

## DICOM Correction Proposal

STATUS	Letter Ballot
Date of Last Update	2023-09-02
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Submission Date	2023-02-02

Correction Number	CP-2284
Log Summary: Remove remaining references to retired Curves and suffix retired sections	
Name of Standard PS3.3, PS3.5	
<p>Rationale for Correction:</p> <p>The Curve IE and Curve Module have been retired with Supplement 98 back in 2004, i.e., almost 20 years ago. However, there are still a few remaining references in the main standard text that should either be removed or move to an explaining Note.</p> <p>Only PS3.3 and PS3.5 are addressed in this CP, although other Parts such as PS3.4, PS3.15 or PS3.17 may also contain references to the retired Curves concept.</p> <p>It is also proposed to <i>consistently</i> suffix the section titles of retired IODs, IEs and Modules as well as chapter titles with “(Retired)”. Changes have been done to PS3.3 only, although other Parts such as PS3.4 may also need this suffix (if this approach is regarded as helpful at all).</p> <p><i>Editorial changes:</i></p> <ul style="list-style-type: none"> <li>The terms “Group[s]” and “Group Number[s]” with defined meanings, i.e. when referring to Attribute Tags, shall be written consistently with capital initials throughout the standard text.</li> <li>In PS3.3, there are two wording variants when referring to “this section”: it is either “this section” or “this Section”. It is suggested to use one or the other variant throughout.</li> </ul>	
Correction Wording:	

*Change PS3.3 Section A.1.2.7 to A.1.2.10*

### **A.1.2.7 Overlay IE (Retired)**

Retired. See PS3.3-2016a.

#### Note

Overlays were previously modeled as independent Information Entities; in the current model they are considered Attributes within the Image IE or Presentation State IE. See A.1.2.6.1.

### **A.1.2.8 Curve IE (Retired)**

Retired. See PS3.3-2004.

### **A.1.2.9 Modality LUT IE (Retired)**

Retired. See PS3.3-2016a.

#### Note

Modality LUTs were previously modeled as independent Information Entities; in the current model they are considered Attributes within the Image IE or Presentation State IE. See A.1.2.6.2.

### **A.1.2.10 VOI LUT IE (Retired)**

Retired. See PS3.3-2016a.

#### Note

VOI LUTs were previously modeled as independent Information Entities; in the current model they are considered Attributes within the Image IE or Presentation State IE. See A.1.2.6.3.

<i>Change PS3.3 Section A.9 to A.13</i>
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### **A.9 Standalone Overlay IOD (Retired)**

Retired. See PS3.3-2004.

### **A.10 Standalone Curve IOD (Retired)**

Retired. See PS3.3-2004.

### **A.11 Basic Study Descriptor IOD (Retired)**

Retired. See PS3.3-2004.

### **A.12 Standalone Modality LUT IOD (Retired)**

Retired. See PS3.3-2004.

### **A.13 Standalone VOI LUT IOD (Retired)**

Retired. See PS3.3-2004.

<i>Change PS3.3 Section A.17.3</i>
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### **A.17.3 RT Image IOD Module Table**

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#### Note

1. The inclusion of the Multi-frame Module allows for the expression of time-dependent image series or multiple exposures of identical beam geometries (i.e., multiple exposure portal images). If a time-dependent series of images (such as port images or DRRs) is represented the Cine Module is used to indicate this. This would subsequently allow analysis of Patient movement during treatment. Multiple exposure images allow individual images of treatment ports and open field ports to be grouped into a single multi-frame image.
2. The Modality LUT Module has been included to allow the possibility of conversion between portal image pixel values and dose transmitted through the Patient. The VOI LUT Module has been included to allow the possibility of translation between stored pixel values (after the Modality LUT has been applied if specified) and display levels.
3. The Curve Module (Retired) and Audio Module (Retired) were previously included in the Image IE for this IOD but have been retired. See PS3.3-2004.
4. The General Equipment Module contains information describing the equipment used to acquire or generate the RT Image (such as a portal imager, conventional simulator or treatment planning system). However, the equipment Attributes in the RT Image Module describe the equipment on which the treatment has been or will be given, typically an electron accelerator.

5. For RT Images that contain no relevant pixel data, such as BEV images without DRR information, Pixel Data (7FE0,0010) should be filled with a sequence of zeros.
6. The Frame of Reference Module has been included to allow the indication of spatial association of two or more RT Image Instances (e.g., where the images have been acquired in the same Frame of Reference, or have been resampled to share the same Frame of Reference). If the Frame of Reference occurs within a SOP Instance within a given Series, then all SOP Instances within that Series will be spatially related. For example, two RT Images may share the same Frame of Reference if they are located on the same physical plane, as determined by the treatment machine Gantry Angle (300A,011E) and source to image plane distance specified by RT Image SID (3002,0026).

<i>Change PS3.3 Section A.20.3</i>
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### **A.20.3 RT Plan IOD Module Table**

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Note

1. ~~Retired. See PS3.3-2011.~~
2. The Audio Module (Retired) was previously included in this IOD but has been retired. See PS3.3-2004.

<i>Change PS3.3 Section A.22 to A.25</i>
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### **A.22 Standalone PET Curve IOD (Retired)**

Retired. See PS3.3-2004.

### **A.23 Stored Print IOD (Retired)**

Retired. See PS3.3-2004.

### **A.24 Hardcopy Grayscale Image IOD (Retired)**

Retired. See PS3.3-2004.

### **A.25 Hardcopy Color Image IOD (Retired)**

Retired. See PS3.3-2004.

<i>Change PS3.3 Section A.32.1.2</i>
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### **A.32.1.2 VL Endoscopic Image IOD Entity-Relationship Model**

This IOD uses the E-R Model in Section A.1.2, with only the Image IE below the Series IE. The Frame of Reference IE is not a component of this IOD.

Note

1. An endoscopic procedure might include multiple Series of single-frame endoscopic images as well as one or more additional Series of related diagnostic images. The procedure might involve multiple Performed Procedure Steps, multiple endoscopes, and multiple anatomic regions and might be supervised, performed, and/or interpreted by one or more individuals.
2. Several distinct diagnostic or therapeutic processes might occur during an endoscopic procedure. For example: Endoscopic examination of duodenal mucosa, biopsy, lavage, or biliary stone removal.
3. The Curve ~~entity~~IE was previously included in the list of entities that are not used, but has been retired from DICOM. It is still not used in this IOD. See PS3.3-2004.

### **A.32.2.2 VL Microscopic Image IOD Entity-Relationship Model**

This IOD uses the E-R Model in Section A.1.2, with only the Image IE below the Series IE. The Frame of Reference IE is not a component of this IOD.

Note

1. The Curve ~~entity~~IE was previously included in the list of entities that are not used, but has been retired from DICOM. It is still not used in this IOD. See PS3.3-2004.
2. The Specimen Identification Module (**Retired**) was previously included in this IOD but has been retired, and its functionality replaced by the Specimen Module. See PS3.3-2008.

### **A.32.3.2 VL Slide-Coordinates Microscopic Image IOD Entity-Relationship Model**

This IOD uses the E-R Model in Section A.1.2, with only the Image IE below the Series IE.

Note

1. The Curve ~~entity~~IE was previously included in the list of entities that are not used, but has been retired from DICOM. It is still not used in this IOD. See PS3.3-2004.
2. The Specimen Identification Module (**Retired**) was previously included in this IOD but has been retired, and its functionality replaced by the Specimen Module. See PS3.3-2008.
3. The Frame of Reference IE was previously (incorrectly) identified as not used in this IOD, although the Frame of Reference Module was specified as Mandatory. See PS3.3-2009.

### **A.32.4.2 VL Photographic Image IOD Entity-Relationship Model**

This IOD uses the E-R Model in Section A.1.2, with only the Image IE below the Series IE. The Frame of Reference IE is not a component of this IOD.

Note

1. The Curve ~~entity~~IE was previously included in the list of entities that are not used, but has been retired from DICOM. It is still not used in this IOD. See PS3.3-2004.
2. The Specimen Identification Module (**Retired**) was previously included in this IOD but has been retired, and its functionality replaced by the Specimen Module. See PS3.3-2008.

### **A.32.5.2 Video Endoscopic Image IOD Entity-Relationship Model**

This IOD uses the E-R Model in Section A.1.2, with only the Image IE below the Series IE. The Frame of Reference IE is not a component of this IOD.

Note

1. The video may include audio channel(s) for acquiring Patient voice or physiological sounds, healthcare professionals' commentary, or environmental sounds.
2. The Frame Pointers Module has not been included because the selection of relevant sub-sequence(s) is usually made in a second workflow step and stored into separate Key Object Selection Documents.

3. The Curve ~~entity~~**IE** was previously included in the list of entities that are not used, but has been retired from DICOM. It is still not used in this IOD. See PS3.3-2004.

#### *Change PS3.3 Section A.32.5.4.2*

### **A.32.5.4.2 Image Related Data Encoding**

The Modality LUT Module, VOI LUT Module, Graphic Annotation Module and Overlay Plane Module shall not be present.

#### **Note**

The Curve Module (Retired) was previously included in the list of Modules that shall not be present, but has been retired from DICOM. It is still not permitted to be present. See PS3.3-2004.

#### *Change PS3.3 Section A.32.6.2*

### **A.32.6.2 Video Microscopic Image IOD Entity-Relationship Model**

This IOD uses the E-R Model in Section A.1.2, with only the Image IE below the Series IE. The Frame of Reference IE is not a component of this IOD.

#### **Note**

1. The video may include audio channel for acquiring Patient voice or physiological sounds, healthcare professionals comment, or environment sounds.
2. The Frame Pointers Module has not been included because the selection of relevant sub-sequence(s) is usually made in a second step and stored into separate Key Object Selection Documents.
3. The Curve ~~entity~~**IE** was previously included in the list of entities that are not used, but has been retired from DICOM. It is still not used in this IOD. See PS3.3-2004.
4. The Specimen Identification Module (**Retired**) was previously included in this IOD but has been retired, and its functionality replaced by the Specimen Module. See PS3.3-2008.

#### *Change PS3.3 Section A.32.6.4.2*

### **A.32.6.4.2 Image Related Data Encoding**

The Modality LUT Module, VOI LUT Module, Graphic Annotation Module and Overlay Plane Module shall not be present.

#### **Note**

The Curve Module (Retired) was previously included in the list of Modules that shall not be present, but has been retired from DICOM. It is still not permitted to be present. See PS3.3-2004.

#### *Change PS3.3 Section A.32.7.2*

### **A.32.7.2 Video Photographic Image IOD Entity-Relationship Model**

This IOD uses the E-R Model in Section A.1.2, with only the Image IE below the Series IE. The Frame of Reference IE is not a component of this IOD.

#### **Note**

1. The video may include audio channel for acquiring Patient voice or physiological sounds, healthcare professionals comment, or environment sounds.
2. The Frame Pointers Module has not been included because the selection of relevant sub-sequence(s) is usually made in a second step and stored into separate Key Object Selection Documents.

3. The Curve ~~entity~~**IE** was previously included in the list of entities that are not used, but has been retired ~~from DICOM~~. It is still not used in this IOD. See PS3.3-2004.
4. The Specimen Identification Module **(Retired)** was previously included in this IOD but has been retired, and its functionality replaced by the Specimen Module. See PS3.3-2008.

*Change PS3.3 Section A.32.7.4.2*

#### **A.32.7.4.2 Image Related Data Encoding**

The Modality LUT Module, VOI LUT Module, Graphic Annotation Module and Overlay Plane Module shall not be present.

Note

The Curve Module (Retired) was previously included in the list of Modules that shall not be present, but has been retired ~~from DICOM~~. It is still not permitted to be present. See PS3.3-2004.

*Change PS3.3 Section A.33.1.3*

#### **A.33.1.3 Grayscale Softcopy Presentation State IOD Module Table**

**Table A.33.1-1. Grayscale Softcopy Presentation State IOD Modules**

IE	Module	Reference	Usage
...			
Presentation State	Presentation State Identification	C.11.10	M
	...		
	Graphic Layer	C.10.7	C - Required if Graphic Annotations or Overlays <del>or Curves</del> are to be applied to referenced image(s)
	...		

*Change PS3.3 Section A.33.2.3*

#### **A.33.2.3 Color Softcopy Presentation State IOD Module Table**

**Table A.33.2-1. Color Softcopy Presentation State IOD Modules**

IE	Module	Reference	Usage
...			
Presentation State	Presentation State Identification	C.11.10	M
	...		
	Graphic Layer	C.10.7	C - Required if Graphic Annotations or Overlays <del>or Curves</del> are to be applied to referenced image(s)
	...		

### A.33.3.3 Pseudo-color Softcopy Presentation State IOD Module Table

Table A.33.3-1. Pseudo-Color Softcopy Presentation State IOD Modules

IE	Module	Reference	Usage
...			
Presentation State	Presentation State Identification	C.11.10	M
	Graphic Layer	C.10.7	C - Required if Graphic Annotations or Overlays <del>or Curves</del> are to be applied to referenced image(s)
	...		

### A.33.6.3 XA/XRF Grayscale Softcopy Presentation State IOD Module Table

Table A.33.6-1. XA/XRF Grayscale Softcopy Presentation State IOD Modules

IE	Module	Reference	Usage
	...		
Presentation State	...		
	Graphic Layer	C.10.7	C - Required if Graphic Annotations or Overlays <del>or Curves</del> are to be applied to referenced image(s)
	...		

### A.36.2.3.1 Enhanced MR Image IOD Content Constraints

The General Image Module, Overlay Plane Module and VOI LUT Module shall not be used in a Standard Extended SOP Class of the Enhanced MR Image.

Note

1. In order to annotate images, whether during acquisition or subsequently, SOP Instances of the Grayscale Softcopy Presentation State Storage or the Structured Report Storage SOP Classes that reference the image SOP Instance, may be used.

No standard mechanism is provided for inclusion of annotations within the image SOP Instance itself, and implementers are discouraged from using private extensions to circumvent this restriction.

Grayscale Softcopy Presentation State Storage Instances that are generated during acquisition may be referenced from the Image SOP Instance by using the Referenced Grayscale Presentation State Sequence in the MR Image and Spectroscopy Instance Macro invoked from the Enhanced MR Image Module. See Section C.8.13.2.

2. The Curve Module (Retired) was previously included in the list of Modules that shall not be present, but has been retired ~~from DICOM~~. It is still not permitted to be present. See PS3.3-2004.

3. The Specimen Identification Module **(Retired)** was previously included in this IOD but has been retired, and its functionality replaced by the Specimen Module. See PS3.3-2008.

The Photometric Interpretation (0028,0004) defined in Section C.8.13.1 Enhanced MR Image Module, shall be MONOCHROME2.

#### *Change PS3.3 Section A.38.1.3.1*

### **A.38.1.3.1 Enhanced CT Image IOD Content Constraints**

The General Image Module, Overlay Plane Module and VOI LUT Module shall not be used in a Standard Extended SOP Class of the Enhanced CT Image.

#### **Note**

1. In order to annotate images, whether during acquisition or subsequently, SOP Instances of the Grayscale Softcopy Presentation State Storage or the Structured Report Storage SOP Classes that reference the image SOP Instance, may be used.

No standard mechanism is provided for inclusion of annotations within the image SOP Instance itself, and implementers are discouraged from using private extensions to circumvent this restriction.

Grayscale Softcopy Presentation State Storage Instances that are generated during acquisition may be referenced from the Image SOP Instance by using the Referenced Grayscale Presentation State Sequence in the Enhanced CT Image Module. See Section C.8.15.2.

2. The Curve Module (Retired) was previously included in the list of Modules that shall not be present, but has been retired ~~from DICOM~~. It is still not permitted to be present. See PS3.3-2004.
3. The Specimen Identification Module **(Retired)** was previously included in this IOD but has been retired, and its functionality replaced by the Specimen Module. See PS3.3-2008.
4. The Enhanced Contrast/Bolus Module will be present even if images are processed to remove contrast information from the pixels, e.g. Virtual Non-Contrast images.

#### *Change PS3.3 Section A.41.2*

### **A.41.2 Ophthalmic Photography 8 Bit Image IOD Entity-Relationship Model**

This IOD uses the E-R Model in Section A.1.2, with only the Image IE below the Series IE.

#### **Note**

The Curve Module (Retired) was previously included in the list of Modules that shall not be present, but has been retired ~~from DICOM~~. It is still not permitted to be present. See PS3.3-2004.

#### *Change PS3.3 Section A.42.2*

### **A.42.2 Ophthalmic Photography 16 Bit Image IOD Entity-Relationship Model**

This IOD uses the E-R Model in Section A.1.2, with only the Image IE below the Series IE.

#### **Note**

The Curve Module (Retired) was previously included in the list of Modules that shall not be present, but has been retired ~~from DICOM~~. It is still not permitted to be present. See PS3.3-2004.

#### *Change PS3.3 Section A.47.3.1.2*

### **A.47.3.1.2 Overlay Plane, ~~Curve~~, VOI LUT and ~~Specimen Identification~~ Softcopy Presentation LUT Modules**



The Overlay Plane Module, VOI LUT Module and Softcopy Presentation LUT Module shall not be used in a Standard Extended SOP Class of the Enhanced XA Image.

**Note**

1. The VOI LUT function is provided by a Frame VOI LUT Functional Group.
2. The Curve Module (Retired) was previously included in the list of Modules that shall not be present, but has been retired ~~from DICOM~~. It is still not permitted to be present. See PS3.3-2004.
3. The Specimen Identification Module (**Retired**) was previously included in this IOD but has been retired, and its functionality replaced by the Specimen Module. See PS3.3-2008.

*Change PS3.3 Section A.48.3.1.2*

#### **A.48.3.1.2 Overlay Plane, ~~Curve~~, VOI LUT and ~~Specimen Identification~~ Softcopy Presentation LUT Modules**

The Overlay Plane Module, VOI LUT Module and Softcopy Presentation LUT Module shall not be used in a Standard Extended SOP Class of the Enhanced XRF Image.

**Note**

1. The VOI LUT function is provided by a Frame VOI LUT Functional Group.
2. The Curve Module (Retired) was previously included in the list of Modules that shall not be present, but has been retired ~~from DICOM~~. It is still not permitted to be present. See PS3.3-2004.
3. The Specimen Identification Module (**Retired**) was previously included in this IOD but has been retired, and its functionality replaced by the Specimen Module. See PS3.3-2008.

*Change PS3.3 Section A.67.4.1*

#### **A.67.4.1 Prohibited Modules**

The ~~Curve Module (Retired)~~, Overlay Plane Module and VOI LUT Module shall not be used in a Standard Extended SOP Class of the Ophthalmic Thickness Map.

**Note**

**The Curve Module (Retired) was previously included in the list of Modules that shall not be present, but has been retired. It is still not permitted to be present. See PS3.3-2004.**

*Change PS3.3 Section A.70.3.1*

#### **A.70.3.1 Legacy Converted Enhanced CT Image IOD Content Constraints**

**The Photometric Interpretation (0028,0004) defined in Section C.8.15.2 is MONOCHROME2.**

**Note**

~~The Photometric Interpretation (0028,0004) defined in Section C.8.15.2 is MONOCHROME2.~~ If the value of Photometric Interpretation (**0028,0004**) in the source single frame images is MONOCHROME1, which is permitted by Section C.8.2.1, lossless conversion of the ~~P~~pixel ~~D~~data to MONOCHROME2 and updating of any related Attributes is necessary.

The General Image Module, Overlay Plane Module, VOI LUT Module, Supplemental Palette Color Lookup Table Module and Graphic Annotation Module shall not be used in a Standard Extended SOP Class of the Legacy Converted Enhanced CT Image.

#### Note

In order to annotate images, whether during acquisition or subsequently, SOP Instances of the Grayscale Softcopy Presentation State Storage or the Structured Report Storage SOP Classes that reference the image SOP Instance, may be used.

No standard mechanism is provided for inclusion of annotations within the image SOP Instance itself, and implementers are discouraged from using private extensions to circumvent this restriction.

Grayscale Softcopy Presentation State Storage Instances that are generated during conversion shall be referenced from the Image SOP Instance by using the Referenced Grayscale Presentation State Sequence in the Enhanced CT Image Module. See Section C.8.15.2.

#### Note

The Curve Module (Retired) has been retired ~~from DICOM~~. It is still not permitted to be present. See PS3.3-2004.

### *Change PS3.3 Section A.71.3.1*

## **A.71.3.1 Legacy Converted Enhanced MR Image IOD Content Constraints**

The Photometric Interpretation (0028,0004) defined in Section C.8.13.1 shall be MONOCHROME2.

#### Note

If the value of Photometric Interpretation **(0028,0004)** in the source single frame images is MONOCHROME1, which is permitted by Section C.8.3.1, lossless conversion of the ~~P~~pixel\_~~D~~data to MONOCHROME2 and updating of any related Attributes is necessary.

The General Image Module, Overlay Plane Module, VOI LUT Module, Supplemental Palette Color Lookup Table Module and Graphic Annotation Module shall not be used in a Standard Extended SOP Class of the Legacy Converted Enhanced MR Image.

#### Note

In order to annotate images, whether during acquisition or subsequently, SOP Instances of the Grayscale Softcopy Presentation State Storage or the Structured Report Storage SOP Classes that reference the image SOP Instance, may be used.

No standard mechanism is provided for inclusion of annotations within the image SOP Instance itself, and implementers are discouraged from using private extensions to circumvent this restriction.

Grayscale Softcopy Presentation State Storage Instances that are generated during conversion shall be referenced from the Image SOP Instance by using the Referenced Grayscale Presentation State Sequence in the Enhanced MR Image Module. See Section C.8.15.2.

#### Note

The Curve Module (Retired) has been retired from DICOM. It is still not permitted to be present. See PS3.3-2004.

### *Change PS3.3 Section A.72.3.1*

## **A.72.3.1 Legacy Converted Enhanced PET Image IOD Content Constraints**

The value of Photometric Interpretation (0028,0004) defined in Section C.8.9.4 and Section C.8.22.3 is MONOCHROME2.

#### Note

~~The value of Photometric Interpretation (0028,0004) defined in Section C.8.9.4 and Section C.8.22.3 is MONOCHROME2.~~ So no conversion of the ~~P~~pixel\_~~D~~data from MONOCHROME1 to MONOCHROME2 is necessary.

The General Image Module, Overlay Plane Module, VOI LUT Module, Supplemental Palette Color Lookup Table Module and Graphic Annotation Module shall not be used in a Standard Extended SOP Class of the Legacy Converted Enhanced PET Image.

**Note**

In order to annotate images, whether during acquisition or subsequently, SOP Instances of the Grayscale Softcopy Presentation State Storage or the Structured Report Storage SOP Classes that reference the image SOP Instance, may be used.

No standard mechanism is provided for inclusion of annotations within the image SOP Instance itself, and implementers are discouraged from using private extensions to circumvent this restriction.

Grayscale Softcopy Presentation State Storage Instances that are generated during conversion shall be referenced from the Image SOP Instance by using the Referenced Grayscale Presentation State Sequence in the Enhanced PET Image Module. See Section C.8.15.2.

**Note**

The Curve Module (Retired) has been retired ~~from DICOM~~. It is still not permitted to be present. See PS3.3-2004.

*Change PS3.3 Section A.73.4.1*

### **A.73.4.1 Prohibited Modules**

The ~~Curve Module (Retired)~~, Overlay Plane Module and VOI LUT Module shall not be used in a Standard Extended SOP Class of the Corneal Topography Map.

**Note**

**The Curve Module (Retired) was previously included in the list of Modules that shall not be present, but has been retired. It is still not permitted to be present. See PS3.3-2004.**

*Change PS3.3 Section A.74.3.1.2*

### **A.74.3.1.2 Overlay Plane Module, ~~Curve Module~~ and VOI LUT Module**

The Overlay Plane Module, ~~Curve Module (Retired)~~, VOI LUT Module and Softcopy Presentation LUT Module shall not be used in a Standard Extended SOP Class of the Breast Projection X-Ray Image.

**Note**

1. The VOI LUT function is provided by a Frame VOI LUT Functional Group.
2. **The Curve Module (Retired) was previously included in the list of Modules that shall not be present, but has been retired. It is still not permitted to be present. See PS3.3-2004.**

*Change PS3.3 Section A.86.1.15.4.2*

### **A.86.1.15.4.2 Inclusion of Modules in Standard Extended SOP Classes**

The General Image Module, Overlay Plane Module, ~~Curve Module~~, Modality LUT Module and VOI LUT Module shall not be used in a Standard Extended SOP Class of the Enhanced RT Image ~~IOD~~.

**Note**

**The Curve Module (Retired) was previously included in the list of Modules that shall not be present, but has been retired. It is still not permitted to be present. See PS3.3-2004.**

*Change PS3.3 Section A.86.1.16.4.2*

### **A.86.1.16.4.2 Inclusion of Modules in Standard Extended SOP Classes**

The General Image Module, Overlay Plane Module, ~~Curve Module~~, Modality LUT Module, VOI LUT Module and Multi-frame Dimension Module shall not be used in a Standard Extended SOP Class of the Enhanced Continuous RT Image IOD.

**Note**

**The Curve Module (Retired) was previously included in the list of Modules that shall not be present, but has been retired. It is still not permitted to be present. See PS3.3-2004.**

*Change PS3.3 Section B.1 to B.6*

## **B.1 Patient Information Object Definition (Retired)**

Retired. See PS3.3-2004.

## **B.2 Visit Information Object Definition (Retired)**

Retired. See PS3.3-2004.

## **B.3 Study Information Object Definition (Retired)**

Retired. See PS3.3-2004.

## **B.4 Study Component Information Object Definition (Retired)**

Retired. See PS3.3-2004.

## **B.5 Results Information Object Definition (Retired)**

Retired. See PS3.3-2004.

## **B.6 Interpretation Information Object Definition (Retired)**

Retired. See PS3.3-2004.

*Change PS3.3 Section B.9.2*

### **B.9.2 IOD Modules**

**Table B.9-1. Basic Image Box IOD Modules**

<b>Module</b>	<b>Reference</b>	<b>Module Description</b>
SOP Common	C.12.1	Contains SOP Common information
Image Box Pixel Presentation	C.13.5	Contains Image Box presentation information

**Note**

The Image Box Relationship Module (Retired) was previously defined in DICOM. It is now retired. See PS3.3-1998.

*Change PS3.3 Section B.13 and B.14*

## **B.13 VOI LUT Box Information Object Definition (Retired)**

This section was previously defined in DICOM. It is now retired. See -PS3.3-1998-.

## **B.14 Image Overlay Box Information Object Definition (Retired)**

This section was previously defined in DICOM. It is now retired. See -PS3.3-1998-.

*Change PS3.3 Section B.16*

## **B.16 Print Queue Information Object Definition (Retired)**

Retired. See PS3.3-2004.

*Change PS3.3 Section B.19*

## **B.19 Pull Print Request Information Object Definition (Retired)**

Retired. See PS3.3-2004.

*Change PS3.3 Section B.21*

## **B.21 Basic Print Image Overlay Box Information Object Definition (Retired)**

Retired. See PS3.3-2004.

*Change PS3.3 Section C.3.5 and C.3.6*

### **C.3.5 Visit Discharge Module (Retired)**

Retired. See PS3.3-2004.

### **C.3.6 Visit Scheduling Module (Retired)**

Retired. See PS3.3-2004.

*Change PS3.3 Section C.4.1 to C.4.9*

### **C.4.1 Study Relationship Module (Retired)**

Retired. See PS3.3-2004.

### **C.4.2 Study Identification Module (Retired)**

Retired. See PS3.3-2004.

### **C.4.3 Study Classification Module (Retired)**

Retired. See PS3.3-2004.

### **C.4.4 Study Scheduling Module (Retired)**

Retired. See PS3.3-2004.

### **C.4.5 Study Acquisition Module (Retired)**

Retired. See PS3.3-2004.

### **C.4.6 Study Read Module (Retired)**

Retired. See PS3.3-2004.

### **C.4.7 Study Component Module (Retired)**

Retired. See PS3.3-2004.

#### **C.4.8 Study Component Relationship Module (Retired)**

Retired. See PS3.3-2004.

#### **C.4.9 Study Component Acquisition Module (Retired)**

Retired. See PS3.3-2004.

*Change PS3.3 Section C.4.16*

#### **C.4.16 Radiation Dose Module (Retired)**

This Module has been retired. See PS3.3-2017c

*Change PS3.3 Section C.5 and C.6*

### **C.5 Results Modules (Retired)**

Retired. See PS3.3-2004.

### **C.6 Interpretation Modules (Retired)**

Retired. See PS3.3-2004.

*Change PS3.3 Section C.7.1.2*

#### **C.7.1.2 Specimen Identification Module (Retired)**

Retired. See PS3.3-2008.

##### **Note**

The functionality of the Specimen Identification Module has been replaced by the Specimen Module. See Section C.7.6.22.

*Change PS3.3 Section C.7.7 and C.7.8*

#### **C.7.7 Patient Summary Module (Retired)**

Retired. See PS3.3-2004.

#### **C.7.8 Study Content Module (Retired)**

Retired. See PS3.3-2004.

*Change PS3.3 Section C.8.5.1 to C.8.5.4*

#### **C.8.5.1 US Frame of Reference Module (Retired)**

This Section was defined in a previous release of the DICOM Standard. The Section is now retired. See PS3.3-XXXX.

#### **C.8.5.2 US Region Calibration (Retired)**

This Section was defined in a previous release of the DICOM Standard. The Section is now retired. See PS3.3-XXXX.

#### **C.8.5.3 US Image Module (Retired)**

This Section was defined in a previous release of the DICOM Standard. The Section is now retired. See PS3.3-XXXX.

#### **C.8.5.4 US Frame of Reference Module (Retired)**

This Section was defined in a previous release of the DICOM Standard. The Section is now retired. See PS3.3-2003.

*Change PS3.3 Section C.8.7.1.1.9*

##### **C.8.7.1.1.9 Synchronization of Frame and Waveform Times**

The synchronization of a multi-frame X-Ray image with a waveform (e.g., ECG, pressure, or respiration) encoded in a different SOP Instance is managed through the Attributes of the Synchronization Module (see Section C.7.4.2) of the Frame of Reference IE.

###### **Note**

The use of a Curve IE within the X-Ray IODs was previously defined ~~in DICOM~~ (See PS3.3-2004). That use has been retired in favor of encoding waveform data in a separate IOD.

*Change PS3.3 Section C.8.8.5.2*

#### **C.8.8.5.2 Frame of Reference Relationship Sequence and Transformation Matrix**

Retired. See PS3.3-2011.

###### **Note**

The concept of definition of registered Frame of References using the Frame of Reference Relationship Sequence (3006,00C0) formerly present in the Standard is retired. The use of Registration IODs is advised since the introduction of Spatial Registration IOD, which is a much stronger and more general concept, and independent from the specifics of RT Structure Sets. Additionally it is of importance that registrations are decoupled from image and segmentation objects.

*Change PS3.3 Section C.8.8.7*

#### **C.8.8.7 RT Dose ROI Module (Retired)**

Retired. See PS3.3-2022d.

*Change PS3.3 Section C.8.9.5 and C.8.10*

#### **C.8.9.5 PET Curve Module (Retired)**

Retired. See PS3.3-2004.

#### **C.8.10 Hardcopy Modules (Retired)**

Retired. See PS3.3-2004.

*Change PS3.3 Section C.8.12.7*

#### **C.8.12.7 Multi-Resolution Navigation Module (Retired)**

Retired. See PS3.3-2021c.

*Change PS3.3 Section C.9.1*

#### **C.9.1 Overlay Identification Module (Retired)**

Retired. See PS3.3-2004.

*Change PS3.3 Section C.10.7*

## C.10.7 Graphic Layer Module

**Table C.10-7. Graphic Layer Module Attributes**

Attribute Name	Tag	Type	Attribute Description
Graphic Layer Sequence	(0070,0060)	1	A Sequence of Items each of which represents a single layer in which overlays, <del>curves</del> , graphics or text may be rendered.  One or more Items shall be included in this Sequence.  An Item is required for each layer referenced from the Graphic Annotation Module or the Overlay Activation Module.
...			

*Change PS3.3 Section C.11.3*

## C.11.3 LUT Identification Module (Retired)

This section has been retired. See PS3.3-2006.

*Change PS3.3 Section C.11.7*

## C.11.7 Overlay Activation Module

This Module defines a manner of controlling whether or not bit-mapped overlay ~~and curve~~ information ~~are~~is displayed.

....

*Change PS3.3 Section C.13.12*

## C.13.12 Print Request Module (Retired)

Retired. See PS3.3-2004.

*Change PS3.3 Section C.15 and C.16*

## C.15 Queue Management Specific Modules (Retired)

Retired. See PS3.3-2004.

## C.16 Stored Print Specific Modules (Retired)

Retired. See PS3.3-2004.

*Change PS3.3 Annex D*



# D Codes and Controlled Terminology (Informative) (Retired)

Retired. See PS3.16.

*Change PS3.3 Annex E*

# E Explanation of Patient Orientation (Normative) (Retired)

Retired. See PS3.17.

*Change PS3.3 Section F.5.5 to F.5.18*

## **F.5.5 Standalone Overlay Directory Record Definition (Retired)**

Retired. See PS3.3-2004.

## **F.5.6 Standalone Modality LUT Directory Record Definition (Retired)**

Retired. See PS3.3-2004.

## **F.5.7 Standalone VOI LUT Directory Record Definition (Retired)**

Retired. See PS3.3-2004.

## **F.5.8 Standalone Curve Directory Record Definition (Retired)**

Retired. See PS3.3-2004.

## **F.5.9 Topic Directory Record Definition (Retired)**

Retired. See PS3.3-2004.

## **F.5.10 Visit Directory Record Definition (Retired)**

Retired. See PS3.3-2004.

## **F.5.11 Results Directory Record Definition (Retired)**

Retired. See PS3.3-2004.

## **F.5.12 Interpretation Directory Record Definition (Retired)**

Retired. See PS3.3-2004.

## **F.5.13 Study Component Directory Record Definition (Retired)**

Retired. See PS3.3-2004.

## **F.5.14 Print Queue Directory Record Definition (Retired)**

~~This section was previously defined in DICOM. It is now retired.~~ Retired. See PS3.3-1998.

## **F.5.15 Film Session Directory Record Definition (Retired)**

~~This section was previously defined in DICOM. It is now retired.~~ Retired. See PS3.3-1998.

### **F.5.16 Film Box Directory Record Definition (Retired)**

~~This section was previously defined in DICOM. It is now r~~Retired. See PS3.3-1998.

### **F.5.17 Basic Image Box Directory Record Definition (Retired)**

~~This section was previously defined in DICOM. It is now r~~Retired. See PS3.3-1998.

### **F.5.18 Stored Print Directory Record Definition (Retired)**

Retired. See PS3.3-2004.

*Change PS3.3 Section F.5.33*

### **F.5.33 HL7 Structured Document Directory Record Definition (Retired)**

Retired. See PS3.3-2018b.

*Change PS3.3 Section F.6.2*

### **F.6.2 Multi-referenced File Directory Record Definition (Retired)**

Retired. See PS3.3-2004.

*Change PS3.3 Annex G to O*

## **G Integration of Modality Worklist and Modality Performed Procedure Step in the Original DICOM Standard (Informative) (Retired)**

Retired. See PS3.17.

## **H Retired Composite Information Object Definitions (Normative) (Retired)**

Retired. See XXXX?

## **I Retired Modules (Normative) (Retired)**

Retired. See XXXX?

## **J Waveforms (Informative) (Retired)**

Retired. See Annex C “Waveforms (Informative)” in PS3.17.

## **K SR Encoding Example (Informative) (Retired)**

Retired. See Annex D “SR Encoding Example (Informative)” in PS3.17.

## **L Mammography CAD (Informative) (Retired)**

Retired. See Annex E “Mammography CAD (Informative)” in PS3.17.

## **M Chest CAD (Informative) (Retired)**

Retired. See Annex F “Chest CAD (Informative)” in PS3.17.

## **N Explanation of Grouping Criteria for Multi-frame Functional Group IODs (Informative) (Retired)**

Retired. See Annex G “Explanation of Grouping Criteria For Multi-frame Functional Group IODs (Informative)” in PS3.17.

## **Clinical Trial Identification Workflow Examples (Informative) (Retired)**

Retired. See Annex H “Clinical Trial Identification Workflow Examples (Informative)” in PS3.17.

<i>Change PS3.5 Section 3.10</i>
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### **3.10 DICOM Data Structures and Encoding Definitions**

The following definitions are commonly used in this Standard:

[...]

## Repeating Group

Standard Data Elements within a particular range of Group Numbers where Data Elements that have identical Element Numbers have the same meaning within each Group (and the same VR, VM, and Data Element Type). Repeating Groups shall only exist for ~~Curves and~~ Overlay Planes (Group Numbers ~~(50xx,eeee)~~ and ~~(60xx,eeee)~~, respectively) and are a remnant of older versions of this Standard.

### Note

Repeating Groups were also used for Curves that were previously defined but have been retired. See PS3.5-2004.

*Change PS3.5 Chapter 7*

# 7 The Data Set

A Data Set represents an instance of a real world Information Object. A Data Set is constructed of Data Elements. Data Elements contain the encoded Values of Attributes of that object. The specific content and semantics of these Attributes are specified in Information Object Definitions (see PS3.3).

The construction, characteristics, and encoding of a Data Set and its Data Elements are discussed in this section. Pixel Data, and Overlays, ~~and Curves~~ are Data Elements whose interpretation depends on other related Data Elements.

*Change PS3.5 Section 7.6*

## 7.6 Repeating Groups

Multiple Overlay Planes ~~and Curves~~ are often associated with a single Image (see PS3.3). Standard Data Elements with even Group Numbers ~~(5000-501E,eeee)~~ represent Curves, while Data Elements with even Group Numbers (6000-601E,eeee) represent Overlay Planes. ~~Both of these~~ This ranges of Group numbers ~~are is~~ known as Repeating Groups. This use of ~~gG~~Group ~~n~~Numbers is a remnant of older versions of this Standard, which associated a semantic meaning with particular Groups.

In ~~each of these~~ this ranges of Group Numbers, Standard Data Elements that have identical Element Numbers have the same meaning within each Group (and the same VR, VM, and Data Element Type). The notation ~~(50xx,eeee)~~ and ~~(60xx,eeee)~~ ~~are is~~ used for the Group Number in Data Element Tags when referring to a common Data Element across these ~~gG~~Groups (see PS3.6). Groups ~~(50xx,eeee)~~ and ~~(60xx,eeee)~~ are called Repeating Groups because of these characteristics.

Repeating Groups shall only be allowed in the even Groups (6000-601E,eeee) ~~and even Groups (5000-501E,eeee)~~ ~~cases~~. In the future, Data Elements with VRs of SQ shall be used to serve a similar purpose.

### Note

1. Encoding of Curves in the even Groups (50xx,eeee) was previously defined but has been retired. See PS3.5-2004.
2. Private Groups in the odd Groups (5001-501F,eeee) and (6001-601F,eeee) may still be used, but there is no implication of repeating semantics, nor any implied shadowing of the standard ~~#~~Repeating ~~gG~~Groups.

*Change PS3.5 Section A.1*

## A.1 DICOM Implicit VR Little Endian Transfer Syntax

...

a. ...

b. ...

- c. The encoding of the Data Elements of the Data Set shall be as follows according to their Value Representations:

- 

**Note**

1. Encoding of Curve Data (5000xx,3000) and Audio Sample Data (5000xx,200C) was previously defined but has been retired. See PS3.5-2004.
2. Vertex Point Index List (0066,0025), Edge Point Index List (0066,0024), Triangle Point Index List (0066,0023) and Primitive Point Index List (0066,0029) were previously defined with a Value Representation of OW and always interpreted as unsigned, but have been retired. These have been replaced by corresponding OL Data Elements, which allow Values larger than 65535 to index the full range of points that can be encoded in Point Coordinates Data (0066,0016). See PS3.5-2015c.

This DICOM Implicit VR Little Endian Transfer Syntax shall be identified by a UID of Value "1.2.840.10008.1.2".

<i>Change PS3.5 Section A.2</i>
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## **A.2 DICOM Little Endian Transfer Syntax (Explicit VR)**

...

- a. ...
- b. ...
- c. The encoding of the Data Elements of the Data Set shall be as follows according to their Value Representations:
  - ...

**Note**

1. For Data encoded with the Value Representation OB, the Data encoding is unaffected by byte ordering.
2. Encoding of Curve Data (5000xx,3000) and Audio Sample Data (5000xx,200C) was previously defined but has been retired. See PS3.5-2004.
3. Vertex Point Index List (0066,0025), Edge Point Index List (0066,0024), Triangle Point Index List (0066,0023) and Primitive Point Index List (0066,0029) were previously defined with a Value Representation of OW and always interpreted as unsigned, but have been retired. These have been replaced by corresponding OL Data Elements, which allow Values larger than 65535 to index the full range of points that can be encoded in Point Coordinates Data (0066,0016). See PS3.5-2015c.

This DICOM Explicit VR Little Endian Transfer Syntax shall be identified by a UID of Value "1.2.840.10008.1.2.1".

<i>Change PS3.5 Section A.4</i>
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## **A.4 Transfer Syntaxes For Encapsulation of Encoded Pixel Data**

...

1. ...
2. ...
3. The encoding of the Data Elements of the Data Set shall be as follows according to their Value Representations:
  - ...

**Note**

1. For Data encoded with the Value Representation OB, the Data encoding is unaffected by byte ordering.
2. Encoding of Curve Data (5000xx,3000) and Audio Sample Data (5000xx,200C) was previously defined but has been retired. See PS3.5-2004.

3. Vertex Point Index List (0066,0025), Edge Point Index List (0066,0024), Triangle Point Index List (0066,0023) and Primitive Point Index List (0066,0029) were previously defined with a Value Representation of OW and always interpreted as unsigned, but have been retired. These have been replaced by corresponding OL Data Elements, which allow Values larger than 65535 to index the full range of points that can be encoded in Point Coordinates Data (0066,0016). See PS3.5-2015c.