

1	Status	Final Text
2	Date of Last Update	2018/09/17
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6	Submission Date	2017/12/07

7	Correction Number CP-1780	
8	Log Summary: Add flag to segmentation object indicating segments are nonoverlapping	
9	Name of Standard	
10	PS3.3, PS3.6 2018c	
11	Rationale for Correction:	
12	Binary segmentations instances may be transformed into or from "label maps", in which each pixel contains a coded value that	
13	indicates the segment, rather than the Segmentation IOD representation that encodes separate bitplanes for each segment. This	
14	conversion is facilitated by knowing whether or not any segment bitplanes overlap. Add an appropriate flag.	
15	Correction Wording:	

Amend DICOM PS3.3 as follows (changes to existing text are bold and underlined for additions and ~~struckthrough~~ for removals):

C.8.20.2 Segmentation Image Module

Table C.8.20-2. Segmentation Image Module Attributes

Attribute Name	Tag	Type	Attribute Description
...
Segmentation Type	(0062,0001)	1	The type of encoding used to indicate the presence of the segmented property at a pixel/voxel location. Enumerated Values: BINARY FRACTIONAL See Section C.8.20.2.3.
Segmentation Fractional Type	(0062,0010)	1C	For fractional segmentation encoding, the meaning of the fractional value. Required if Segmentation Type (0062,0001) is FRACTIONAL. See Section C.8.20.2.3 for Enumerated Values.
Maximum Fractional Value	(0062,000E)	1C	Specifies the value that represents a probability of 1 or complete occupancy. There shall be no values in Pixel Data (7FE0,0010) greater than this value. Required if Segmentation Type (0062,0001) is FRACTIONAL.
<u>Segments Overlap</u>	<u>(0062,0013)</u>	<u>3</u>	<u>Whether or not any segments in this instance overlap. I.e., whether or not any pixel is or might be in more than one segment.</u> Enumerated Values: <u>YES</u> <u>Some segments overlap</u> <u>UNDEFINED</u> <u>Some segments might overlap</u> <u>NO</u> <u>No segments overlap</u> <u>See Section C.8.20.2.3.</u> Note <u>If the value is NO, then a receiving application to which this matters can be assured that no segments overlap and does not need to check every pixel. If the value is UNDEFINED or YES, or the Attribute is absent, then a receiving application might need to check every pixel in every segment.</u>
Segment Sequence	(0062,0002)	1	Describes the segments that are contained within the data. One or more Items shall be included in this Sequence.
...

C.8.20.2.3 Segmentation Type and Segmentation Fractional Type and Segments Overlap

A Segmentation Type (0062,0001) of BINARY indicates the segmented property is present with a value of 1 and absent with a value of 0.

For a Segmentation Type (0062,0001) of FRACTIONAL the segmented property is defined as a value from zero to the Maximum Fractional Value (0062,000E). A FRACTIONAL segmentation shall be further specified via Segmentation Fractional Type (0062,0010).

Enumerated Values of Segmentation Fractional Type (0062,0010):

PROBABILITY Defines the probability, as a ratio of the pixel value to the Maximum Fractional Value, that the segmented property occupies the spatial area defined by the voxel.

OCCUPANCY Defines the proportion of the pixel volume occupied by the segmented property as the ratio of the pixel value to the Maximum Fractional Value.

Note

Binary segmentation instances may be transformed into or from "label maps", in which each pixel contains a coded value that indicates the segment, rather than the Segmentation IOD representation that encodes separate bitplanes for each segment. This conversion is facilitated by knowing whether or not any segment bitplanes overlap. A Segments Overlap (0062,0013) value of NO indicates they can be converted into (or may have been converted from) a label map representation without the need to check every pixel.

6 Registry of DICOM Data Elements

Table 6-1. Registry of DICOM Data Elements

Tag	Name	Keyword	VR	VM	
(0062,0013)	Segments Overlap	SegmentsOverlap	CS	1	