

DICOM Correction Item

Correction Item: CP-137 (Final Text)	
Log Summary: Clarification of Image Position (0020, 0032) definition	
Type of Modification: Clarification	Name of Document: PS 3.3 1998
<p>Rationale for Change:</p> <p>The Image Position attribute description in table C.7.8 is : “The x, y, z coordinates of the upper left hand corner (first pixel transmitted) of the image, in mm.. See C.7.6.2.1.1 for further explanation)”</p> <p>Section C.7.6.2.1.1 describe as following the field Image Position (0020,0032) : “The Image Position (0020, 0032) specifies the x, y, and z coordinates of the upperleft hand corner of the image; it is the first pixel transmitted. etc.”</p> <p>In these definitions, it is not clear if Image Position is located on the center of the first pixel or on the upper left corner of the first pixel. This is an issue for application for which half a pixel error in located anatomical structure may be a safety issue (e.g. use of CT Image to locate structure for RT treatment).</p> <p>In Annex E (NORMATIVE) in the drawings representing the first pixel of the image as well as the image coordinate system, the origin of the coordinate system is clearly based in the center of the first pixel.</p> <p>Moreover, Pixel Spacing (0028, 0030) used in parallel with Image Position and Image Orientation to locate anatomical structure, is also defined in table C.7-8 as the physical distance between the Center of each pixel.</p> <p>Therefore I suggest to clarify the definition of Image Position in order define it more precise. In order to be consistent with the normative Annex E, I suggest to define the Image Position as located in the center of the first pixel.</p>	
Sections of Document Affected:	
Table C.7-8 Section C.7.6.2.1.1	
Suggested Wording of Changes:	

**Table C.7-8
IMAGE PLANE MODULE ATTRIBUTES**

Attribute Name	Tag	Type	Attribute Description
Pixel Spacing	(0028,0030)	1	Physical distance in the patient between the center of each pixel, specified by a numeric pair - adjacent row spacing (delimiter) adjacent column spacing in mm.
Image Orientation (Patient)	(0020,0037)	1	The direction cosines of the first row and the first column with respect to the patient. See C.7.6.2.1.1 for further explanation.
Image Position (Patient)	(0020,0032)	1	The x, y, and z coordinates of the upper left hand corner (center of the first pixel transmitted) of the image, in mm. See C.7.6.2.1.1 for further explanation.

C.7.6.2.1 Image Plane Attribute Descriptions

C.7.6.2.1.1 Image Position And Image Orientation

The Image Position (0020,0032) specifies the x, y, and z coordinates of the upper left hand corner of the image; it is the **center of** the first pixel transmitted. Image Orientation (0020,0037) specifies the direction cosines of the first row and the first column with respect to the patient. These Attributes shall be provide as a pair. Row value for the x, y, and z axes respectively followed by the Column value for the x, y, and z axes respectively.