CP-208
Relationship of patient coordinate systems
in DICOM and IEC 62C/269/CDV

Date: 2001/04/16
Status: Final Text

DICOM Correction Proposal Form

Correction Number	CP-208

| Log Summary: Relationship of patient coordinate systems in DICOM and IEC 62C/269/CDV ||

Type of Modification: Extension	Name of Standard PS 3.3-2000

Rationale for Correction:

DICOM RT objects use the DICOM Patient Coordinate System, common to all DICOM objects. For all other radiotherapy-specific geometrical parameters, these objects use definitions provided in the IEC 61217 standard "Radiotherapy equipment – Coordinates, movements and scales".

In January 2000 the IEC voted and passed an amendment (62C/269/CDV, 1999) to IEC 61217. This amendment defines a patient-based coordinate system whose axes differ from the DICOM Patient Coordinate System, but correspond to a convention commonly used within the radiotherapy community. The DICOM Patient Coordinate System can be obtained from the IEC PATIENT coordinate system by rotating 90 degrees about the x-axis in the negative (counter-clockwise) direction.

In addition, the IEC standard is now known as IEC61217.

This proposal corrects the name of the IEC standard and specifies new text to reference the IEC system and briefly describe its relationship to the DICOM system.

Sections of document affected:

DICOM 2000 Part 3 (Information Object Definitions), Section 2 (Normative references)
DICOM 2000 Part 3 (Information Object Definitions), Section 3.10 (Definitions)
DICOM 2000 Part 3 (Information Object Definitions), Section C.8.8 (Radiotherapy Modules)

Correction Wording:

In DICOM 2000 Part 3 (Information Object Definitions), Section 2 (Normative references), replace "1217" with "61217" (in two places).

In DICOM 2000 Part 3 (Information Object Definitions), Section 3.10 (Definitions), replace "1217" with "61217" (in one place).

In DICOM 2000 Part 3 (Information Object Definitions), Section C.8.8 (Radiotherapy Modules), replace "1217" with "61217" (in six places).

In DICOM 2000 Part 3 (Information Object Definitions), Section C.8.8 (Radiotherapy Modules), add the following note just before the paragraph beginning "Many of the dosimetry concepts…":

Note:
IEC document 62C/269/CDV "Amendment to IEC 61217: Radiotherapy Equipment – Coordinates, movements and scales" also defines a patient-based coordinate system, and specifies the relationship between the DICOM Patient Coordinate System (see Section C.7.6.2.1.1) and the IEC PATIENT Coordinate System. Rotating the IEC PATIENT Coordinate System described in IEC 62C/269/CDV (1999) by 90 degrees counter-clockwise (in the negative direction) about the x-axis yields the DICOM Patient Coordinate System, i.e. $(X_{DICOM}, Y_{DICOM}, Z_{DICOM}) = (X_{IEC}, -Z_{IEC}, Y_{IEC})$. Refer to the latest IEC documentation for the current definition of the IEC PATIENT Coordinate System.