Digital Imaging and Communications in Medicine (DICOM)

Template for DICOM Supplements

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# Document History

|  |  |  |  |
| --- | --- | --- | --- |
| 2019/02/21 | Version 3 | DAC | Updated to reflect conventions in DocBook publishing |
|  |  |  |  |
|  |  |  |  |

# Open Issues

|  |  |
| --- | --- |
| 1. | Is more substantive content needed? |
|  |  |
|  |  |

# Closed Issues

|  |  |
| --- | --- |
| 1. | List styles have been removed since no longer used. |
|  |  |
|  |  |

# Scope and Field of Application

This template is provided for the convenience of DICOM Supplement editors.

When you read this template, be sure you "show tabs, paragraphs, etc. turned on". Some of the conventions are shown only by example.

The Scope and Field of Application section title is Style Heading 1.

Supplements are divided into three MS Word Sections: the title page, the table of contents, and the balance of the document. Each of these Sections start on an odd page.

All Sections are formatted as Even - Odd Pages (set this from File - Document Layout - Layout).

Page Layout for the entire document and all sections shall be Portrait. Landscape orientation is never used, and large table and figures should not assume that the Standard can include landscape orientated content.

Headers are different left and right. Use Normal Style in the Headers. The first line of the header is the title of the Supplement; the second line is the page #. No page number is shown on the title page.

Pages are numbered continuously from 1 for the entire document, where page 1 is the Title Page.

Line numbers are used only in the 2nd and 3rd MS Word sections.

Footers are not used in Supplements.

Do not create any new styles.

To insert the Table of Contents, select "Insert -- Index and Tables -- and the tab Table of Contents. Select Format = Custom Style. Set Show Levels to 7. Select OK. The title "Table of Contents" is Normal style modified to Centered, Bold, 14 Point Font.

In this template, there are many violations of proper usage of informative and normative sections in actual standard (or Supplement) writing. This is only a template and not complete instructions for writing standards.

# 1 Example for DICOM Sections

This document shows examples of styles to be used for future DICOM documents. It has been reviewed with NEMA Publications and the intent is that the Final Test versions we generate will be the softcopy that is used to print paper versions of the standard (with no or very minor format changes).

## 1.1 Styles

All headings should use the appropriately numbered heading style. All heading text, regardless of level, should be first word capitalized. Never use all capitals for headings.

Section titles at all levels (headings) are: section number <tab> section title.

Text within a section is Normal style. Type one (not two) paragraph marks (return) at the end of each paragraph.

Sentences are separate by one space, not two.

Do not create or use additional styles.

There are cases where specific text formats do not have a unique style assigned. For instance, the text at the bottom of the cover page is modified Normal style. It is OK to change some of the attributes of styles for specific pieces of text, though they may well be ignored in the conversion to DocBook for incorporation in the Standard. Do not store such changes as new or updated styles.

A list of all styles is given in Annex A.

Styles can be copied from on document to another using Format - Style - Organizer. Select this template in the right-side selection box.

When you copy text from one document to another, styles may be copied to the new document. Unneeded styles should be removed using Format - Style - Organizer.

## 1.2 Notes

This section shows examples of Notes. Notes are used for informative text in normative sections.

Note:

 1. This is an example of the format for multiple notes. Multiple notes and single notes use the same style: Note.

 2. To achieve the proper spacing after the last line of a note, enter a "New line mark" (type shift and return) followed by a paragraph mark.

Note:

 This is an example of a single note that has 2 paragraphs.

 This is the second paragraph of the Note.

## 1.3 Lists

### 1.3.1 Numbered and Bulleted Lists

Use Word auto-numbering for numbered and bulleted lists, such that it provides the format and numeric values or bullet symbols automatically.

Use the Word "increase indent" mechanism for nested lists.

### 1.3.2 Document Lists

There are several cases where other lists are used, e.g. abbreviations, referenced documents, etc. If other spacing is needed for specific lists, modify the tab and next line spacing. Highlight the symbol or abbreviation or reference in **bold**.

Following are examples:

The following symbols and abbreviations are used in this Part of the DICOM Standard.

**ACR** American College of Radiology

**ASCII** American Standard Code for Information Interchange

**AE** Application Entity

In the following list, the spacing of the tab and next line was changed to accommodate longer entries. It is not a new style.

**ISO/IEC Directives, 1989** Part 3 - Drafting and Presentation of International Standards.

**ISO 7498-1** Information Processing Systems-Open Systems Interconnection-Basic Reference Model

**ISO/TR 8509** Information Processing Systems-Open Systems Interconnection-Service Conventions

## 1.4 Sections

Sections need to be numbered manually and should not use Word auto-numbering, or chaos will result.

Text such as this may be present that precedes the sub-sections of a section, if any.

### 1.4.1 This is an Informative Sub-Section (Informative)

Sections or sub-sections that contain only informative information are permitted. The word "Informative" is appended to the section title.

Sections are Normative unless specifically indicated as Informative, or included within a parent indicated as Informative.

##### 1.4.1.1 Number of Sub-Sections

This section is also Informative since it is a lower level subsection in an informative subsection. "(Informative)" is not included in the section title.

In any given section, there should be at least two sub-sections, otherwise there would be no need for sub-sections. This is not always the case in DICOM, but is good practice. For example, use such as the following two sub-sections should be avoided since there is only one level 6 and one level 7.

##### 1.4.1.1.1 Heading Level 5

This is a level five sub-section. It should be used only when really necessary.

This section is again Informative since it is a new sub-section within a parent Informative sub-section.

###### 1.4.1.1.1.1 Heading Level 6

User the 6th level only if really, really necessary.

1.4.1.1.1.1.1 Heading Level 7

User the 7th level only if really, really, really necessary. It is rare to require more than 7 levels and no styles are provided.

# 2 Figures and Tables

This illustrates the start of a new section of the document. A section is the start of a new heading 1 part. It is not required to start on a new page. Heading 2 and higher parts are called sub-sections. This should not be confused with the MS Word "Sections" that are used to controlled formatting of document sub-divisions.

Figures provided by Supplement editors are subsequently redrawn in SVG for inclusion in the DocBook standard, but any source material such as rasterized images included in figures need to be supplied for use by the SVG artist.

Tables and Figures are numbered consecutively from the beginning of the immediately enclosing sub-section (e.g. 2.1.1-1, 2.1.1-2).

The numbering of Figures is independent of Tables. E.g. the first Table in Section 2.1 is Table 2.1-1 and the first Figure in the Section is Figure 2.1-1

## 2.1 Example and style for Figure Titles



Figure 2-1. DICOM Model of the Real World

The titles for figures use the Figure Title style and is first word capitalized and placed below the figure. Do not use all capitals for figure titles.

## 2.2 Tables

The titles for tables use the Table Title style, and is first word capitalized and placed above the table. Do not use all capitals for figure titles.

The heading row (first row) in a table uses Table Label style.

The table entries (subsequent rows) use the Table Entry style.

Heading entries (table labels) are usually centered. Left or centered justification of the table entries should be the same in a given column, but all columns in a table don't have to be the same. Use whatever looks best, but be consistent with different tables showing similar data.

Table 2-1. PRINT QUEUE IOD MODULES

|  |  |
| --- | --- |
| Module | Reference |
| SOP Common Information | C.12.1 |
| General Queue Module | C.14.1 |
| Print Queue Module | C.14.2 |

Tables should have single lines on the top and bottom and between cells. When information spans rows or columns, use the Word Merge Cells mechanism rather than formatting that omits the lines between cells, as shown in the following table.

Table 2-2N-ACTION ARGUMENTS

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Action Type Name | Action Type ID | Attribute | Tag | UsageSCU/SCP |
| Print | 1 | Referenced Print Job Sequence | (2100,0500) | -/MCRequired if Print Job SOP is supported |
| >Referenced SOP Class UID | (0008,1150) | -/MCRequired if Referenced Print Job Sequence (2100,0500) is present |
| >Referenced SOP Instance UID | (0008,1155) | -/MCRequired if Referenced Print Job Sequence (2100,0500) is present |

# 3 File Name Conventions

The following file names shall be used for DICOM documents that are posted on the NEMA server.

## 3.1 Supplements

The file name for supplements is "supnn\_xx\_title.docx", where:

nn two digit number of the Supplement, with a leading 0 if necessary

xx two digit version number of the document, with a leading 0 if necessary

title is an abbreviated title of the document, without spaces

E.g., the 3rd version of Supplement 181 would be: "sup181\_03\_TractographyResultsStorage.docx".

Note that "sup" is not capitalized.

## 3.2 Correction Proposals

The file name for Correction Proposals is "cpnnnn\_xx\_title.docx", where:

nnnn four digit number of the CP

xx two digit version number of the document, with a leading 0 if necessary

title is an abbreviated title of the document, without spaces

E.g., the 11th version of CP 1663 would be: "cp1663\_11\_AddScanPatternOPT.docx"

## 3.4 Named Versions of Documents

The following versions of documents are named. For these documents, the following are the values of xx. These names shall not be used until the WG 6 gives approval of the draft. For example, the draft presented to a WG for approval for public comment should have a number version, the name "pc" is used only for the version that has been approved by WG 6 for release for public comment.

pc public comment, document mature enough for comment outside the WG developing it

fz frozen draft, the document has been placed under strict change control for the purpose of encouraging prototype implementations

vp voting packet CP version, which is to be considered by WG 6 for release for letter ballot

lb letter ballot text, the version that will be submitted for letter ballot by the DICOM committee

ft the final text version, released after letter ballot has been approved and all comments have been addressed by the developing WG and WG 6 - this is the version that is the approved standard

E.g., the final text version of Supplement 206 would be: "sup206\_ft\_Add-Ciphersuites-TLS-Profile.docx".

# 4 Attribute Modules and Macros

## 4.1 Attribute Modules

Most Supplements include additions of information content to PS3.3 in the form if Attribute Modules. These generally take the following form:

Table 4.1-1. Example Module Table

|  |  |  |  |
| --- | --- | --- | --- |
| Attribute Name | Tag | Type | Attribute Description |
| Attribute A | (aaaa,aaaa) | 1 | This is an example. |
| Attribute B Sequence | (bbbb,bbbb) | 1 | This is an example of a Sequence Attribute |
| >Attribute C | (cccc,cccc) | 1 | This is an example. |
| >Attribute D | (dddd,dddd) | 1 | This is an example. |

## 4.2 Use of Attribute Macros

If two or more Modules have all or a large portion of their contained Attributes in common, these Attributes may be defined outside the tables in an Attribute Macro and referenced from the tables. The reference means that the Attributes of the Attribute Macro shall be included in the Module at the place of the reference, at the specified nesting level. The following conventions apply:

— Attribute Macros shall be defined as a separate table which shall all be contained in a section (usually the last section) in the main body of the same Part that references the Attribute Macro (i.e., Macros in one Part shall not be invoked from a different Part). Attribute Macros shall be referenced by Name and Table identification.

— The reference to (invocation of) the Attribute Macro shall be documented in a separate line in the Module Table at the place the Macro Attributes are to be added. There shall be zero or more ‘>‘ characters before the text indicating the nesting level within any the Sequence as necessary. The style for this row shall be Table Entry but the font shall be italicized. All columns except the right one shall be merged into a single column. The right column of the Table (‘Attribute Description’) shall list any special conditions or parameters for the Macro Attributes in the Module.

— The table that defines the Macro shall have the same number of columns and column titles as the Module table in which the Macro is invoked.

## 4.3 Examples of Attribute Modules

An example of the convention is shown below. Text in the reference and formatting as in the example shall be followed.

Table 4.3-1 is an example of a Module Table using the Attribute Macro convention.

Table 4.3-1. Example Module Table

|  |  |  |  |
| --- | --- | --- | --- |
| Attribute Name | Tag | Type | Attribute Description |
| Attribute A | (aaaa,aaaa) | 1 | This is an example. |
| Attribute B Sequence | (bbbb,bbbb) | 1 | This is an example of a Sequence Attribute |
| >Include 'Example Macro' Table 4.3-2 | In this Module, Attribute D (dddd,dddd) is Type 1 |

Table 4.3-2 is an example of the Attribute Macro referenced in Table 4.3-1.

Table 4.3-2. Example Macro

|  |  |  |  |
| --- | --- | --- | --- |
| Attribute Name | Tag | Type | Attribute Description |
| Attribute C | (cccc,cccc) | 1 | This is an example. |
| Attribute D | (dddd,dddd) | 3 | This Attribute is generally a Type 3 |

The contents of the Example Module Table, if it had not been described with the Example Macro would have been as shown in Table 4.3-3

Table 4.3-3. Example Module Table without the Use of an Attribute Macro

|  |  |  |  |
| --- | --- | --- | --- |
| Attribute Name | Tag | Type | Attribute Description |
| Attribute A | (aaaa,aaaa) | 1 | This is an example. |
| Attribute B Sequence | (bbbb,bbbb) | 1 | This is an example of a Sequence Attribute |
| >Attribute C | (cccc,cccc) | 1 | This is an example. |
| >Attribute D | (dddd,dddd) | 1 | In this Module, this Attribute has been specialized to Type 1 as indicated in Table 4.3-1 |

# Annex A Styles (Normative)

Each Annex starts on a new page. Insert a page break before it. Do not create a new Word Section.

The Annex heading is style Heading 1. Each Annex is labeled as either Informative or Normative.

Styles can be moved from this template to another document using Format - Style - Organizer.

## A.1 List of styles

The complete list of styles used is shown below.

DocList used for lists, this is one example, also is used for acronyms, lists of related documents and other text where this format is appropriate.

Figure Title titles for figures, not for table titles

Heading 1 titles of section and sub-sections

.

.

Heading 7

Instruction used for instruction lines in Supplements, not used in final DICOM Parts

Note used for all notes, both multiple and single notes

Table Entry entries in tables, differs from normal in the spacing before and after paragraphs

Table Label generally the first line in the table, may be used for other lines where appropriate

Table Title title for tables

toc 1 table of content styles corresponding to heading 1 ... 7

.

.

toc 7

# Annex B Supplements (Normative)

There are some special considerations for Supplements.

## B.1 Content of Supplements

In Supplements, the third MS Word section contains the Scope and Field of Application, as well as the instructions for modifications to DICOM that are the subject of the Supplement.

Previously Supplements were defined to contain a Foreward containing boilerplate text regarding the parts of and development of the Standard, but such a Forward is no longer used.

## B.2 Example of a Supplement Scope and Field of Application

This Supplement describes the management of Widgets in a network environment. It contains the Widgets Management Service Class and the Widgets Management SOP Class Definition.

Widgets Management covers the following functions:

— request and monitor the content of a widget

— manipulate the content of a widget

This Supplement includes a number of Addenda to existing Parts of DICOM:

PS 3.3 Addendum Widget Information Object Definitions

PS 3.4 Addendum Widget Management Service Class

PS 3.6 Addendum Widget Management Additions to the Data Dictionary

## B.3 Instructions in Supplements

In Supplements, there are instructions on how additions and changes are needed in the existing parts of DICOM. The Instructions style is to be used for this text, which is included in a box and italicized.

Following example shows how changes to existing text and small additions should be made:

Modify PS3.3 Section 6.1 Information Object Definition as indicated (changes to existing text are bold and underlined for additions and ~~bold and struckthrough~~ for removals):

### 6.1.2 Normalized IOD

A Normalized IOD is an Information Object Definition which generally represents a single entity in the DICOM Model of the Real-World. **~~Such an IOD includes Attributes which are only inherent in the Real-World Object that the IOD represents.~~**

**In this Standard, strict definition of Normalized Object Definitions has been not been applied. Application of strict definitions would often result in unnecessary complexity and reduced performance of implementations for several applications.**

For more extensive additions, particularly those involving the additions of large sections of content, the editorial instructions describe the addition, use placeholders for section, table and figure numbers, and do not make use of bold or underlined content, e.g.:

Add the following new content to PS3.3 Section 6.1:

### 6.1.X Mythical IOD

A Mythical IOD is an Information Object Definition which generally does not exist in the DICOM Model of the Real-World.

## B.4 Documentation of Changes

### B.4.1 Changes to Existing Parts

In Supplement items where there is a modification to existing sections in DICOM, the changes shall be documented with bold struckthrough text for removed words and bold underlined text for additions.

This is shown in the earlier example.

### B.4.2 Changes from One Draft to Another

Editors may choose to specifically track changes between different drafts of the Supplement using the normal Word change tracking mechanisms, and accept all changes at periodic milestones to maintain clarity.

Word change tracking is never used to indicate what the changes to the actual Standard are.

## B.5 Document History, Open and Closed Issues

Each Supplement shall include a Document History, and Open and Closed Issues describing what changes have been made between versions, what Open Issues have been identified that remain unresolved (and which may need to be addressed at Public Comment), and which previously Open issues have been Closed.