DICOM Correction Proposal

STATUS	Final Text
Date of Last Update	2016/09/08
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Submission Date	2014/07/26

Correction Number CP-1433	
Log Summary: RT-specific KOS CIDs	
Name of Standard PS3.16 2016c	

Rationale for Correction:

With the introduction of the Second Generation Radiotherapy Objects, the facility of directly linking instances together has been removed. Eventually, there will be the RT Course IOD (Supplement 178) which will tie together the RT instances on a higher level but also in a larger scope. For example there is not an easy way to semantically describe a certain planning state. It is foreseen that the Input Information Sequence and Scheduled Workitem Code in the Unified Procedure Step could provide the collection of objects and their semantics in a certain use case context. Until then a solution is proposed that makes use of the existing Key Object Selection (KOS) IOD to tie together a set of instances with a specific semantic context. Therefore, it is proposed by WG-07 to add new codes to Part 16 that cover states and process steps in a clinical radiotherapy workflow.

Furthermore, the KOS object can be archived and may be of use already in First Generation Radiotherapy Objects.

The addition comprises codes to represent (proposed) input for a certain process step, codes that represent input that was actually used and codes that represent the result of a process step.

The proposed CIDs are not intended to be used to derive any further semantics about which SOP Classes to include in a KOS that is using one of these codes. In addition, no assumption shall be derived from the codes regarding

- what the reason or intent was of the application that created such a KOS instance, or

- what the concrete next step of an application consuming such a KOS shall be.

These definitions are out of scope of this Correction Proposal.

Examples:

1) Pre-Planning:
   A generic contouring workstation is performing image fusion and contouring and is creating Spatial Registration and Segmentation instances. A KOS instance is created with a Key Object Document Title code "Pre-Planning Result". A Treatment Planning System may or may not use this KOS instance to identify instances; one or more of those instances may be used to create a treatment plan.

2) Planning:
   A TPS receives a KOS with a code "Pre-Planning Result" and imports the data for a planning procedure. Additional contouring is performed and an even newer image series is added and registered. After planning is done, the TPS will put out a KOS with a code "Treatment Planning Input Used" that references all content from the imported "Pre-Planning Result" KOS and also the image series and registration that were included. As a result, a KOS with a code "RT Planning Result" is created referencing all instances relevant to this treatment plan.

| In addition, another KOS that primarily references multiple beam doses for a verification step is generated with a code "For Plan Quality Assurance". |
| Correction Wording: |

Add to PS 3.16 Annex B

CID 7010   Key Object Selection Document Title

Context ID 7010
Key Object Selection Document Title
Type: Extensible Version: ~~20150915~~ 20160908

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
DCM	113000	Of Interest
DCM	113001	Rejected for Quality Reasons
DCM	113002	For Referring Provider
DCM	113003	For Surgery
DCM	113004	For Teaching
DCM	113005	For Conference
DCM	113006	For Therapy
DCM	113007	For Patient
DCM	113008	For Peer Review
DCM	113009	For Research
DCM	113010	Quality Issue
DCM	113013	Best In Set
DCM	113018	For Printing
DCM	113020	For Report Attachment
DCM	113021	For Litigation
DCM	113030	Manifest
DCM	113031	Signed Manifest
DCM	113032	Complete Study Content
DCM	113033	Signed Complete Study Content
DCM	113034	Complete Acquisition Content
DCM	113035	Signed Complete Acquisition Content
DCM	113036	Group of Frames for Display
DCM	113037	Rejected for Patient Safety Reasons
DCM	113038	Incorrect Modality Worklist Entry
DCM	113039	Data Retention Policy Expired
DCM	113022	Collection of Presentation States
DCM	**128181**	**Diagnostic Source Images**
DCM	**128182**	**Segmentation Result**
DCM	**128183**	**Registration Result**
DCM	**128195**	**For Diagnosis**
DCM	**128218**	**Diagnosis Input Used**
DCM	**128196**	**For Segmentation**
DCM	**128219**	**Contouring Input Used**
DCM	**128199**	**For Plan Comparison**
DCM	**128220**	**Plan Comparison Input Used**
DCM	**128203**	**For Tumor Board**

DCM	128221	Tumor Board Input Used
DCM	128208	For Tumor Registry
DCM	128222	Tumor Registry Input Used
DCM	128207	For Clinical Trial Submission
DCM	128223	Clinical Trial Submission Input Used
Include CID 7023 "RT Process Output"		
Include CID 7024 "RT Process Input"		
Include CID 7025 "RT Process Input Used"		

CID 7023   RT Process Output

Context ID 7023
RT Process Output
Type: Extensible Version: 20160908

Coding Scheme Designator (0008,0102	Code Value (0008,0100)	Code Meaning (0008,0104)
DCM	128184	Pre-Planning Result
DCM	128185	RT Prescription Result
DCM	128186	Dose Calculation Image Series
DCM	128187	Coordinate Alignment Image Series
DCM	128188	RT Treatment Simulation Result
DCM	128189	RT Planning Result
DCM	128190	Dosimetric Result
DCM	128191	Patient Setup Verification Result
DCM	128192	RT Treatment Session Result
DCM	128193	RT Treatment Course Summary
DCM	128194	RT Treatment QA Result

> **Note:** The concepts in the CID are intended to be a declarative statement to represent the output of an operation, without implying that this operation was part of a particular workflow or that the output will be used in any future operation.

CID 7024   RT Process Input

Context ID 7024
RT Process Input
Type: Extensible Version: 20160908

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
DCM	128180	For RT Workflow
DCM	128197	For RT Prescription
DCM	128198	For RT Treatment Planning
DCM	128200	For RT Plan Summation
DCM	128201	For Physician Review
DCM	128202	For Physicist Review
DCM	128204	For Plan Quality Assurance
DCM	128205	For Machine Quality Assurance
DCM	128206	For Patient Setup Verification

> **Note:** The concepts in the CID are intended to be a declarative statement to represent the potential input of an operation, without implying that this operation is part of a particular workflow, that this input will be used at all in any subsequent operation, that only parts of the referenced instances will be used, or that instances other than those referenced will be used as input.

CID 7025   RT Process Input Used

Context ID 7025
RT Process Input Used
Type: Extensible Version: 20160908

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
DCM	128209	RT Workflow Input Used
DCM	128210	RT Prescription Input Used
DCM	128211	RT Treatment Planning Input Used
DCM	128212	RT Plan Summation Input Used
DCM	128213	Physician Review Input Used
DCM	128214	Physicist Review Input Used
DCM	128215	Plan Quality Assurance Input Used
DCM	128216	Machine Quality Assurance Input Used
DCM	128217	Patient Setup Verification Input Used

Note: The concepts in the CID are intended to be a declarative statement to represent input that has been used in an operation, without implying that this operation was part of a particular workflow or how this input was collected.

Add the following to the table in PS3.16, Annex D:

ANNEX D   DICOM CONTROLLED TERMINOLOGY DEFINITIONS (NORMATIVE)

Code Value	Code Meaning	Definition	Notes
128180	For RT Workflow	Instances available as input for a general radiotherapeutic workflow.	
128181	Diagnostic Source Images	Instances used to make a diagnosis.	
128182	Segmentation Result	Instances created during a segmentation session.	
128183	Registration Result	Instances created during a spatial registration.	
128184	Pre-Planning Result	Instances created during preparation prior to planning.	
128185	RT Prescription Result	Instances created for prescription of a radiotherapeutic treatment.	
128186	Dose Calculation Image Series	Image instances that represent an image series that is intended to be the primary input for the dose calculation. Any parameters required for dose calculation (such as electron density) is derived from this series.	
128187	Coordinate Alignment Image Series	Image instances that represent an image series from which the display coordinate system for a radiotherapeutic treatment planning is derived. Typically this series does not provide the parameters required for the dose calculation.	
128188	RT Treatment Simulation Result	Instances created during the simulation of a radiotherapeutic treatment delivery session. May also include input objects actually used.	
128189	RT Planning Result	Instances created during the planning of a radiotherapeutic treatment. May also include input objects actually used.	
128190	Dosimetric Result	Instances created during the creation of the dosimetric result of a radiotherapeutic treatment plan. May also include input objects actually used.	
128191	Patient Setup Verification Result	Instances created during the verification of the patient's treatment position. May also include input objects actually used.	

Code Value	Code Meaning	Definition	Notes
128192	RT Treatment Session Result	Instances created during the treatment session. May also include input objects actually used.	
128193	RT Treatment Course Summary	Instances created during a treatment course. May also include input objects actually used.	
128194	RT Treatment QA Result	Instances created during evaluation of the treatment delivery quality. May also include input objects actually used.	
128195	For Diagnosis	Instances available to make a diagnosis.	
128196	For Segmentation	Instances available for segmentation.	
128197	For RT Prescription	Instances available for prescribing a radiotherapeutic treatment delivery.	
128198	For RT Treatment Planning	Instances available for creating a radiotherapeutic treatment plan.	
128199	For Plan Comparison	Instances available for comparing plans.	
128200	For RT Plan Summation	Instances available to combine radiotherapeutic plans or doses.	
128201	For Physician Review	Instances available for review by a physician.	
128202	For Physicist Review	Instances available for review by a physicist.	
128203	For Tumor Board	Instances available for review of a tumor board.	
128204	For Plan Quality Assurance	Instances available to perform quality assurance of a radiotherapeutic treatment delivery plan.	
128205	For Machine Quality Assurance	Instances available to perform quality assurance of one of the hardware or software components involved in a radiotherapeutic treatment delivery.	
128206	For Patient Setup Verification	Instances available for verification of the patient treatment position.	
128207	For Clinical Trial Submission	Instances available for submission for a clinical trial study.	
128208	For Tumor Registry	Instances available for submission to a tumor registry.	
128209	RT Workflow Input Used	Instances used as an input of a general radiotherapeutic workflow.	
128210	RT Prescription Input Used	Instances used for prescribing a radiotherapeutic treatment delivery.	
128211	RT Treatment Planning Input Used	Instances used to create a radiotherapeutic treatment plan.	
128212	RT Plan Summation Input Used	Instances used to combine radiotherapeutic plans or doses.	

Code Value	Code Meaning	Definition	Notes
128213	Physician Review Input Used	Instances used for review by a physician.	
128214	Physicist Review Input Used	Instances used for review by a physicist.	
128215	Plan Quality Assurance Input Used	Instances used to perform quality assurance of a radiotherapeutic treatment delivery plan.	
128216	Machine Quality Assurance Input Used	Instances used to perform quality assurance of one of the hardware or software components involved in a radiotherapeutic treatment delivery.	
128217	Patient Setup Verification Input Used	Instances used during verification of the patient treatment position.	
128218	Diagnosis Input Used	Instances used to make a diagnosis.	
128219	Contouring Input Used	Instances used for segmentation.	
128220	Plan Comparison Input Used	Instances used for comparing plans.	
128221	Tumor Board Input Used	Instances used for review of a tumor board.	
128222	Tumor Registry Input Used	Instances submitted to a tumor registry.	
128223	Clinical Trial Submission Input Used	Instances submitted to a clinical trial study.	