2019/04/25

The following changes have been made relative to the previously published PS3 2019a release of the standard, by incorporating the changes specified in the supplements and correction items.

The Final Text of all applied Supplements and Correction Proposals is available at ftp://medical.nema.org/medical/dicom/final/

Production Notes

The DocBook XML files are the source format, and all other formats are rendered from it.

The PDF format is rendered from the DocBook XML, and remains the "official" (authoritative) form of the standard. The PDF contains hyperlinks to sections, figures and tables both within and between parts (which in the latter case work if you are reading the PDF in a tool that supports linking to other parts).

The two HTML formats are provided for the convenience of those who find them easier to navigate within a browser, and though the appearance and organization is different, the content is the same. One form consists of entire parts in one very large HTML page, and the other consist of chunks of sections with navigation elements. Both forms are hyper-linked within and between parts. The figures in the HTML are SVG, so a browser that supports SVG is required (most contemporary browsers do).

All paragraphs (<p/> elements) in the HTML files of this release, are uniquely identified with a hypertext anchor (<a/> element), each of which has an id attribute (derived from the source DocBook <para/> element xml:id attribute). These unique identifiers will remain stable in subsequent releases, so they may be reliably used as the persistent targets of hyperlinks relative to the current release base URL, and are more specific than the existing anchors for entire sections or tables. Unlike the section and table anchors, there is no semantic significance to the syntax of the identifiers (i.e., they are UUIDs, rather than being derived from the section or table numbering pattern). Subsequent releases will add new identifiers for new paragraphs and text split out of existing paragraphs into new paragraphs, and will, if possible, empty, rather than entirely remove, existing paragraphs that are retired (in order to avoid dead links).

The chunked HTML format includes navigation elements in the header and footer, as well as a hyperlink to the current release of that page, in case the user happens to find or be using an older release of the page.

The DOCX (for Word) and ODT (for OpenOffice or LibreOffice) formats are provided for the convenience of future Supplement and CP editors. Their main claim to fame is that they exist at all, and though they are viewable and editable, they are lacking many features of the Word source of previous release, for example the use of styles for section headings. They do contain embedded hyperlinks, and these are also present in the table of contents, even though the page numbers rendered in the table of contents may be meaningless. To reiterate, the intent of these files is to provide a source to cut and past into new Word documents, and not to be functional documents in their own right. Since Word does not support SVG, all figures embedded in the DOCX files have been rasterized to a fixed resolution and are adequate for position only and are not editable and are not intended to be a substitute for the SVG figures.

The rendering pipeline used to produce these files is available but requires some expertise to use it. It is not supported. To achieve quality rendering, the use of some commercial tools was necessary, to supplement the many open source tools that were also used. Oxygen (commercial) was used as the XML editor since it supports a WYSIWG authoring mode. OpenOffice (open source) was used as the equation editor. The DocBook (open source, version docbook-xsl-ns-1.78.1) style sheets were used to create the HTML and intermediate FO form used to created the PDF and DOCX. MathML equations were converted to SVG using pMML2SVG (open source, version pMML2SVG-0.8.5). RenderX XEP (commercial) was used to produce the PDF, and XMLmind FO-Converter (commercial) was used to produce the DOCX. The difference files were produced using DeltaXML DocBook Compare (commercial). The PDF files were post-processed with qpdf to generate object streams to reduce the size of the tagged PDF and improve searching for strings that span lines within tables and to linearize the files for streamed web page viewing.

Some characteristics of the DocBook XML may be of interest to those performing automated processing or extraction:

- Zero width spaces (U+200B) are used in some places to allow long words (such as PS3.6 keywords and UIDs) to break within table columns and avoid tables becoming too wide to fit on a page. These need to be filtered out before using these words literally.

- Enumerated values and defined terms are formalized in PS3.3 as DocBook variablelist elements with a title identifying them as such, to facilitate their automated detection and extraction.

- Template and context group tables in PS 3.16 are preceded by variablelist elements defining whether or not they are extensible, etc., again to enable automated extraction.

- Hyperlinks (xref and link elements) are used extensively but may obscure the identifier of what is being linked to from the perspective of automated extraction. It may be useful to consult the olink targetdb files that are included in the package to "look up" the target of such links, rather than reinventing this mechanism, which is used by the DocBook stylesheets for cross-document linking. E.g., one can look up "sect_TID_300" in "output/html/targetdb/PS3_16_target.db" to determine that it has a "number" of "TID 300" and a "ttl" of "Measurement", etc.

Changes to Parts

General Changes

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PS3.1

- Correct name of PS3.10

PS3.2

- CP 1850

PS3.3

- Clean up layout of Surface Mesh Primitives Macro Attribute Descriptions in C.27.4.1

- Correct Flash Return Status term numbers

- Correct Corneal Size Type within Corneal Size Sequence per CP 1803

- Correct spelling of Originating SOP Instance Reference Sequence in Table 10.34-1

- Correct wrapping of WHOLE BODY in PDF for PET

- Update MGI_Strain.rpt link

- Sup 183 - update hyperlinks to sections in PS3.18

- CP 1766

- CP 1835

- CP 1841

- CP 1842

- CP 1843

- CP 1848

- CP 1850

- CP 1851

PS3.4

- CP 1850

PS3.5

- Correct VL encoding for explicit VR for SV and UV to follow "all new VR"s rule

- CP 1841

- CP 1843

- CP 1844

- CP 1847

PS3.6

- CP 1766

- CP 1842

- CP 1848

- CP 1849

- CP 1851

- CP 1853

PS3.7

PS3.8

PS3.10

- Correct names of parts in Fig 6.2-2

PS3.11

PS3.12

PS3.14

PS3.15

- Normative references converted to bibliography with hyperlinks throughout text

- Attribute names in de-identification table made consistent with PS3.6

- CP 1551

- CP 1552

PS3.16

- Correct misspelled SNOMED code for retinal structure

- Correct misspelled SNOMED code for groin skin crease

- Correct content item description row references for issuer in TID 8001, TID 8002

- Move "no purpose of reference is specified" for IMAGE, WAVEFORM, COMPOSITE out of template and into Content Item Descriptions consistently

- Replace dead web site reference link in CID 4203 with link to archived site

- Remove incorrect note in retired codes about (G-A16C, SRT, "Part of tooth") remaining in use

- Correct attribute names to match PS3.6

- Capitalize Homo sapien code meaning to match others

- CP 1551

- CP 1770

- CP 1835

- CP 1845

- CP 1846

- CP 1848

- CP 1849

- CP 1850

- CP 1853

- CP 1855

PS3.17

- Correct coding scheme for patient concept in MMMM.1

- Sup 183 - update hyperlinks to sections in PS3.18

- CP 1845

- CP 1848

- CP 1850

PS3.18

- Sup 183

- Sup 203

- Remove instance synonyms except where parameter itself is referenced

- Retain WADO-RS, -URI, etc. in abbreviations section

- Move Fielding (and other) references to bibliography

- Corrected invalid statement in 8.3.5.1 Query Parameters For Rendered Resources that "all parameters are required to be supported by the origin server"

- Correct incorrect "rendered representation" in 10.5 to "Bulkdata"

- Swapped Sup 183 Annexes G and H so as not to renumber existing Annex G that already has identical content

- Remove reference to non-existent Annex describing structure of document

PS3.19

PS3.20

- CP 1850

PS3.21

- CP 1850

Supplements Incorporated

Sup 183 PS3.18 Web Services Re-Documentation

Sup 203 Thumbnail Resources for DICOMweb

Correction Items Incorporated

CP 1551 Correct Attribute Types in Text Style

CP 1552 Resolve discrepancy in defined Value Constraint for ATNA message

CP 1766 Extend Original Attributes Sequence

CP 1770 Add more compression information to X-Ray Radiation Dose SR

CP 1835 Use TID for Quantity Definition

CP 1841 Allow compressed RGB for WSI

CP 1842 Referenced Frame Numbers used in Acquisition Context is limited by 16 bit VR

CP 1843 JPEG-LS Planar Configuration constraints conflict with WSI, US, VL, Enhanced Color MR and compressed RGB images

CP 1844 Restore group length VR definition even though retired

CP 1845 Add description and example for ROI distance measurements with coordinates

CP 1846 Replace DCM code for circumscribed with SNOMED codes

CP 1847 Restrict future VRs to only upper case letters

CP 1848 Add concepts for relative blood flow and volume with reference regions

CP 1849 Brain tumor segmentation codes

CP 1850 Change old RT-style SNOMED IDs to CT-style Concept IDs

CP 1851 Add length of encapsulated document when not even

CP 1853 Add "All Modalities" context group

CP 1855 Remove duplicate Irradiation Event UID codes