

DICOM Correction Item

Correction Number		CP-413
Log Summary: Change documentation of Icon Image Sequence		
Type of Modification	Name of Standard	
Clarification	PS 3.3 2003	
Rationale for Correction The WG6 Ad-Hoc Group on Publishing DICOM in XML is working to formalize the representation of IODs, Modules and Macros. This CP has emerged from this work and is necessary to enable a consistent XML representation. The CP is only intended to introduce a change in documentation. It is not intended to change the meaning of the standard. Icon Image Sequence (0088,0200) appears in a number of modules and directory records but specifies the contents of the sequence by referencing Image Pixel Module. In all other cases, sequence contents are included using the Macro construct. The inclusion of an entire module is an anomaly that should be equivalently formulated using a Macro. The proposal creates an Image Pixel Macro and redefines the Image Pixel Module to simply include the Image Pixel Macro. All instances where the Image Pixel Module is included are replaced with explicit inclusion of the Image Pixel Macro.		
Sections of documents affected PS 3.3, Annex C, C.7.6 PS 3.3, Annex C, C.8.18 PS 3.3, Annex F, F.5 PS 3.3, Annex F, F.7		
Correction Wording:		

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Item 1: Amend Annex C, C.7.6.1, Table C.7-9 (General Image Module) of PS 3.3:

...			
Lossy Image Compression Ratio	(0028,2112)	3	<p>Describes the approximate lossy compression ratio(s) that have been applied to this image.</p> <p>See C.7.6.1.1.5 for further explanation.</p> <p>May be multivalued if successive lossy compression steps have been applied.</p> <p>Notes: 1. For example, a compression ratio of 30:1 would be described in this Attribute with a single value of 30.</p> <p>2. For historical reasons, the lossy compression ratio should also be described in Derivation Description (0008,2111).</p>
Icon Image Sequence	(0088,0200)	3	This icon image is representative of the Image.
<p>> Image Pixel Module <i>Include 'Image Pixel Macro'</i> Table C.7-11.2</p>			See C.7.6.1.1.6 for further explanation.
Presentation LUT Shape	(2050,0020)	3	<p>When present, specifies an identity transformation for the Presentation LUT such that the output of all grayscale transformations, if any, are defined to be in P-Values.</p> <p>Enumerated Values are:</p> <p>IDENTITY - output is in P-Values - shall be used if Photometric Interpretation (0028,0004) is MONOCHROME2 or any color photometric interpretation.</p> <p>INVERSE - output after inversion is in P-Values - shall be used if Photometric Interpretation (0028,0004) is MONOCHROME1.</p> <p>When this attribute is used with a color photometric interpretation then the luminance component is in P-Values.</p>

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Item 2: Amend Annex C, C.7.6.1.1.6 of PS 3.3:

6 **C.7.6.1.1.6 Icon Image Sequence**

8 An Icon Image may be used as a key representative of an Image. It is defined as a Sequence
 9 that contains a single Item encapsulating the Data Set made of the Data Elements of the Icon
 10 Image. The Data Elements are defined by the Image Pixel ~~Module~~ **Macro** (see Section
 C.7.6.3). The restrictions defined in Section F.7 shall apply.

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Item 3: Amend Annex C, C.7.6.3 (Image Pixel Module) of PS 3.3:

2 **C.7.6.3 Image Pixel Module**

4 ~~Table C.7-11 specified the Attributes that describe the pixel data of the image.~~

Table C.7-11.1 describes the Image Pixel Module.

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**Table C.7-11.1
IMAGE PIXEL MODULE ATTRIBUTES**

Attribute Name	Tag	Type	Attribute Description
<i>Include 'Image Pixel Macro' Table C.7-11.2</i>			

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10 Table C.7-11.2 specifies the common attributes that describe the pixel data of the image.

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**Table C.7-11.2
IMAGE PIXEL MODULE MACRO ATTRIBUTES**

Attribute Name	Tag	Type	Attribute Description
Samples per Pixel	(0028,0002)	1	Number of samples (planes) in this image. See C.7.6.3.1.1 for further explanation.
Photometric Interpretation	(0028,0004)	1	Specifies the intended interpretation of the pixel data. See C.7.6.3.1.2 for further explanation.
...			

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Item 4: Amend Annex C, C.8.13.1, Table C.8.13-1 (Enhanced MR Image Module) of PS 3.3:

...			
Lossy Image Compression Ratio	(0028,2112)	1C	Describes the approximate lossy compression ratio(s) that have been applied to this image. See C.7.6.1.1.5 for further explanation. May be multivalued if successive lossy compression steps have been applied. Note: For example, a compression ratio of 30:1 would be described in this Attribute with a single value of 30. Required if Lossy Images Compression (0028,2110) is "01".
Icon Image Sequence	(0088,0200)	3	This icon image is representative of the Image.
> Image Pixel Module <i>Include 'Image Pixel Macro' Table C.7-11.2</i>			See C.7.6.1.1.6 for further explanation.

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Item 4: Amend Annex C, C.18.4, Table C.18.4-1 (Image Reference Macro) of PS 3.3:

...			
>>Referenced SOP Instance UID	(0008,1155)	1	Uniquely identifies the referenced SOP Instance.

>Icon Image Sequence	(0088,0200)	3	This Icon Image is representative of the Image. The Icon Image may be no greater than 128 rows by 128 columns.
>>Image Pixel Module Include 'Image Pixel Macro' Table C.7-11.2			See Section F.7.

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Item 5: Amend Annex F, F.5.3, Table F.5-3 (Series Keys) of PS 3.3:

...			
Series Number	(0020,0011)	1	
Icon Image Sequence	(0088,0200)	3	This Icon Image is representative of the Series. It may or may not correspond to one of the images of the Series.
>Image Pixel Module Include 'Image Pixel Macro' Table C.7-11.2			See Section F.7 of this Part.
Any other Attribute of the Series IE Modules		3	

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Item 6: Amend Annex F, F.5.4, Table F.5-4 (Image Keys) of PS 3.3:

...			
Instance Number	(0020,0013)	1	
Icon Image Sequence	(0088,0200)	3	This Icon Image is representative of the Image.
>Image Pixel Module Include 'Image Pixel Macro' Table C.7-11.2			See Section F.7 of this Part.
Any other Attribute of the Image IE Modules		3	

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Item 7: Amend Annex F, F.5.5, Table F.5-5 (Image Keys) of PS 3.3:

...			
Overlay Number	(0020,0022)	1	
Icon Image Sequence	(0088,0200)	3	
>Image Pixel Module Include 'Image Pixel Macro' Table C.7-11.2			See Section F.7 of this Part.
Any other Attribute of the Overlay IE Modules		3	

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Item 8: Amend Annex F, F.5.18, Table F.5-18 (Stored Print Keys) of PS 3.3:

...			
Instance Number	(0020,0013)	2	A number that identifies this film box.
Icon Image Sequence	(0088,0200)	3	One or more Icons which represent the images (of the Film Box) which are referenced by the Stored Print SOP instance.
> Image Pixel Module Include 'Image Pixel Macro' Table C.7-11.2			See Section F.7 of this Part.
Any other Attribute of the Image IE Modules		3	

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Item 9: Amend Annex F, F.5.19, Table F.5-19 (RT Dose Keys) of PS 3.3:

...			
Dose Comment	(3004,0006)	3	
Icon Image Sequence	(0088,0200)	3	This Icon Image is representative of the RT Dose.
> Image Pixel Module Include 'Image Pixel Macro' Table C.7-11.2			See Section F.7 of this part.
Any other Attribute of the Dose IE Modules		3	

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Item 10: Amend Annex F, F.7 of PS 3.3:

F.7 ICON IMAGE KEY DEFINITION

- 6 An Icon Image may be used as a key representative of an Image, RT Dose, Stored Print, Series
 8 or Overlay in a corresponding Directory Record to allow an application to display icons which
 10 enable a user to select one or more from amongst several of them. It is based on the general
 12 purpose Image Pixel ~~Module Macro~~ (See Annex C).
- 14 The Icon Image Key corresponds to Data Element (0088,0200). It is defined as a Sequence
 16 which contains a single Item encapsulating the Data Set made of the Data Elements of the Icon
 18 Image. The Data Elements are defined by the Image Pixel ~~Module Macro~~ (see Section
 20 C.7.6.3).
- 22 The Image Pixel ~~Module Macro~~ usage is restricted in a few areas to facilitate general use in
 Directory Record across various modality environments. These restrictions are:
- 16 a. Only monochrome and palette color images shall be used. Samples per Pixel
 18 (0028,0002) shall have a Value of 1, Photometric Interpretation (0028,0004) shall
 have a Value of either MONOCHROME 1, MONOCHROME 2 or PALETTE
 COLOR, Planar Configuration (0028,0006) shall not be present
- Note: True color icon images are not supported. This is due to the fact that the reduced size of
 the Icon Image makes the quality of a palette color image (with 256 colors) sufficient in
 most cases. This simplifies the handling of Icon Images by File-set Readers and File-set
 Updaters.

- 2 b. If an FSR/FSU supports Icons (i.e. does not ignore them) then it shall support at
4 least a maximum size of 64 by 64 Icons. An FSC may write Icons of any size. Icons
 larger than 64 by 64 may be ignored by FSRs and FSUs unless specialized by
 Application Profiles
- 6 c. Pixel samples have a Value of either 1 or 8 for Bits Allocated (0028,0100) and Bits
 Stored (0028,0101). High Bit (0028,0102) shall have a Value of one less than the
 Value used in Bit Stored
- 8 d. Pixel Representation (0028,0103) shall used an unsigned integer representation
 (Value 0000H)
- 10 e. Pixel Aspect Ratio (0028,0034) shall have a Value of 1:1
- 12 f. If a Palette Color lookup Table is used, an 8 Bit Allocated (0028,0100) shall be used