is translatable. It is a phrase element.
- Inheritance would be + topic/ph hw-d/hwcontrol

<partno>

- Attributes: Universal attribute group, outputclass, @keyref (Same as <keyword>, no changes)
- The <partno> element represents a part number. This element is part of the DITA hardware domain, a special set of DITA elements designed to document hardware information.
- Content model:

Contains:

text data, <draft-comment>, <required-cleanup>, <text>, <tm>

As well as any elements included due to inheritance.

Contained By:

<abstract>, <alt>, <author>, , <bodydiv>, <brand>, <category>, <cite>, <component>, <consequence>, <coords>, <copyrholder>, <data>, <dd>, <ddhd>, <desc>, <div>, <draft-comment>, <dt>, <dthd>, <entry>, <example>, <featnum>, <figgroup>, <fn>, <howtoavoid>, <i>, <index-see>, <index-see-also>, <index-sort-as>, <indexterm>, <itemgroup>, <keywords>, , <line-through>, <lines>, <linkinfo>, <linktext>, <lq>, <navtitle>, <note>, <overline>, <p>, <ph>, <platform>, <pre>, <prodname>, <prognum>, <publisher>, <q>, <searchtitle>, <section>, <sectiondiv>, <series>, <shortdesc>, <sli>, <sort-as>, <source>, <stentry>, <sub>, <sup>, <title>, <tt>, <typeofhazard>, <u>, <xref>

As well as any elements included due to inheritance.

- Yes, this is translatable. The part number itself may be different per country.
- Inheritance would be + topic/keyword hw-d/partno

DTDs:

All document-type shells that current include the software domain should be modified to add the hardware domain.

hardwareDomain.ent
hardwareDomain.mod
RNG:
hardwareDomain.rng

Adding an attribute

N/A

Renaming or refactoring elements and attributes

N/A

Removing elements or attributes

N/A

Processing impact

Expected to be minimal.

Overall usability

The new <hwcontrol> element provides a richer semantic option for writers and makes it easier for people setting up transforms to identify a different formatting for a different concept. DITA users may choose to replace existing semantic tags with this new element.

Backwards compatibility

DITA 2.0 is the first DITA release that is open to changes affecting backwards compatibility. To help highlight any impact, does this proposal involve any of the following?

Was this change previously announced in an earlier version of DITA?

No

Removing a document type that was shipped in DITA 1.3?

No

Removing a domain that was shipped in DITA 1.3?

No

Removing a domain from a document type shell was shipped in DITA 1.3?

No

Removing or renaming an element that was shipped in DITA 1.3?

No

Removing or renaming an attribute that was shipped in DITA 1.3?

No

Changing the meaning of an element or attribute in a way that would disallow existing usage?

No. However, some users may choose to replace existing semantic tagging with this new element. It would not "disallow", but could make current semantic tagging not as valid as it was.

Changing a content model by removing something that was previously allowed, or by requiring something that was not?

No

Changing specialization ancestry?

No

Removing or replacing a processing feature that was defined in DITA 1.3?

No

Are element or attribute groups being renamed or shuffled?

No

Migration plan

If the answer to any question in the previous section is "yes":

Might any existing documents need to be migrated?

If you are already using some sort of outputclass, you may want to replace your existing extension to use this new element. Users will need to search and replace as we would have no idea how different people implemented the extension.

Might any existing processors or implementations need to change their expectations?

People may want to provide some default formatting for `<hwcontrol>`. It could be based on `<userinput>` or `<cmdname>`.

Might any existing specialization or constraint modules need to be migrated?

If there are constraints on the contexts in which `<userinput>` is permitted, there may be modifications needed for the new element.

If no migration need is anticipated, why not?

N/A

Costs

Outline the impact (time and effort) of the feature on the following groups.

Maintainers of the grammar files

Cost of adding a new domain and updating document-type shells.

Editors of the DITA specification

- How many new topics will be required? 3 - one describing the hardware domain, and one topic for the new elements `<hwcontrol>` and `<partno>`.
- How many existing topics will need to be edited? All topics that list or describe domains, any topics describing the content models, the `@type` topic.
- Will the feature require substantial changes to the information architecture of the DITA specification? If so, what? - No
- If there is new terminology, is it likely to conflict with any usage of those terms in the existing specification? - N/A

Vendors of tools

This addition should require minimal effort to support.

DITA community-at-large

- Will this feature add to the perception that DITA is becoming too complex? - no
- Will it be simple for end users to understand? - yes.
- If the feature breaks backwards compatibility, how many documents are likely to be affected, and what is the cost of migration? - Migration will be optional, and it should be a relatively simple search and replace for old extension to new extension.

Producing migration instructions or tools

- How extensive will migration instructions be, if it is integrated into an overall 1.3 # 2.0 migration publication or white paper? At most a topic.
- Will this require an independent white paper or other publication to provide migration details? - No
- Do migration tools need to be created before this change can be made? If so, how complex will those tools be to create and to use? - No

Examples

```
<step><cmd>If the command is already running,  
select the command window and press <hwcontrol>CTRL+C</hwcontrol>
```

to end processing.</cmd></step>

<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>

<step><cmd>To set your machine for this type of hem, set the <hwcontrol outputclass="knob">Stitch Length</hwcontrol> to <userinput>3</userinput> and the <hwcontrol outputclass="lever">Stitch Selector</hwcontrol> to <userinput>D</userinput>.

<step><cmd>To sew backwards, set the <hwcontrol outputclass="discrete-control">Stitch Length</hwcontrol> to <userinput>Reverse</userinput> and press the <hwcontrol outputclass="continuous-control">pedal</hwcontrol> with your foot.

<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.

<step>
 <cmd>Place the replacement <hwcontrol>Component <partno>DB-123-789</partno></hwcontrol> in the slot and secure with the 4 screws.</cmd>
</step>