

DICOM Correction Proposal

STATUS	Final Text
Date of Last Update	2013/10/18
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Correction Number	CP-1268
Log Summary:	Additional Registration Input Information
Name of Standard	PS 3 2011, PS16 2011 + CP-1258
Rationale for Correction:	<p>The current definition of the Spatial Registration IOD references Used Spatial Fiducials as registration input. For some applications, there is additional information in the form of an arbitrarily defined volumetric object, that may be created in advance by a segmentation process and that may define one or more bounding volumes that are taken into consideration for registration.</p> <p>A typical use case might be a spinal registration in a radiotherapy patient positioning workflow, where one or more related sections of the spine are only considered to be registered. The bounding area may then have already been defined by a (manual or automatic) segmentation step during the planning process. This area may be available in the form of a simple box, or a segment following the anatomical structure with an additional margin or even a part of the actual segmented anatomy.</p> <p>It is therefore proposed to go along the existing definition of fiducial references and add an additional reference to segments accordingly. In the same way as it is not defined for the Fiducials what their semantics or function during the process of creating the registration was, no additional semantics is provided for the referenced segmentations. It is a notion only that this information was available “to determine the Frame of Reference Transformation Matrix”.</p> <p>Additionally, in order to allow for non-anatomic or abstract segmentations the Segmented Property Types are extended to include this notion: CID 7165 (introduced by CP 1258) is extended by a code called “Registration Input” along the existing nomenclature of the Fiducial UID (0070,031A) where this “[..] identifies the fiducial used as registration input.”</p> <p>The IHE-RO Technical Committee sees high value in this and the motivation is to include this reference in the upcoming new revision of the IHE-RO Multi-Modality Image Registration Profile as well as in the Discrete Positioning and Delivery Workflow Profile.</p>
Correction Wording:	

Amend PS3.3, Annex C, Chapter C.20.2 Spatial Registration Module

C.20.2 Spatial Registration Module

Table C.20.2-1 defines the general Attributes of the Spatial Registration Module.

**Table C.20.2-1
SPATIAL REGISTRATION MODULE ATTRIBUTES**

Attribute Name	Tag	Type	Attribute Description
...			
Registration Sequence	(0070,0308)	1	
...			
>Used Fiducials Sequence	(0070,0314)	3	The fiducials used to determine the Frame of Reference Transformation Matrix. One or more Items are permitted in this sequence.
>>Include 'SOP Instance Reference Macro' Table 10-11			Reference to the Spatial Fiducial SOP Instance identifying the Used Fiducial(s)
>>Fiducial UID	(0070,031A)	1	The UID that identifies the fiducial used as registration input.
<u>>Used Segments Sequence</u>	<u>(0062,0012)</u>	<u>3</u>	<u>The segments used to determine the Frame of Reference Transformation Matrix. One or more Items are permitted in this sequence.</u>
<u>>>Include 'SOP Instance Reference Macro' Table 10-11</u>			<u>Reference to the Segmentation or Surface Segmentation SOP Instance identifying the Used Segments.</u>
<u>>>Referenced Segment Number</u>	<u>(0062,000B)</u>	<u>1</u>	<u>Uniquely identifies the segment described in the Segment Sequence (0062,0002) by reference to the Segment Number (0062,0004). Referenced Segment Number (0062,000B) shall not be multi-valued.</u>

Add the following row to PS3.6, Section 6

(0062,0012)	<u>Used Segments Sequence</u>	<u>UsedSegmentsSequence</u>	<u>SQ</u>	<u>1</u>
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Amend PS3.16, Annex B, CID 7165

CID 7165 Abstract Segmentation Types

Context ID 7165

Abstract Segmentation Types

Type: Extensible Version: ~~20130617~~20131017

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
...		

<u>DCM</u>	<u>125041</u>	<u>Registration Input</u>
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Add the following row in PS 3.16, Annex D

Annex D Dicom controlled terminology definitions (normative)

Code Value	Code Meaning	Definition	Notes
...			
<u>125041</u>	<u>Registration Input</u>	<u>A segment for use as an input to an image registration process, e.g., to specify the bounding region for determining a Frame of Reference Transformation Matrix.</u>	