DICOM Correction Item

Correction Number	CP-287
Log Summary: Displayed area selection pixel addressing and spatial transformation	

Type of Modification	Name of Standard
Clarification	PS 3.3 2001

Rationale for Correction
In a presentation state, when an image has been spatially transformed (rotated and/or flipped), then the pixel addresses of the "new" (after spatial transformation) top left and bottom right pixels are still defined in terms of the original image pixels (before spatial transformation).
Though this is explicitly stated in the standard there has been some confusion, hence a figure is added to illustrate the correct interpretation.
Also, since the words "vertical" and "horizontal" are unqualified as used in the text, they are qualified to indicate that they are before spatial transformation.

Sections of documents affected
PS 3.3 C.10.4

Correction Wording:

Add a figure to PS 3.3 Annex C.10.4:

C.10.4   Displayed Area Module

…

Table C.10-4
DISPLAYED AREA MODULE ATTRIBUTES

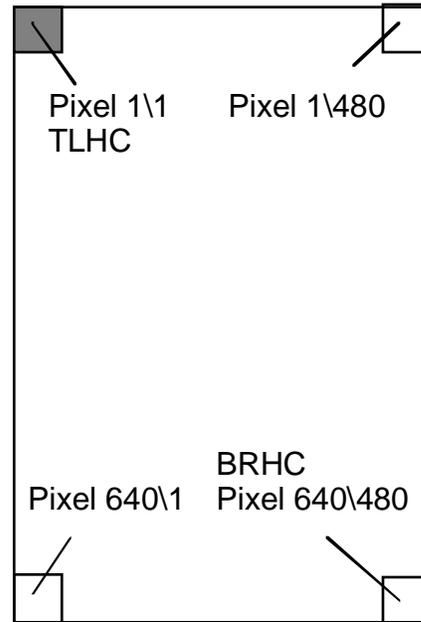| Attribute Name	Tag	Type	Attribute Description
Displayed Area Selection Sequence	(0070,005A)	1	A sequence of Items each of which describes the displayed area selection for a group of images or frames. Sufficient Items shall be present to describe every image and frame listed in the Presentation State Module. One or more Items shall be present.
…	…	…	…
>Displayed Area Top Left Hand Corner	(0070,0052)	1	The top left (after spatial transformation) pixel in the referenced image to be displayed, given as column\row. Column is the horizontal **(before spatial transformation)** offset (X) and row is the vertical **(before spatial transformation)** offset (Y) relative to the origin of the pixel data **(**before spatial transformation**)**, which is 1\1. **See Figure C.10.4-1.**
>Displayed Area Bottom Right Hand Corner	(0070,0053)	1	The bottom right (after spatial transformation) pixel in the referenced image to be displayed, given as column\row. Column is the horizontal **(before spatial transformation)** offset (X) and row is the vertical **(before spatial transformation)** offset (Y) relative to the origin of the pixel data **(**before spatial transformation**)**, which is 1\1. **See Figure C.10.4-1.**
…	…	…	….

Notes: 1. In scale to fit mode, the Displayed Area Top Left Hand Corner (TLHC)and Bottom Right Hand Corner (BRHC) have the effect of defining how any zoom or magnification and/or pan has been applied to select a region of an image to be displayed (the Specified Displayed Area), without assuming anything about the size of the actual display.

2. The TLHC and BRHC may be outside the boundaries of the image pixel data (e.g. the TLHC may be 0 or negative, or the BRHC may be greater than Rows or Columns), allowing minification or placement of the image pixel data within a larger Specified Displayed Area. There is no provision to position a zoomed selected sub-area of the image pixel data within a larger Specified Displayed Area.

a. No spatial transformation

Pixel 1\1 - TLHC   Pixel 640\1

Pixel 1\480   Pixel 640\480 - BRHC

Pixel 1\480   Pixel 1\1
TLHC

BHRC
Pixel 640\480   Pixel 640\1

b. 90 degree clock-wise rotation

Pixel 1\1   Pixel 1\480
TLHC

BRHC
Pixel 640\1   Pixel 640\480
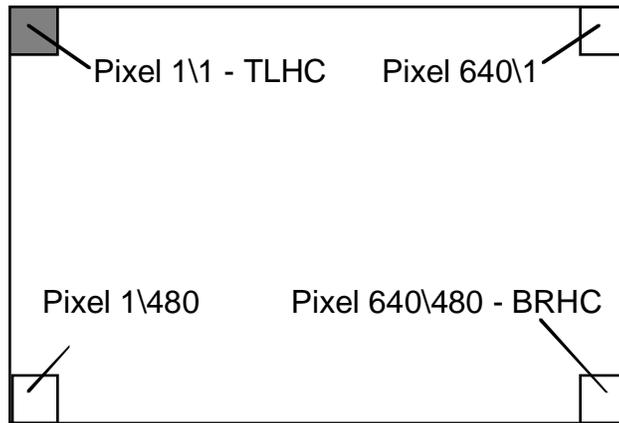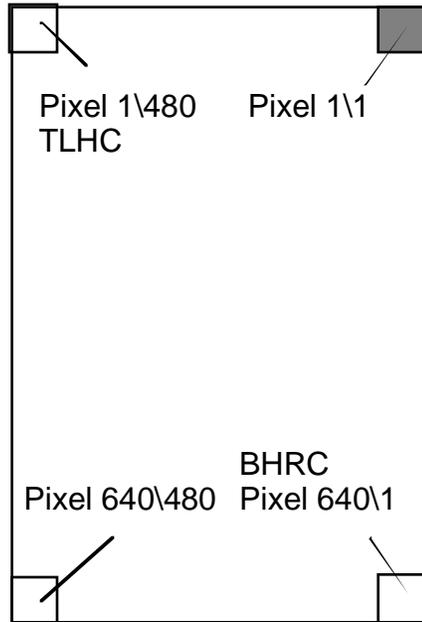
c. 90 degree clock-wise rotation
and horizontal flip

Figure C.10.4-1
Example of displayed area selection addressing of pixels
before and after spatial transformation