2016/11/18

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

PS3.2

- Sup 169

PS3.3

- Remove Module from Common Instance Reference in Table A.79.3-1
- Remove duplicate Delivered Treatment Time from Table C.8.8.26-1
- Add missing type column for Last Menstrual Date in Table C.7-4a
- Add Parametric Map to IOD Module Overview (supposed to be done previously for Sup 172)
- Remove note that replicates definition for Tracking ID and UID.
- Add normative references for JPEG, JPEG 2000, JPEG LS and hyperlink to them, as well as other lossy compression standards, from defined terms.
- Section not Table C.2.2.2 reference to PS3.4 in 10.25.1.
- Add missing Radiopharmaceutical Radiation Dose SR and Implantation Plan SR to Table A.1-7 Modules Overview for SRs.
- In module overview for RT Table A.1-4, add missing Type U RT Treatment Summary Record for RT Ion Beams Treatment Record.
- Sup 169
- Sup 195
- CP 1527
- CP 1584
- CP 1591
- CP 1595
- CP 1597
- CP 1598
- CP 1599
- CP 1601
- CP 1608
- CP 1609
- CP 1611
- CP 1612

PS3.4

- Correctly nest attributes within Table HH.6-1
- Use updated "fat arrow" SVG figures for Sup 156
- Sup 169
- Sup 195
- CP 1594

PS3.5

- Make MPEG family profile / level naming pattern consistent
- Sup 195

PS3.6

- Make MPEG family profile / level naming pattern consistent
- Sup 169
- Sup 195
- CP 1584
- CP 1597
- CP 1609
- CP 1611

PS3.7

PS3.8

PS3.10

PS3.11

PS3.12

PS3.14

PS3.15

PS3.16

- Apply changes from CP 1318 that were not made previously to TID 10004 to add MPPS condition on DAP and time totals.
- Sup 169 - with corrected SNOMED code for "Mean"
- CP 1578
- CP 1579
- CP 1587
- CP 1588

- CP 1591
- CP 1592
- CP 1593
- CP 1612

PS3.17

- Use updated "fat arrow" SVG figures for Sup 156
- Correct SNOMED code for sagittal in example
- Correct SNOMED code for atlas in example (was using SCT code but SRT coding scheme)
- Sup 169
- Sup 195
- CP 1584

PS3.18

- CP 1602

PS3.19

PS3.20

Supplements Incorporated

Sup 169 Simplified Adult Echocardiography Report

Sup 195 HEVC/H.265 Transfer Syntax

Correction Items Incorporated

CP 1527 Correction of X-Ray Frame Acquisition Sequence Attributes Description

CP 1578 Correct Pulse Sequence Name in MR Image Library

CP 1579 Clarify explanation of heading conditions in Measurement template

CP 1584 Allow Palette Color in Parametric Map

CP 1587 Add Tmax perfusion parameter

CP 1588 Inconsistent Person Participant Relationship in Radiopharmaceutical RDSR

CP 1591 Allow multiple finding sites for single regions of interest in measurement templates and segmentations

CP 1592 Add codes for prostatic sector anatomy

CP 1593 Add Magnetic Susceptibility to Image Model Component Semantics for Quantitative Susceptibilty Parametric Maps

CP 1594 Add SOP Class requirements for Raw Data

CP 1595 Add Content Labels for Raw Data

CP 1597 Clarify Segmentation Algorithm Parameters

CP 1598 Clarify Fractional Segmentation

CP 1599 Add IEC References for MR

CP 1601 Add Graphic Group Module in Planar MPR VPS

CP 1602 Fix incorrect term in RS Rendered Retrieve table

CP 1608 Clarification for Scan Spot Position Map

CP 1609 RT Ion Beams Scan Spot Time Indicator

CP 1611 Add Selected Value To RT Treatment Overrides

CP 1612 Clarify incorrect multiplier for male James SUV lean body mass formula