DICOM Correction Item

Correction Number CP-665	
Log Summary: Clarification of Spatial Locations Preserved	
Type of Modification	Name of Standard
Clarification	PS 3.3 2006
Rationale for Correction: DICOM WG 6 first proposed the Spatial Locations Preserved (0028,135A) attribute as a means of documenting whether or not a direct relationship existed between pixels in Digital Mammography Image - For Processing and Digital Mammography Image - For Presentation instances. The logic presumed that if any sort of image scaling, translation or rotations had occurred then there was no way that a workstation could understand the proper locations for rendering CAD marks onto For Presentation images when the CAD marks were defined relative to findings in the For Processing images. CP-564, in which Spatial Locations Preserved (0028,135A) was added to the standard, overlooked a key characteristic provided by DICOM, the Patient Orientation (0020,0020) attribute. This CP proposes to clarify wording surrounding the use of Spatial Locations Preserved by stating that, as long as identically orienting the For Processing and For Presentation images based on the encoded Patient Orientation (0020,0020) tags of both images results in preservation of spatial location, that the Spatial Locations Preserved should be set to a new value, REORIENTED_ONLY. Clarification will also be made that, in the event that a For Presentation image has Spatial Locations Preserved (0028,135A) value NO, that CAD marks cannot be rendered or overlayed on that image if the CAD marks were derived from the For Processing source image.	
Sections of documents affected PS 3.3 Annex C	
Correction Wording: See below.	

Modify PS 3.3, Annex C

C.7.6.1 General Image Module

Table C.7-9 specifies the Attributes that identify and describe an image within a particular series.

Table C.7-9
GENERAL IMAGE MODULE ATTRIBUTES

Attribute Name	Tag	Type	Attribute Description
…	…	…	…
Patient Orientation	(0020,0020)	2C	Patient direction of the rows and columns of the image. Required if image does not require Image Orientation (Patient) (0020,0037) and Image Position (Patient) (0020,0032). See C.7.6.1.1.1 for further explanation. Note: IOD's may have attributes other than Patient Orientation, Image Orientation, or Image Position (Patient) to describe orientation in which case this attribute will be zero length.
…	…	…	…
Source Image Sequence	(0008,2112)	3	A Sequence that identifies the set of Image SOP Class/Instance pairs of the Images that were used to derive this Image. Zero or more Items may be included in this Sequence. See C.7.6.1.1.4 for further explanation.
>*Include 'Image SOP Instance Reference Macro' Table 10-3*			
>Purpose of Reference Code Sequence	(0040,A170)	3	Describes the purpose for which the reference is made, that is what role the source image or frame(s) played in the derivation of this image. Only a single Item shall be permitted in this sequence.
>>*Include 'Code Sequence Macro' Table 8.8-1*			*Defined Context ID is 7202.*
>Spatial Locations Preserved	(0028,135A)	3	~~Whether or not~~ **The extent to which** the spatial locations of all pixels are preserved during the processing of the source image that resulted in the current image**.** Enumerated Values: YES NO **REORIENTED_ONLY - A projection radiograph that has been flipped, and/or rotated by a multiple of 90 degrees** Note**s**: 1. This applies not only to images with a known relationship to a 3D space, but also to projection images. For example, a projection

			radiograph such as a mammogram that is processed by a point image processing operation such as contrast enhancement, or a smoothing or edge enhancing convolution, would have a value of YES for this attribute. A projection radiograph that had been magnified or warped geometrically would have a value of NO for this attribute. **A projection radiograph that has been flipped, and/or rotated by a multiple of 90 degrees, such that transformation of pixel locations is possible by comparison of the values of Patient Orientation (0020,0020) would have a value of REORIENTED_ONLY.** This attribute is typically of importance in relating images with Presentation Intent Type (0008,0068) values of FOR PROCESSING and FOR PRESENTATION. **2. When the value of this attribute is NO, it is not possible to locate on the current image any pixel coordinates that are referenced relative to the source image, such as for example, might be required for rendering CAD findings derived from a referenced FOR PROCESSING image on the current FOR PRESENTATION image.**
>Patient Orientation	**(0020,0020)**	**1C**	**The Patient Orientation values of the source image.** **Required if the value of Spatial Locations Preserved (0028,135A) is REORIENTED_ONLY.**
…	…	…	…