2021/11/25

The following changes have been made relative to the previously published PS3 2021d 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

PS3.2

PS3.3

- Correct table titles for RT Codes and Context Group tables; fix number of columns in table (remove extra)
- Correct apostrophe character in Content Creator's ...
- Correct missing introduction to Table 10-15a and incorrect attribute type and description (Sup 160)
- CP 2115
- CP 2126
- CP 2127
- CP 2128
- CP 2131
- CP 2132

PS3.4

- Correct reference to Image Frame Conversion Source Functional Group Macro
- Correct (remove) wrong number of UPS SOP Classes mentioned in CC.3.1

PS3.5

- Correct text referring to Number of Frames element

PS3.6

- Correct capitalization of 'for' in keyword for (300A,0788)
- Correct misspelled keyword for Number of Table Columns
- CP 1950
- CP 2115
- CP 2127

PS3.7

- Fix typo in C-FIND Protocol Procedures

- CP 2119

PS3.8

- Correct row grouping in Table 10.4.4-1

PS3.10

PS3.11

PS3.12

PS3.14

PS3.15

- CP 2116
- CP 2120

PS3.16

- Additional fixes to Figure A-20 per CP 2109 not incorporated in 2021d
- Correct TID 1021 inclusion from TID 10042 in Fig A-18b
- Correct TID 4300 Row 11 SeriesQualityFindings CID
- Correct CID 9573 misspelled title and inclusion of itself rather than 9572 as per Sup 160 FT
- Update names of files in FHIR JSON and XML URLs for Context Group resources to match what IGPublisher expects (ValueSet-keyword used as filename)
- Clean up form of conditions in templates based on code values to use consistent 'value of Row n =' pattern
- CP 1950
- CP 2117
- CP 2124
- CP 2125
- CP 2133
- CP 2134

PS3.17

PS3.18

- CP 2122
- CP 2137

PS3.19

PS3.20

PS3.21

PS3.22

Supplements Incorporated

Correction Items Incorporated

CP 1950 Add measurement codes for Cardiac Strain

CP 2115 Per-segment multiple algorithms and creators

CP 2116 More dates, times, datetimes and selector attributes need de-identification

CP 2117 Add ICD-O-3 and ICD-10-CM as Coding Schemes

CP 2119 PS3.7: Correct Annotation in (sub-)item negotiation figures

CP 2120 Clarifications to de-identification

CP 2122 Fix QIDO-RS user agent Query Parameter Requirement

CP 2124 Provide two meanings for some EEG lead codes

CP 2125 Add new EEG Lead codes

CP 2126 Extend Source Pixel Plane Characteristics

CP 2127 Clarify Origin of Device-Based FoR

CP 2128 UV Mapping Module Corrections

CP 2131 Correct Beam Modifier Coordinate System description

CP 2132 Correct Patient Support Position Order table name

CP 2133 Add CAD-RADS scores as coded values

CP 2134 Clarify usage of Referenced Imaging Agent Identifier

CP 2137 PS3.18 Metadata is Dataset only and does not include Group 0002 File Meta Information