2016/06/10

The following changes have been made relative to the previously published PS3 2016b 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 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).

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

PS3.2

• CP 1509

• CP 1549

PS3.3

• Correct Table C.31-1. RT General Machine Verification Module Attributes to include table 10-11, not C.10-11 (incorrect prior to XML conversion but had correct description)

• Correct swapped code value and coding scheme in (111791, DCM, "Spherical projection"), (111792, DCM, "Surface contour mapping") and (121311, DCM, "Localizer")

• Remove quotes around code value in (121311, DCM, "Localizer")

• Add UC to list of VRs affected by Specific Character Set in C.12.1.1.2.

• Remove unnecessary Type 1C conditions on nested sequence attributes in the Modality LUT Macro in Table C.11-1b.

• Update SVG versions of mouse figures C.7.1.4-1, C.7.1.4-2, C.7.1.4-3, C.7.3.1.1.2-2.

• CP 1013

• CP 1503

• CP 1539 and add missing definition for Context Group Local Version

• CP 1541

• CP 1548

• CP 1550

• CP 1556

• CP 1561

PS3.4

• Point Media Retired Standard SOP Classes I.5 to B.6 rather than repeating, to be consistent with CP 1550 changes

• CP 1550 and reworded note about same UID for Storage/Network SOP Classes

• CP 1561

• CP 1561

PS3.5

• Clean up order of name and tag for references to specific data elements to match normal convention

• CP 1544

- CP 1549

PS3.6

- CP 1013

- CP 1539

- CP 1556

PS3.7

PS3.8

PS3.10

PS3.11

PS3.12

PS3.14

PS3.15

- CP 1361

- CP 1362

- CP 1553

PS3.16

- Correct DA Federal Performance Standard for Diagnostic X-Ray Systems subsection reference from 1020.32(d) (7) to 1020.32(d) (3).

- CP 1543

- CP 1545

- CP 1546

- CP 1547

- CP 1556

- CP 1560

- CP 1618

PS3.17

- Correct swapped code value and coding scheme in (111791, DCM, "Spherical projection")

- CP 1509

- CP 1542

PS3.18

- CP 1509

• CP 1544

PS3.19

• CP 1539

• CP 1544

PS3.20

Supplements Incorporated

Correction Items Incorporated

CP 1013   RT Ion Beams Recording Clarifications

CP 1361   Correct ParticipantObjectDescription in DICOM audit message

CP 1362   Correct AuditSourceIdentification in DICOM audit message

CP 1503   Extension of the Selector Attribute Macro

CP 1509   Refactor media type description for web services

CP 1539   Add Equivalent Purpose Code

CP 1541   Template Content Sequence not required when template created through refactoring

CP 1542   Specify units for positioner angles in image library

CP 1543   PET image library corrections

CP 1544   Value Representation corrections related to OL, UC and UR

CP 1545   Make use of DateTime consistent in concept names

CP 1546   Incorrect LOINC code for Estimated Fetal Weight Percentile for Hadlock

CP 1547   Add syringe to device CID

CP 1548   Remove explicit mention of Bacus patent related to whole slide images

CP 1549   Remove description of retired Big Endian Transfer syntax

CP 1550   Refactor SOP Class specs for non-Patient IODs

CP 1553   Resolve discrepancy in Real World Entities for ATNA messages for Data Export & Import

CP 1556   Add Scheduled Workitem Code Sets for Reading

CP 1557   Add UPS Assigned Notification Event Type

CP 1560   Add missing language of content item and descendants to RDSR

CP 1561   Replace Retrieve URL with URI

CP 1618   Replace incorrect SNOMED codes - Median/Middle