

Tagged PDF 2.0

What PDF 2.0 tagging brings in the context of format interchange and repurposing?

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Normex



Yulian Gaponenko,
Dual Lab

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Yulian Gaponenko, Dual Lab



New in ISO 32000-2

- Major rework
- Removed tags (Standard Structure Types)
 - Grouping elements: Art, BlockQuote, Index, NonStruct, Private, Sect, TOC, TOCI
 - Inline elements: BibEntry, Code, Note (FENote), Quote, Reference
- New tags
 - Artifact, Aside, DocumentFragment, Em, FEnote - replacement for Note
 - H7..Hn, Strong, Sub, Title

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Artifact sample

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2018-05-14

Tags

Tags

<Artifact>

<P>

<L>

<Aside>

<Figure>

<P>

<Figure>

<P>

<Artifact>

<Artifact>



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Aside sample

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2018-05-14

Tags

Tags

<Artifact>

<P>

<L>

<Aside>

<Figure>

<P>

<Figure>

<P>

<Artifact>

<Artifact>


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New attribute owners

- Artifact
- HTML-5.00
- CSS-3.00
- RDFa-1.10
- ARIA-1.1
- NSO
 - use /NS to define namespace

NORMEX

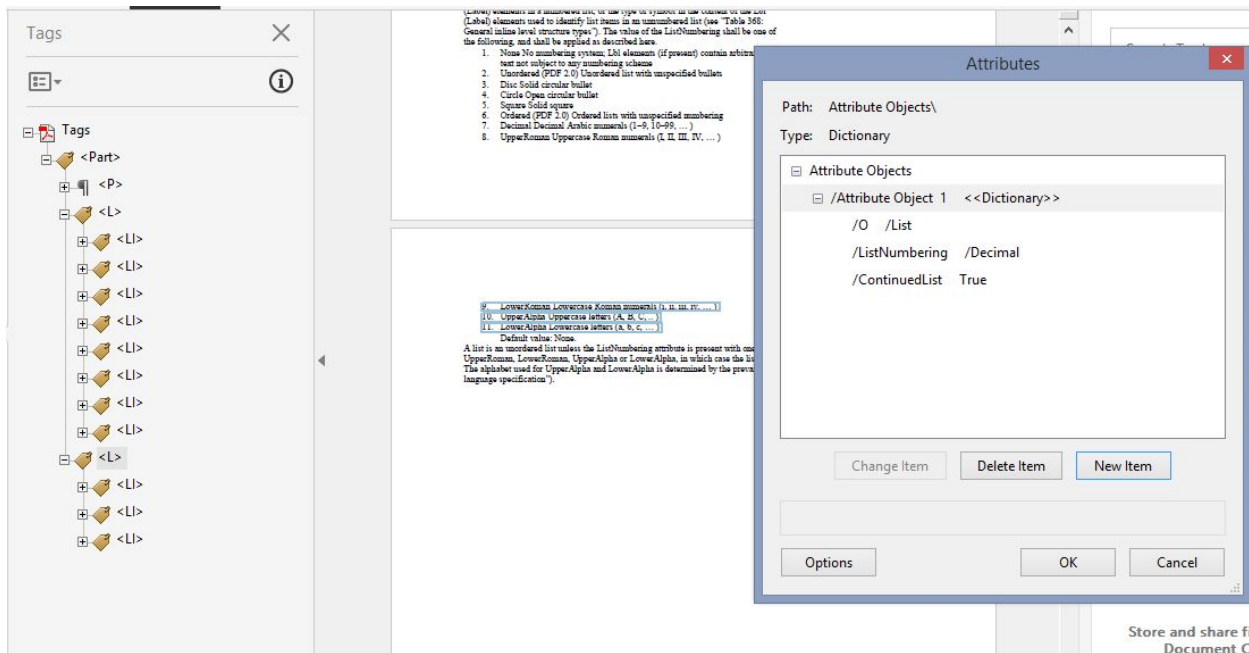
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New attribute - ListNumbering



The screenshot shows the PDF software interface. On the left, the 'Tags' panel displays a tree structure of document elements, including a list of `<LI>` elements. The main window shows a list of list items, with the first item selected. The 'Attributes' dialog box is open, showing the 'ListNumbering' attribute set to 'Decimal'. The dialog box has a 'Path' field set to 'Attribute Objects\', a 'Type' field set to 'Dictionary', and a 'ListNumbering' field set to 'Decimal'. The 'Options' button is visible at the bottom of the dialog box.

Attributes

Path: Attribute Objects\
Type: Dictionary

Attribute Objects

/Attribute Object 1 <<Dictionary>>

/O /List
/ListNumbering /Decimal
/ContinuedList True

Change Item Delete Item New Item

Options OK Cancel

Store and share file
Document Cl

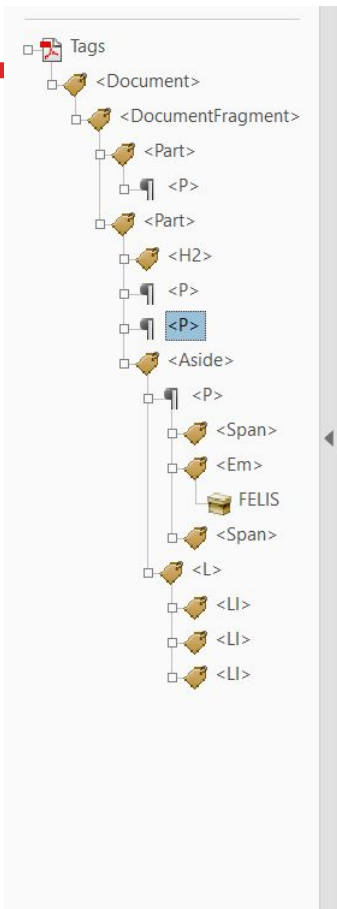
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adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

Ac orci phasellus egestas

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Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.

Pellentesque elit ullamcorper dignissim cras tincidunt lobortis. Tellus at urna condimentum mattis pellentesque id. Urna cursus eget nunc scelerisque viverra mauris in. Euismod nisi porta lorem mollis aliquam ut porttitor leo. Mauris pellentesque pulvinar pellentesque habitant morbi. Pretium nibh ipsum consequat nisl. Dignissim sodales ut eu sem integer vitae. Lorem ipsum dolor sit amet consectetur adipiscing elit ut aliquam. Id cursus metus aliquam eleifend mi. Penatibus et magnis dis parturient montes nascetur. Vitae aliquet

SED FELIS EGET VELIT

- Aliquet sagittis id consectetur elementum
- Purus ut faucibus pulvinar
- Integer enim neque volutpat ac tincidunt vitae

nec ullamcorper sit. Semper risus in hendrerit gravida rutrum quisque non tellus. Penatibus et magnis dis parturient montes nascetur. Dignissim cras tincidunt lobortis feugiat vivamus at augue eget arcu. Tristique senectus et netus et. Risus at ultrices mi tempus imperdiet nulla malesuada. Cursus turpis massa tincidunt dui. Lobortis elementum nibh tellus molestie. Eget mi proin sed libero enim.

What's inside?

9 0 obj <<

/Type	/StructElem
-------	-------------

/NS	48 0 R
------------	---------------

/S	/P
/P	8 0 R
/K	[...]

>>

Namespace
dictionary

10 0 obj <<

/Type	/StructElem
-------	-------------

/NS	48 0 R
------------	---------------

/S	/P
/P	4 0 R
/K	[...]

/Ref	[...]
-------------	--------------

>>

Reference
structure
elements

4 0 obj <<

/Type	/StructTreeRoot
-------	-----------------

/ParentTree	47 0 R
-------------	--------

/Namespaces	[48 0 R]
/K	[8 0 R 10 0 R]

...

>>

8 0 obj <<

/Type	/StructElem
-------	-------------

/NS	48 0 R
------------	---------------

/S	/Div
/P	4 0 R
/K	[...]

/AF	101 0 R
------------	----------------

>>

Associated
files

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Namespaces crash course

- every structure type belongs to a namespace;
- several namespaces may be specified in document;
- every namespace can have own role mappings;
- namespaces are defined by the *Namespace dictionary*.

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Namespace dictionary

```
48 0 obj <<
```

```
  /Type      /Namespace
```

```
  /NS        (http://iso.org/pdf2/ssn)
```

```
  /RoleMapNS <<
```

```
    /CustomRole [/Div 48 0 R] % ind ref to current NS dict
```

```
  >>
```

```
  /Schema 67 0 R % ind ref to a Filespec dict of the schema file
```

```
  >>
```

```
endobj
```

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Standard structure namespaces

- Standard structure namespace for PDF 2.0
"<http://iso.org/pdf2/ssn>" - ISO 32000-2 Clause 14.8, "Tagged PDF"
- Standard structure namespace for PDF 1.7
"<http://iso.org/pdf/ssn>" - ISO 32000-1 Clause 14.8, "Tagged PDF"

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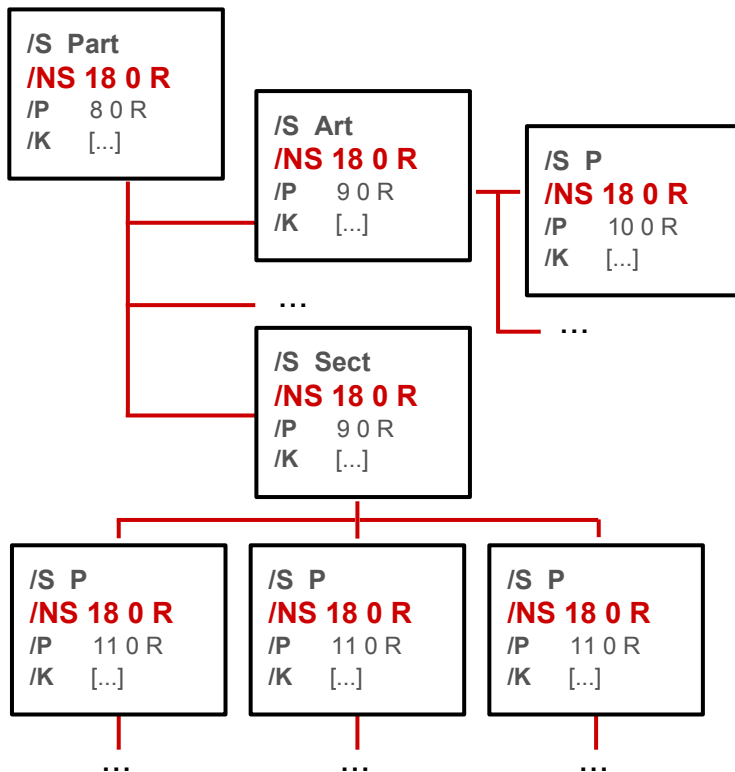
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"...the default standard structure namespace shall be "<http://iso.org/pdf/ssn>"."



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18 0 obj <<

/Type /Namespace

/NS (<http://iso.org/pdf/ssn>)

>>

endobj

NORMEX

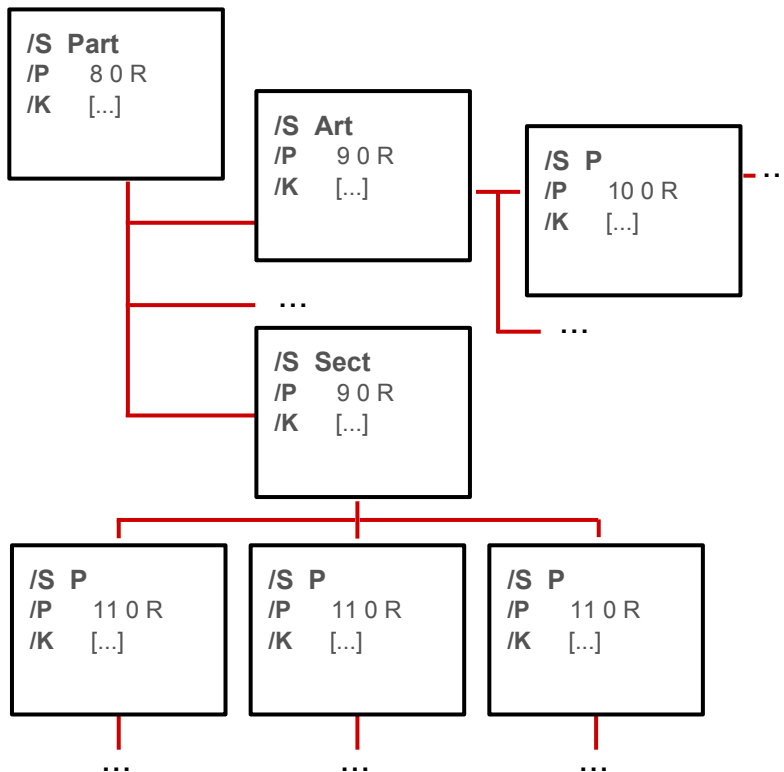
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Standard structure namespace for PDF 1.7



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What possibilities do namespaces provide?

- standardized way of reusing domain specific languages;
- more data preserved;
- facilitates accessibility and extractability.

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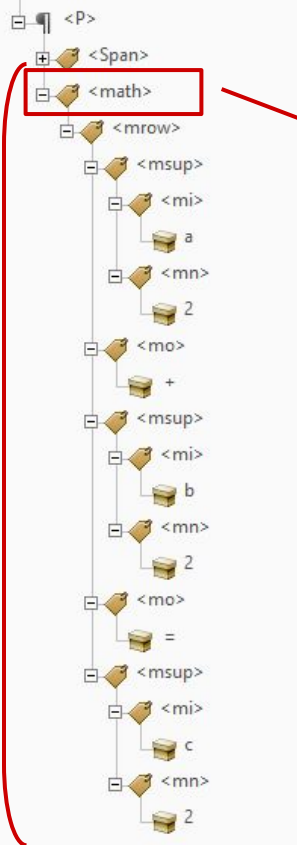
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Domain specific namespaces. MathML

In a right angled triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides. i.e, If a and b are the legs and c is the hypotenuse then

$$a^2 + b^2 = c^2$$



```
11 0 obj <<
  /Type /StructElem
  /S /math
  /NS 28 0 R
  /P 8 0 R
  /K 12 0 R
>>
```

```
28 0 obj <<
  /Type /Namespace
  /NS (http://www.w3.org/1998/Math/MathML)
>>
```

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Structure destination

- Destination defines a place in a document (same or remote)
 - 1.7 Explicit (page)
 - 1.7 Named Destination
 - 2.0 Structure Destination - associated with Structure Element
 - through object reference
 - Through ID in SE (when GotoR is used)

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Structure destination - sample

Contents

- Creating a PDF
- PDF viewers
- Issues
- Technical**

Technical

PDFs are rendered by the [Collection](#) software extension, which is...

[Wikipedia technical help](#)

Get personal technical help at the [Teahouse](#), Help with...

[General technical help](#)

Editing (Edit toolbar · [CharInsert](#) · [Edit conflict](#) · [Reverting](#)) · [VisualEditor](#) (User guide) · [Create a page](#) · [Page history](#) · [Page information](#) · [Page name \(Introduction\)](#) · [Browser notes](#) (Keyboard shortcuts · [Troubleshooting](#) · [Bypass cache](#)) · [Mobile access](#) · [Multilingual support](#) · [Special Characters](#) (Entering · [Printing](#) · [User access levels](#) · [Software notices](#))

130 0 obj
 <<
 /Type /StructElem
 /S /H2
 /NS 48 0 R
 >>

Creating a PDF

From the left sidebar, under Print/export, see the rendering progress. When rendering is

Structure tree:

- <L>
- <P>
- <H2>**
- <P>
-
- Technical
- <P>
- <Div>

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Associated files in 2.0

- /AF key could be used “anywhere”
 - Catalog, Page, Xobject, Annotation, Graphics Object (through marked content)
 - Structure Element
 - Points to File Specification dictionary
 - /AFRelationship **shall** be used in FS
 - Doesn’t mandate anything when it comes to processing
 - **Source**, Data, **Alternative**, **Supplement**, EncryptedPayload, FormData, Schema, Unspecified

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Tags




Tags

<Table>

+ <TR>

+ <TR>

+ <TR>

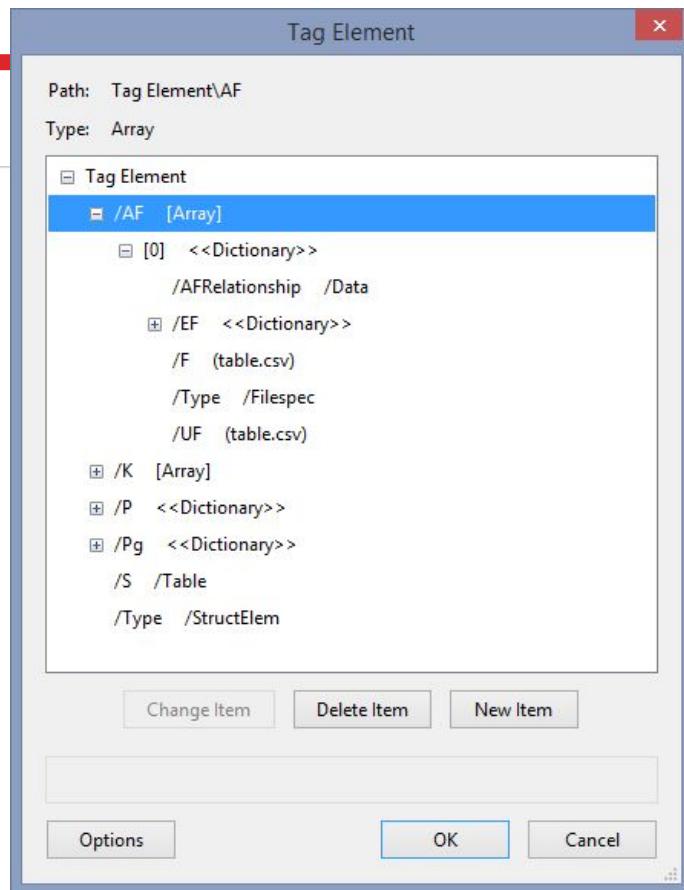
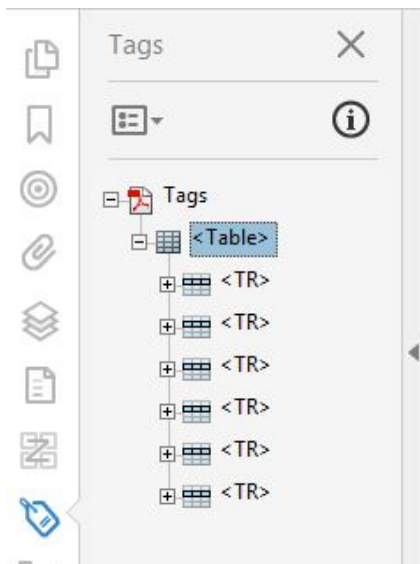
+ <TR>

+ <TR>

+ <TR>

Segment	Employed 2000	Employed 2013	Change (%)
Overall	894	950	+6.4%
No degree	88	70	-21.3%
HS, no college	280	250	-10.6%
Some college	247	260	+5.4%
Bachelor's +	278	370	+33.0%





Change (%)

+6.4%

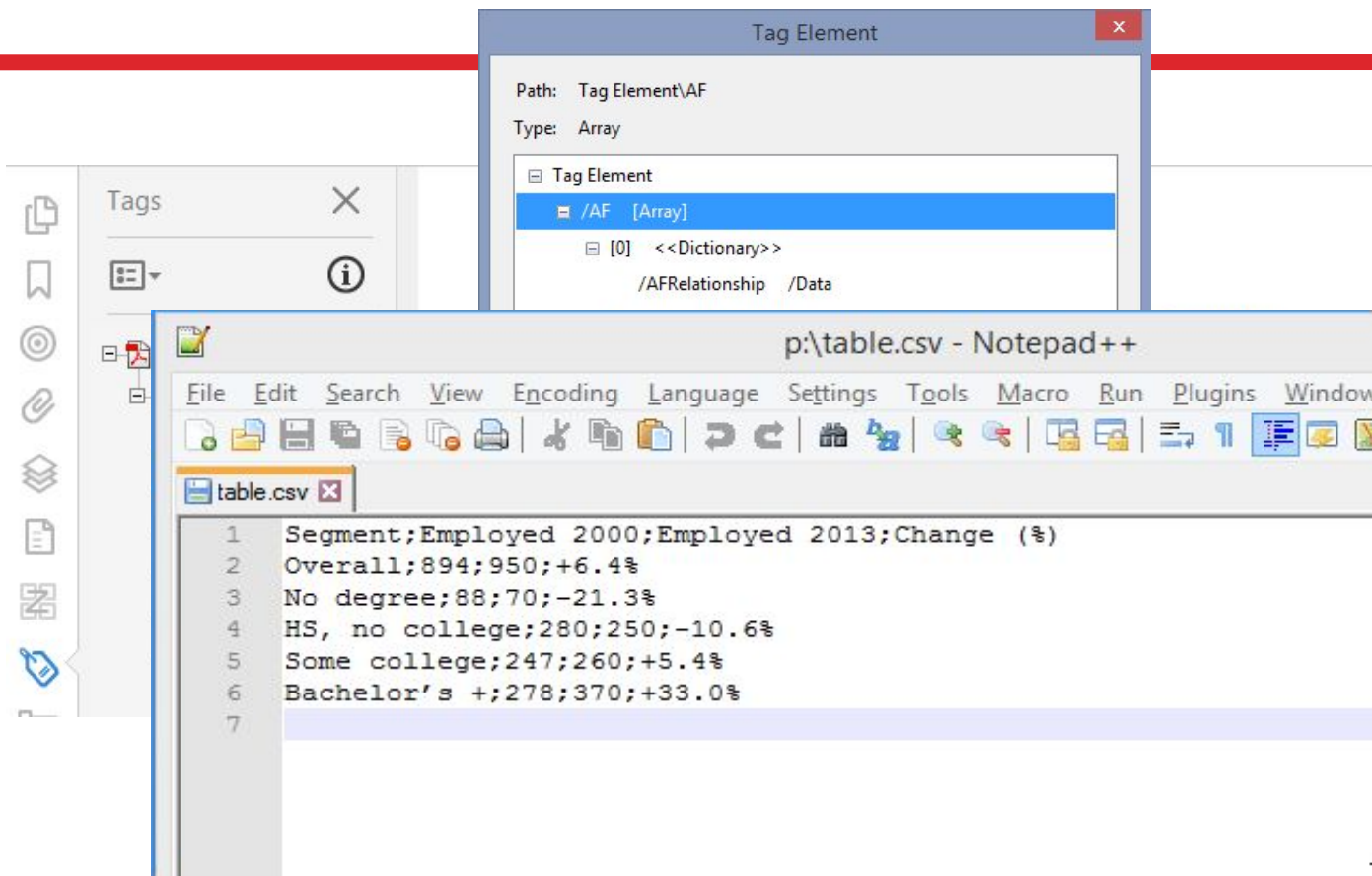
-21.3%

-10.6%

+3.4%

+33.0%



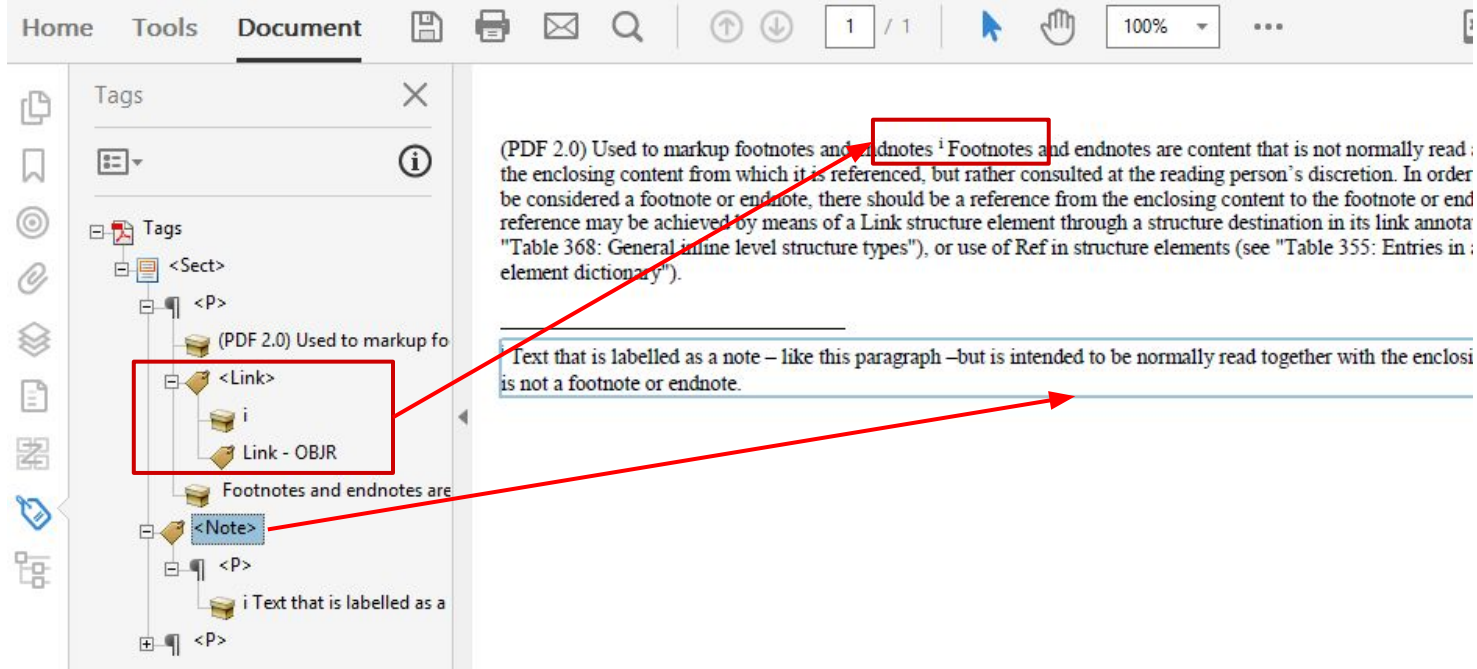


The screenshot displays a PDF software interface with a 'Tags' panel on the left and a 'Tag Element' dialog box open. The dialog shows the path 'Tag Element\AF' and type 'Array'. Below, a tree structure shows 'Tag Element' containing '/AF [Array]', which in turn contains '[0] <<Dictionary>>' with sub-entries '/AFRelationship' and '/Data'. In the background, a Notepad++ window titled 'p:\table.csv - Notepad++' is open, showing a CSV file with 7 lines of data.

	Segment	Employed 2000	Employed 2013	Change (%)
1	Overall	894	950	+6.4%
2	No degree	88	70	-21.3%
3	HS, no college	280	250	-10.6%
4	Some college	247	260	+5.4%
5	Bachelor's +	278	370	+33.0%
6				
7				



Tagging Note in 1.7 using Link



Home Tools Document

Tags

<Sect>

<P>

(PDF 2.0) Used to markup fo

<Link>

i

Link - OBJR

Footnotes and endnotes are

<Note>

<P>

i Text that is labelled as a

(PDF 2.0) Used to markup footnotes and endnotes¹ Footnotes and endnotes are content that is not normally read; the enclosing content from which it is referenced, but rather consulted at the reading person's discretion. In order to be considered a footnote or endnote, there should be a reference from the enclosing content to the footnote or endnote reference may be achieved by means of a Link structure element through a structure destination in its link annotation ("Table 368: General inline level structure types"), or use of Ref in structure elements (see "Table 355: Entries in: element dictionary").

Text that is labelled as a note – like this paragraph –but is intended to be normally read together with the enclosing content is not a footnote or endnote.

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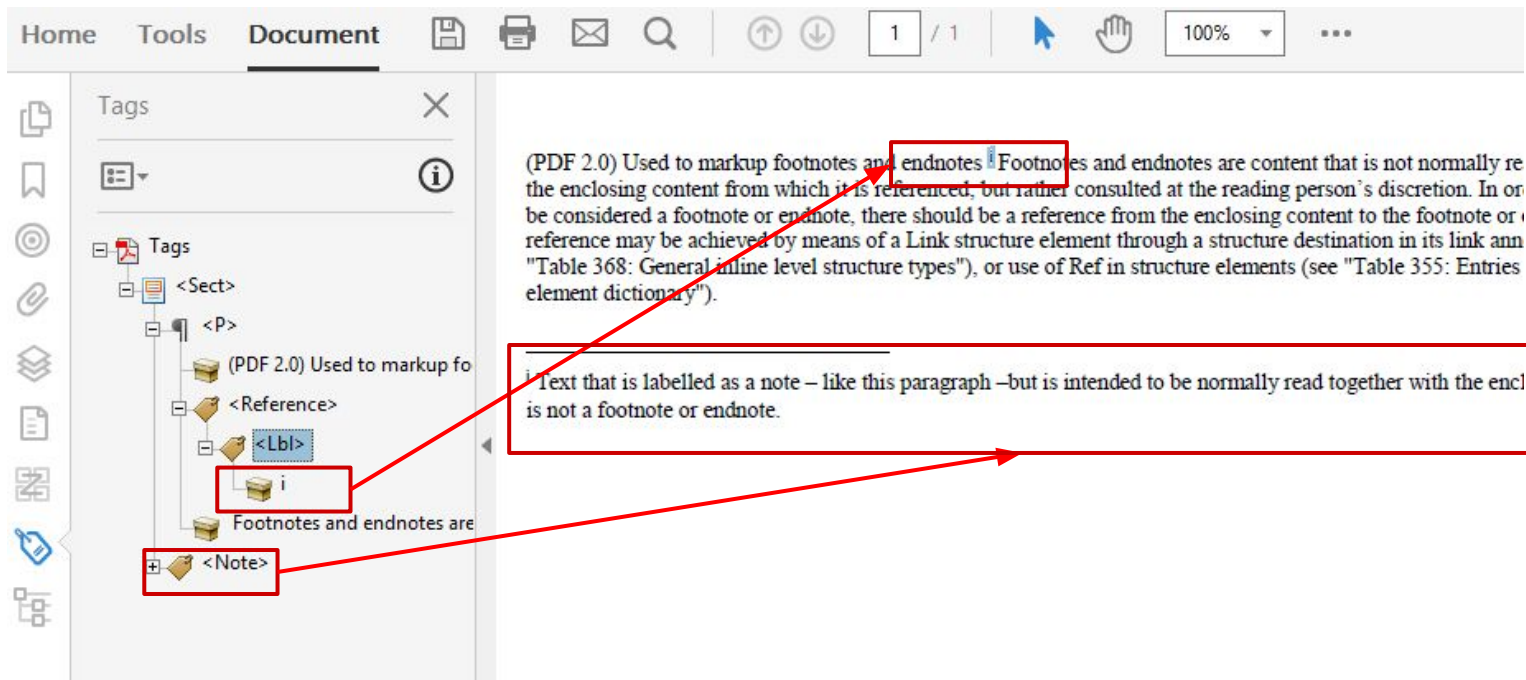
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Tagging Note in 1.7 using Reference



The screenshot shows the PDF.js interface with the 'Document' tab selected. The left sidebar displays the document structure tree. The main content area shows a paragraph of text with a footnote reference.

Document Structure Tree (Left Sidebar):

- Tags
 - <Sect>
 - <P>
 - (PDF 2.0) Used to markup fo
 - <Reference>
 - <Lbl>
 - i
 - Footnotes and endnotes are
 - <Note>

Main Content Area:

(PDF 2.0) Used to markup footnotes and endnotes. Footnotes and endnotes are content that is not normally re the enclosing content from which it is referenced, but rather consulted at the reading person's discretion. In or be considered a footnote or endnote, there should be a reference from the enclosing content to the footnote or reference may be achieved by means of a Link structure element through a structure destination in its link ann "Table 368: General inline level structure types"), or use of Ref in structure elements (see "Table 355: Entries element dictionary").

i Text that is labelled as a note – like this paragraph –but is intended to be normally read together with the encl is not a footnote or endnote.

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/Ref - new language in 2.0

Ref	array	(Optional; PDF 2.0) An array containing zero, one or more indirect references to structure elements. A Ref identifies the structure element or elements to which the item of content, contained within this structure element, refers (e.g. footnotes, endnotes, sidebars, etc.).
------------	-------	--

Path: Tag Element
Type: Dictionary

- Tag Element
 - /K 10
 - /P <<Dictionary>>
 - /Pg <<Dictionary>>
 - /Ref [Array]
 - [0] <<Dictionary>>
 - /K [Array]
 - /P <<Dictionary>>
 - /S /FENote
 - /L /Lbl

Buttons: Change Item, Delete Item, New Item, Options, OK, Cancel

PDF Content:

(PDF 2.0) Used to mark up footnotes and endnotes. Footnotes: the enclosing content from which it is referenced, but rather can be considered a footnote or endnote, there should be a reference reference may be achieved by means of a Link structure element ("Table 368: General inline level structure types"), or use of Ref element dictionary").

Text that is labelled as a note – like this paragraph –but is intended is not a footnote or endnote.

Tags Panel:

- Tags
 - <Sect>
 - <P>
 - (PDF 2.0) Used to mark up it
 - <Lbl>
 - Footnotes and endnotes are
 - <FENote>

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Matrix representation of ISO 32000-2, Annex L, "Parent-child relationships between standard structure elements"

This table is the source data for the table in Annex L.

[illegible]

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Annex L -Defines relationship between tags

Matrix representation of ISO 32000-2, Annex L, "Parent-child relationships between standard structure elements"

This table is the source data for the table in Annex L.

→ parent	StructTreeRoot	Document	DocumentFragment	Part	Div	Aside	Title	Sub	P	Hn	H	Lbl	Em	Strong	Span	Link	Annot	Form	Ruby	RB	RT	RP	Warichu	WT	WP	FENote	L
↓ child	StructTreeRoot	Document	DocumentFragment	Part	Div	Aside	Title	Sub	P	Hn	H	Lbl	Em	Strong	Span	Link	Annot	Form	Ruby	RB	RT	RP	Warichu	WT	WP	FENote	L
Document	0..1	0..n	0..n	0..n	0..n	0..n	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DocumentFragment	0	0..n	0..n	0..n	0..n	0..n	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Part	0	0..n	0..n	0..n	0..n	0..n	0..n	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Div	0	0..n	0..n	0..n	0..n	0..n	0..n	0	0	0	0	0..n	0	0	0	0..n	0..n	0..n	0	0	0	0	0	0	0	0..n	0..n
Aside	0	0..n	0..n	0..n	0..n	0	0..n	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0..n	0..n
P	0	0..n	0..n	0..n	0..n	0..n	0..n	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hn	0	0..n	0..n	0..n	0..n	0..n	0..n	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H	0	0..n	0..n	0..n	0..n	0..n	0..n	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Title	0	0..n	0..n	0..n	0..n	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub	0	0	0	0..n	0	0	0	0	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0	0	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n
Lbl	0	0	0	0..n	0	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n
Em	0	0	0	0	0	0	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0	0	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n
Strong	0	0	0	0	0	0	0	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0	0	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n
Span	0	0	0	0	0	0	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0	0	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n
Link	0	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0	0	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n
Annot	0	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0	0	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n
Form	0	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0	0	0	0	0	0	0	0	0	0
Ruby	0	0	0	0	0	0	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0	0	0	0	0	0	0	0	0..n	0..n
RB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	[a]	0	0	0	0	0	0	0	0
RT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	[a]	0	0	0	0	0	0	0	0
RP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	[a]	0	0	0	0	0	0	0	0
Warichu	0	0	0	0	0	0	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0..n	0	0	0	0	0	0	0	0	0..n	0..n
WT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FENote	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
L	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

LI

Table

TR

TH

TD

THHead

THBody

THFoot

Caption

Figure

Formula

Artifact

FENote

0..n

0..n

0..n

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

LI

LBODY

Table

TR

TH

TD

THHead

THBody

THFoot

Caption

Figure

Formula

Artifact

actual content (no child elements)

OBR content

L

0..n

NORMEX

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Normex



Yulian Gaponenko,
Dual Lab

This table is the source data for the table in Annex L.

Table

Strong

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Normex



NORMEX

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Normex

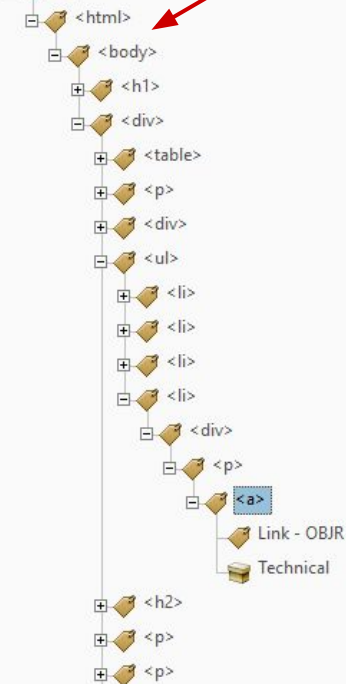


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Tags



Tags



/NS (http://www.w3.org/1999/xhtml)

Help:Download as PDF

This help page is a **how-to guide**.

It details processes or procedures of some aspect or aspects of Wikipedia's norms and practices. It is not one of Wikipedia's policies or guidelines, as it has not been thoroughly vetted by the community.



An alternative
running Mediawiki
http://media

Wikipedia pages can be exported

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/a [Link 48 0 R]

/html [Document 48 0 R]

/ul [L 48 0 R]

...

Creating a PDF

From the left sidebar, under Print/export, select **Download as PDF**. The rendering engine starts and a dialog appears to show the rendering progress. When rendering is complete, the dialog shows "The document file has been generated. [Download the file](#) to your computer." Click the download link to open the PDF in your selected PDF viewer.

PDFs are rendered in two columns. The last page(s) include "Text and image sources, contributors, and licenses" listing all of the contributors, "Images" listing all of the images used in the article, and "Content license" listing the article licensing.

Links within the article and to external sites are preserved. If you have PDF software, you can use it to create a PDF which may give more control over the output.

/O /CSS-3.00
/list-style-type /none
/overflow /hidden

/O /HTML-5.00
/href (#Technical)
/hreflang (en-us)

```

/AF
[ <<
  /Type Filespec
  /EF 415 0 R
  /F (styles.css)
  /UF (styles.css)
  /AFRelationship
    /Supplement
>> ]
...
blockquote {
  overflow: hidden;
  margin: 1em 0;
  padding: 0 40px
}

strong.selflink {
  font-weight: 700
}
...

```

NORMEX

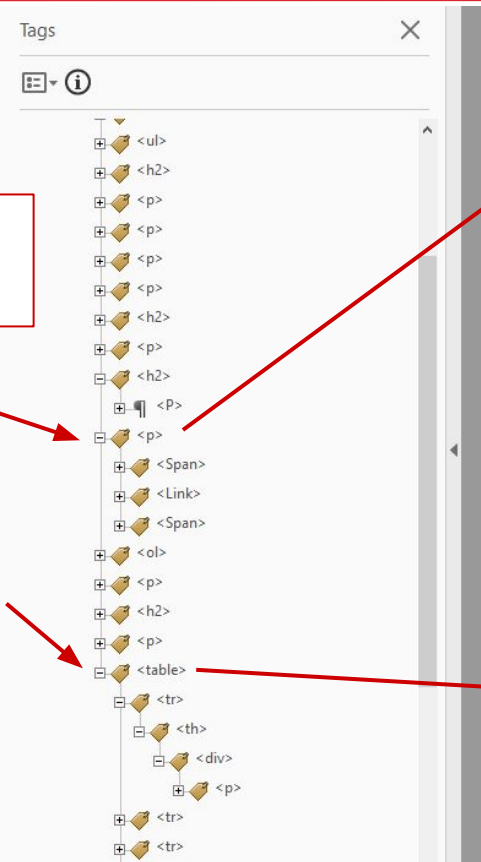
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Normex



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Dual Lab

/O /ARIA-1.1
/role /note

/O /ARIA-1.1
/role /navigation
/aria-labelledby
("Wikipedia_
technical_help")



For browser support, see [Comparison of web browsers](#) § [Image format support](#). For PDF app software.

Issues

For more information, see the [list of bugs](#) on Phabricator

1. PDFs are rendered in two columns; this cannot be changed
2. The table of contents is not rendered
3. Tables, including infoboxes, are not rendered; see [T85777](#), [T73296](#), [T73311](#)
4. Columns in the article are rendered as a single column within the PDF columns
5. Grouped references do not render; see [T41095](#)
6. Many [CSS](#) properties are ignored, causing template issues; see [T32702](#),

1. [{\(chem\)};](#) see [T42042](#)

7. [<ruby>](#) elements do not render; see [T23504](#)
8. Long equations are overflowing

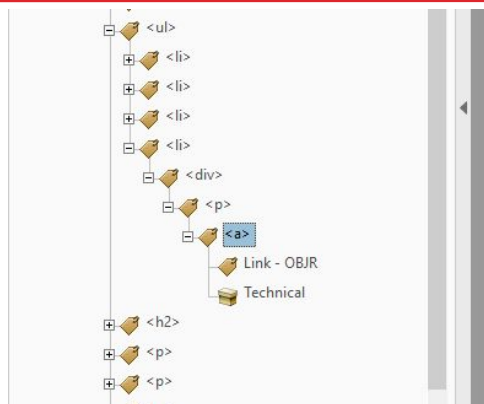
See [T134205](#) for a method to generate PDF files proposed in May 2016.

Technical

PDFs are rendered by the [Collection](#) software extension, which in turn uses the [PDF Writer](#) extensi

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From the left sidebar, under Print/export

1. `{{chem}}`; see T42042

7. `<ruby>` elements do not render; see T2350

8. Long equations are overflowing

See T134205 for a method to generate PDF files pro

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PDFs are rendered by the Collection software extens

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· Create a page · Page

NORMEX

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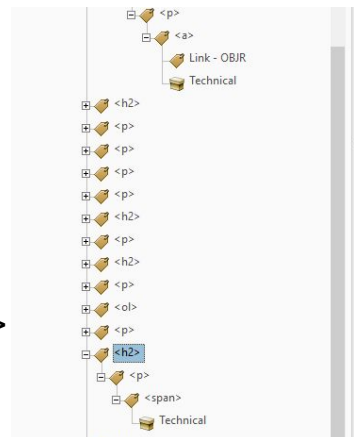


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...

Technical

 ...



More to discover?

- **/PhoneticAlphabet** and **/Phoneme**, **/PronunciationLexicon**
- **NSO** attribute owner and **/NS** entry in structure attributes

Other formats?

- XSL-FO, ODF, SVG
- GraphML, CellML, railML, etc.

NORMEX

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Next steps for developers?

- invent own practices
- save the source information



Thank you!

Any questions?

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