

2019/02/01

The following changes have been made relative to the previously published PS3 2018e 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 create 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

- CP 1793
- CP 1797
- CP 1810

PS3.2

- CP 1797
- CP 1810

PS3.3

- Remove duplicate General Reference Module in RT Segment Annotation Table A.86.1.3-1
- Correct nesting of Content Item Modifier Sequence in Content Item With Modifiers Macro
- Correct condition from Sup 147 that uses non-existent data element and should use Conceptual Volume Category Code Sequence (3010,0067)
- Correct coding scheme for physical object in Table C.36.6-3
- Make name of RT Treatment Phase Intent Module consistent throughout (not sometimes Intended Treatment Phase Module)
- Make IOD overview table consistent with normative IOD module tables for SRs re. Synchronization, and correct Imaging Agent Admin to match Sup 164
- Correct name of Order Entered By to match PS3.6
- CP 1626
- CP 1674
- CP 1736
- CP 1797
- CP 1807
- CP 1810
- CP 1811
- CP 1812
- CP 1813

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- CP 1814
 - CP 1817
 - CP 1818
 - CP 1819
 - CP 1820
 - CP 1821
 - CP 1822
 - CP 1828
 - CP 1829
 - CP 1830
 - CP 1837
 - CP 1840

PS3.4

- Fix table references in CC.2.8.4 Status Codes.
- CP 1797
- CP 1810
- CP 1817
- CP 1828
- CP 1837

PS3.5

- CP 1797
- CP 1810
- CP 1818
- CP 1819
- CP 1833

PS3.6

- Correct keyword for Effective Dose Calculation Method Description (3010,0005)
- Correct keyword for Manufacturer's Model Version (3010,001A)
- Make name of Software Versions (0018,1020) consistent with other parts
- CP 1674
- CP 1714
- CP 1736

- CP 1764
- CP 1797
- CP 1810
- CP 1812
- CP 1813
- CP 1814
- CP 1818
- CP 1834
- CP 1837
- CP 1838

PS3.7

- Correct Attribute Name for (0000,1021) in Table 9.3-10.
- CP 1793
- CP 1797
- CP 1810

PS3.8

- CP 1810

PS3.10

- CP 1793
- CP 1797
- CP 1810

PS3.11

- CP 1797
- CP 1810

PS3.12

- CP 1797
- CP 1810

PS3.14

- CP 1810

PS3.15

- CP 1736

- CP 1797
- CP 1810
- CP 1826
- CP 1837

PS3.16

- Update examples in TID 1211 note from RFC3066 to RFC5646, which should have been updated in CP 1567.
- Correct coding scheme designator for (130190, DCM, "Dosing Factor")
- Change all "Date Time" with space to "DateTime" without space as per convention
- CP 1674
- CP 1764
- CP 1779
- CP 1797
- CP 1810
- CP 1814
- CP 1815
- CP 1817
- CP 1823
- CP 1824
- CP 1825
- CP 1827
- CP 1834
- CP 1840

PS3.17

- Correct code for Pressure from Sup 164 to A-80002 (SNOMED Request ID Request ID 739735)
- Correct order of code tuple for SNOMED codes in contrast admin example
- Correct typo in (R-0038D, SRT, "Yes") code tuple in contrast admin example
- Add code for Bottle in contrast admin example
- Correct typos in 1.17 in contrast admin example
- Make name of Software Versions (0018,1020) consistent with other parts
- Correct prostate anatomy code in QQQ.1.1 example
- Populate definitions (glossary) and capitalize accordingly
- Change all "Date Time" with space to "DateTime" without space as per convention

- CP 1736
- CP 1810

PS3.18

- CP 1793
- CP 1797
- CP 1810
- CP 1816
- CP 1836
- CP 1838

PS3.19

- CP 1797
- CP 1810

PS3.20

- CP 1810 except that did not hyperlink existing copied definitions since may be used as standalone HL7 Implementation Guide

PS3.21

- Make name of Software Versions (0018,1020) consistent with other parts
- CP 1779
- CP 1797
- CP 1810

Supplements Incorporated

Correction Items Incorporated

- CP 1626** Correct Attribute Types in Text Style
- CP 1674** Add Dermatology Anatomic Site Context Group and NYU Numbering System Coding Scheme
- CP 1714** Add last release to PS 3.6 Data Dictionary
- CP 1736** Add Visible Light Photography Attributes corresponding to EXIF 2.31 and TIFF/EP
- CP 1764** More quantitative image features
- CP 1779** Update AIM to DICOM SR TID 1500 mapping with model revisions
- CP 1793** Harmonize the description of the DICOM Communication Model across the parts
- CP 1797** Update definition of SOP Class, inclusion of Media Storage Service and Web Services
- CP 1807** Corrections of Performed Storage Module
- CP 1810** Make the sections on definitions consistent and complete

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- CP 1811** Key measurements in Encapsulated PDF
 - CP 1812** Add hints and warnings for intraocular lens calculations to Intraocular Lens Calculations IOD
 - CP 1813** Add concept of Toric Intraocular Lenses to Intraocular Lens Calculations IOD
 - CP 1814** Add corneal measurement values sequence to Intraocular Lens Calculations IOD (IOL)
 - CP 1815** Add new Intraocular Lens Formulas and Lens Constants to DICOM Content Mapping Resource
 - CP 1816** Update JPEG-LS and RLE Media Types for web services to use registered rather than experimental media types
 - CP 1817** Replace uses of "data set" that do not refer to the PS3.5 defined meaning
 - CP 1818** Large compressed images may have more frames than fit in the Basic Offset Table
 - CP 1819** Add 64 bit binary VRs
 - CP 1820** InConcatenationTotalNumber must be greater than one if present
 - CP 1821** AcquisitionDuration need not be mandatory for WSI
 - CP 1822** Remove Dimension Index Sequence requirement for WSI when Dimensions implicitly defined by TILED_FULL
 - CP 1823** Add more PET Radiopharmaceuticals for Alzheimer's Disease
 - CP 1824** Add more PMSA Targeting Radiopharmaceuticals
 - CP 1825** Decision result context groups should not be extensible
 - CP 1826** Specimen De-identification
 - CP 1827** Correct code meaning for Formalin
 - CP 1828** Add Barcode Value to Modality Worklist for WSI
 - CP 1829** Clarify what slide label images contain and add overview image type
 - CP 1830** Use of Segmentation and Parametric Maps with Whole Slide Imaging
 - CP 1833** CP 1304 accidentally introduced restriction on PS format for MPEG-2
 - CP 1834** Add RT Dose Measurement Devices to CID 7193
 - CP 1836** Remove instance attributes from QIDO series include all
 - CP 1837** Add Reason For Visit
 - CP 1838** Additions to Breast Imaging Report
 - CP 1840** Make Code Meaning for Bilateral consistent