2014/11/21

The following changes have been made relative to the previously published PS 3 2014b 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. The granularity of the chunking has been increased compared to previous releases (as of the 2014c release), so that individual pages are smaller (this has a significant impact on PS3.3 in particular). 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).

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) 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

- Switched from Courier to ArialUnicodeMS font for monospace <programlisting> text (in PDF), so that Asian characters in examples are not dropped (e.g., PS3.18 F.4, G.2.1)

PS3.1

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PS3.2

- Sup 172
- CP 1370

PS3.3

- Sup 172
- CP 1350
- CP 1381
- CP 1383
- CP 1385
- CP 1387
- CP 1393 (already done)
- CP 1394
- CP 1395 (removed spurious "maximum pixel value in this")
- CP 1396
- CP 1397
- CP 1398
- CP 1399
- CP 1401 (changed "shall" in note to "is")
- Figure corrections:
  - Figures C.7.6.16-8, C.7.6.17-2, C.8.21.3-2, C.8.21.3-3, C.8.21.3-4, C.8.21.3-5, C.11.19-2 restored nesting symbols for attributes
  - Figure C.8.19.6-8 restored direction of the arrow from O to Ot; removed patient
  - Figure C.8-15 restored TLHC pixel size of the Field Of View bigger than the TLHC Pixel size of the Active Area; end of the arrow of (0018,7028) to the center of the TLHC Pixel; made end of the arrow of (0018,7030) shall go to center of the "equivalent TLHC of the Active Area" (smaller than the TLHC of the FOV)
  - Figure C.8.19.6.4-1 restored start and the end of the arrow of (0018,7036) to center of both TLHCs
  - Figures C.8-10, C.8-11, C.8-12 restored consistency of Patient Plane and color of the arrow
  - Figure C.8-12 restored sign of the rotation (i.e. the circular arrow) to positive direction counter-clockwise, i.e. positive towards CRA
  - Figure C.8.19.6-2 restored distances SID, ISO and SOD to be defined parallel to the X-Ray center beam

PS3.4

- Sup 171

- Sup 172
- CP 1350

PS3.5

- refactor note about length limits for UR and UT
- Sup 172
- CP 1368
- CP 1371

PS3.6

- Removed retirement flag on Scheduled Procedure Step Start DateTime, since it is not retired after all, and still used in PS3.3 and PS3.4
- Sup 171
- Sup 172
- CP 1350
- CP 1378
- CP 1383
- CP 1386
- CP 1387
- CP 1391
- CP 1392
- CP 1399

PS3.7

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PS3.8

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PS3.10

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PS3.11

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PS3.12

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PS3.14

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PS3.15

- Removed retirement flag on Scheduled Procedure Step Start DateTime, since it is not retired after all, and still used in PS3.3 and PS3.4

PS3.16

- Correct TID 1400 content item description row reference
- Sup 172
- CP 1366
- CP 1367
- CP 1369 (already done)
- CP 1372
- CP 1373
- CP 1374
- CP 1375
- CP 1376
- CP 1377
- CP 1378
- CP 1379
- CP 1380
- CP 1384
- CP 1386
- CP 1387
- CP 1388
- CP 1389
- CP 1390
- CP 1391
- CP 1392

PS3.17

- Sup 171
- Sup 172
- CP 1386
- CP 1389

PS3.18

- Sup 171
- CP 1350
- CP 1400

PS3.19

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PS3.20

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Supplements Incorporated

Sup 171 Unified Procedure Step by REpresentational State Transfer (REST) Services (UPS-RS)

Sup 172 Parametric Map Storage (used FT2 with corrected data element tags)

Correction Items Incorporated

CP 1350 Add retrieval of referenced instances, series metadata and instance metadata to WADO-RS (used FT2)

CP 1366 Correction of Relationships in Planar and Volumetric ROI Templates

CP 1367 Correct errors in Colon CAD SR IOD Template Figures

CP 1368 Space should be listed in DS and IS VR character repertoire

CP 1369 Relax device identifier constraint in x-ray irradiation event per CP 1065 undone by CP 1077

CP 1370 Conformance Statement Example is Missing Private Creator Value

CP 1371 Length of TM permitted is too long

CP 1372 Add NCI Thesaurus as Coding Scheme

CP 1373 Add Alzheimers Disease PET Radiotracers

CP 1374 Add Zr 89 Monoclonal Antibody PET Radiotracers

CP 1375 Add Various PET Radionuclides and Radiotracers

CP 1376 Add Individual Long Bone Concepts to Anatomic Region and Body Part Examined

CP 1377 Use SNOMED Code for Radiopharmaceutical

CP 1378 Add Anatomic Codes for Fetal Biometry and Pelvic Ultrasound

CP 1379 Add Definitions for all DCM Controlled Terms or Replace with Terms from External Lexicon

CP 1380 Add Various NM Radionuclides

CP 1381 Add term "Flat Filter" for Filter Types used in Proj. X-Ray

CP 1383 Add external resource URI to MWL

CP 1384 Update values in CID 3722

CP 1385 Add Measurement Laterality to General Ophthalmic Refractive Measurements Module

CP 1386 Addition of Measurement Report Root Template for Planar and Volumetric ROIs

CP 1387 Addition of Quantity Descriptors to Real World Value Maps

CP 1388 Add Real World Value Map Reference to Measurements

CP 1389 Factor Common Descriptions Out of Image Library Entries

CP 1390 Generalize Concepts in Abstract Multi-dimensional Image Model Component Semantics

CP 1391 Addition of Quantity Descriptors for Perfusion and Tracer Kinetic Modelling

CP 1392 Addition of Quantity Descriptors and Measurements for PET

CP 1393 Correct Tag Numbers For BLD Adjusted Positions

CP 1394 Add Radioactive Source Model ID to RT Brachy Application Setups Module

CP 1395 Extend RT Structure Set ROI Color

CP 1396 Clarify Dose Value units for DVH in RT Dose

CP 1397 Multiplicity Structure Classification Code

CP 1398 Add FOR Module to RTSS IOD

CP 1399 Add Effective Wedge Angle

CP 1400 Assign WADO-WS namespace and schema

CP 1401 Clarify meaning of PARTIAL in X-Ray RDSR