sup238_01_AssertionCollection.docx

Digital Imaging and Communications in Medicine (DICOM)

Supplement 238: Assertion Collection

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DICOM Standards Committee, Working Group 7

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Foreword

With an increasing number of DICOM Instances from different modalities for a single patient visit and related assertions for them, such as approval, the need to collect these assertions outside the actual Instances arises. The Assertion Collection IOD proposed in this Supplement addresses these issues, along with providing contextual information for the assertion and identification information for the referenced Instances.

Scope and Field of Application

The Assertion Collection IOD provides means to convey a collection of assertions for referenced instances along with the information during which clinical step the assertions were created, along with other meta information.

- High-level identification information for the collection
  This may be information from one or more of the referenced Instances so that the Assertion Collection can be easily identified without evaluating referenced Instances
- Item State definitions for the referenced Instances on Study, Series, Instance or sub-Instance level
  Item States allow to define assertions when e.g. Instances were added or removed, or when they were reviewed and/or approved, along detailed information for which purpose an assertion was made so that the context of an assertion is clear.
- Item State definitions for the Assertion Collection Instance itself.
  This allows for assertion of the entire Assertion Collection. This may be applicable for e.g. treatment plans that are created in several planning steps, each step providing a set of assertions. A final review of the entire treatment plan by the physician may not include the verification of each asserted Instance, but a high-level assertion (“sign-off”) of the entire collection.
- Means to transfer content that was created during the collection of the assertions.
  This may be information collected e.g. during treatment session and provides additional semantics for the collected references.

The design of the Assertion Collection is agnostic to any clinical domain and any requires domain-specific information that is modeled by codes, by including specific CIDs or TIDs.

Potential use cases of the Assertion Collection IOD include collection of assertions for instance references during post-acquisition/pre-planning, treatment planning, treatment delivery, pre- or post-treatment quality evaluation, and more.

An Assertion Collection Instance may be used as input for sub-sequent workflow steps, whereas the Assertion Collection IOD only represents a current state and does not include any forward-looking statements about further usage. It is not intended to control any workflow steps, just to represent the outcome.

Open Questions

1	Do we need/want to represent references/links between referenced instances, e.g. between an RT Radiation Set and the corresponding segmentations?
2	DSC 16-Sept-2022: Should we include Digital Signatures for the assertions?
3	DSC 16-Sept-2022: Is it ok to just refer to a Study or Series and thus assuming that everything that may happen later is implicitly also e.g. approved? Or is this just up to the business logic of the application creating the assertion what is included and what not?
	WG-06 Nov 2022: Have the right attributes be chosen to be replicated in this IOD to present a contextual information?

Closed Questions

	TODO: add reasons why Approval Module should not be used
	TODO: not depending on Studies

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Part 2 Addendum

Add new SOP Classes to PS3.2 Table A.1-2 UID Values:

UID Value	UID Name	Category
1.2.840.10008.5.1.4.1.1.481.XN.1	Assertion CollectionStorage	Transfer

Part 3 Addendum

Add the following in PS3.3 Chapter 7 DICOM model of the real-world

TODO

Add the following to PS3.3 Annex A:

A.VV ASSERTION COLLECTION DOCUMENT INFORMATION OBJECT DEFINITION

Commented [CSH1]: Create E-R diagram
Check implants diagram for predecessor relationships

A.VV.1 Assertion Collection IOD Description

The Assertion Collection IOD is intended to collect assertions on referenced data including corresponding meta information for high-level identification.

A.VV.2 Assertion Collection IOD entity-relationship model

The E-R Model in Section A.1.2 of this Part applies to the Assertion Collection IOD.

A.VV.3 Assertion Collection IOD Module Table

Table A.VV.3-1 specifies the Modules of the Assertion Collection Document IOD.

Table A.VV.3-1
Assertion Collection IOD MODULES

IE	Module	Reference	Usage
Patient	Patient	C.7.1.1	M
	Clinical Trial Subject	C.7.1.3	U
Study	General Study	C.7.2.1	M
	Patient Study	C.7.2.2	U
	Clinical Trial Study	C.7.2.3	U
Series	Assertion Collection Series	C.A.2.17.3.1	M
	Clinical Trial Series	C.7.3.2	U
Equipment	General Equipment	C.7.5.1	M
	Enhanced General Equipment	C.7.5.2	M
Document	Assertion Collection	C.A.2	M
	Common Instance Reference	C.12.2	M
	SOP Common	C.12.1	M

A.VV.3.1 Assertion Collection Document IOD Content Constraints

A.VV.3.1.1 TBD

Add the following to PS3.3 Annex C:

C.A ASSERTION COLLECTION MODULES

C.A.1 Assertion Collection Macros

C.A.1.1 Item State Macro

This macro is invoked to record the state, such as approval or review of an Instance or sub-Instance definitions, depending on where this macro is invoked.

Table C.A.1-1
ITEM STATE MACRO ATTRIBUTES

Attribute Name	Tag	Type	Attribute Description
Item State Sequence	(gggg,0003)	1	States that have been set on the item. One or more Items shall be included in this Sequence. See C.A.1.1.1.1.
>*Include Table 10-30-1 'Assertion Macro'*			*Baseline CID is defined at invocation of macro.*
>Assertion Purpose Code Sequence	(gggg,0005)	2	The purpose for which this assertion is made and valid. Only a single Item shall be present in this Sequence.
>>*Include Table 8.8-1 "Code Sequence Macro Attributes"*			Defined CID NNN8
>Active Item Indicator	(gggg,0004)	1	Indicator of the active versus historic status of this item. Enumerated Values: ACTIVE HISTORIC See C.A.1.1.1.2.

C.A.1.1.1 Item State Macro Attribute Description

C.A.1.1.1.1 Item State Sequence

The Item State Sequence (gggg,0100) contains a Sequence of Items which define the state. The CIDs which define the codes to be used in Assertion Code Sequence (0044,0101) attribute of the Assertion Macro are defined at the invocation of the macro.

Example

One or more Instances may share an Item State if all assertions are valid for all Instances. If, for example, an Instance is removed from the Assertion Collection, a new Item State is created where all prior assertions are present, too, but also the new assertion that the Instance reference is removed.

Assertion Collection 1	**Assertion Collection 1'**	
Item State 1	Item State 1	Item State 2
- Assertion A ("Added")	- Assertion A ("Added")	
- Assertion B ("Reviewed")	- Assertion B ("Reviewed")	
		- Assertion C ("Removed") -- Related Assertions --- Assertion A ("Added") --- Assertion B ("Reviewed")
Reference 1	Reference 1	
Reference 2	Reference 2	
Reference 3		Reference 3

C.A.1.1.1.2 Active Item Indicator

The Active Item Indicator (gggg,0004) attribute is used to specify which state definition items in the Item State Sequence (gggg,0003) are active and which items do only convey an audit trail of states having been in place in the past .

This indication additionally allows conveying more than one state entry of different persons as being active. E.g. if the department requires approvals by more than one person, several items having an approved state can be marked as active, indicating the list of persons having provided approval.

The semantics of the states are defined in the code definition and may be further specialized at invocation of that macro. Which state transitions are allowed and which are the pre-conditions to perform a state transition is outside of the scope of the standard.

C.A.1.1.1.3 Pertinent Documents Sequence

The Pertinent Documents Sequence (0038,0100) shall contain Content Assessment Results SOP Instances that provide the basis for making the Assertion if available.

C.A.1.2 Assertion Collection Reference Information Macro

This macro is invoked to …

Table C.A.1-2
ASSERTION COLLECTION REFERENCE INFORMATION MACRO ATTRIBUTES

Attribute Name	Tag	Type	Attribute Description
User Content Long Label	(3010,0034)	3	User-defined label for the content. See 10.9.2.1.1. See C.A.1.2.1.1.
Reference UID			

Referenced Item State Index	(gggg,0009)	1C	Referenced Item State Index (gggg,0008) in the Assertion Collection References Item State Sequence (gggg,0007) which applies to this Sequence Item. Required if an Item State is defined on the level where the macro is invoked. See C.A.1.2.1.2.
Purpose of Reference Code Sequence	(0040,A170)	1C	Purpose for which the reference is made, that is what role the reference plays in the Assertion Collection. Required if a Purpose can be provided on the level of invocation of this Macro. Zero or more Items shall be included in this Sequence.
>Include Table 8.8-1 "Code Sequence Macro Attributes"			*Baseline CID NNN6 "Assertion Collection Purposes of Reference"*

C.A.1.2.1 Assertion Collection Reference Macro Attribute Description

C.A.1.2.1.1 User Content Long Label

The User Content Long Label (3010,0034) allows annotation of the referenced content. Thus, this attribute could contain the content of a study-identifying attribute such as the Study ID (0020,0010) if the macro is invoked on Study level, the content of a series-identifying attribute such as the Series Description (0008,103E) if invoked on Series level or any of the content identification attributes, if invoked on Instance level.

C.A.1.2.1.2 Referenced Item State Sequence

Depending on the level where this Macro is invoked, the Referenced Item State Index and thus the corresponding Item State applies to the entire level, such as the entire Study or entire Series. As more Series could be added to a Study or more Instances could be added to a Series, and if only a known state of a Study or Series is to be assigned with an Item State, it is recommended, to also include the corresponding Series and Instances.

C.A.2 Assertion Collection Modules

C.A.2.1 Assertion Collection Series Module

Table C.A.2-1
Assertion Collection Series Module Table

Attribute Name	Tag	Type	Attribute Description
Modality	(0008,0060)	1	Type of device, process or method that created the Instances in this Series. Enumerated Values: AC – Assertion Collection
Series Instance UID	(0020,000E)	1	Unique identifier of the Series.
Series Number	(0020,0011)	1	A number that identifies this Series
Series Date	(0008,0021)	1	Date the Series started.
Series Time	(0008,0031)	1	Time the Series started.
Series Description	(0008,103E)	3	Description of the Series.
Series Description Code Sequence	(0008,103F)	3	A coded description of the Series. Only a single Item is permitted in this Sequence.
>Include Table 8.8-1 "Code Sequence Macro Attributes"			*No Baseline CID is defined.*
Referenced Performed Procedure Step Sequence	(0008,1111)	2	Uniquely identifies the Performed Procedure Step SOP Instance for which the Series is created. Zero or one Item shall be included in this Sequence. Note 1. The Performed Procedure Step referred to by this Attribute is the Step during which this Document is generated. 2. If this Document is generated during the same Performed Procedure Step as the evidence in the current interpretation procedure, this Attribute may contain reference to that Performed Procedure Step. 3. This Attribute is not used to convey reference to the evidence in the current interpretation procedure. See Current Requested Procedure Evidence Sequence (0040,A375). 4. This Sequence may be zero length if the Performed Procedure Step is unknown.
>Include Table 10-11 "SOP Instance Reference Macro Attributes"			

C.A.2.2 Assertion Collection Module

Table C.17.A.2-1 defines the general Attributes of an Assertion Collection. These Attributes identify and provide context for the Assertion Collection.

Table C.A.2-1
Assertion Collection Module Table

Attribute Name	Tag	Type	Attribute Description
User Content Long Label	(3010,0034)	1	User-defined label for the content of this SOP Instance. See Section 10.9.2.1.1.
Content Description	(0070,0081)	2	User-defined description for the content of this SOP Instance. See Section 10.9.2.1.1.
Content Creator's Person or Device Sequence	(gggg,0013)	3	Identification of the person or device who created the content. Only a single Item is permitted in this Sequence.
>Include Table C.17-3b "Identified Person or Device Macro Attributes"			*Defined CID for Organizational Role Code Sequence (0044,010A) is CID NNN7 Assertion Collection Item State Roles.*
Concept Name Code Sequence	(0040,A043)	2	A coded description of the content of the SOP Instance. Only a single Item shall be included in this Sequence. See C.A.2.2.1.1.
>Include Table 8.8-1 "Code Sequence Macro Attributes"			*Defined CID NNN1 Assertion Collection Concept Names*
Assertion Collection Identification Content Item Sequence	(gggg,0006)	2	Properties providing more detailed high-level identification. See C.A.2.2.1.2 Zero or more Items shall be included in this Sequence.
>Include Table 10-2.1-1 "Content Item with Modifiers Macro"			*Baseline TID TNNN1 "Assertion Collection Properties"*
Assertion Collection Content Item Sequence	(gggg,0012)	2	Content created during collection of this Assertion Collection Instance. See C.A.2.2.1.3 Zero or more Items shall be included in this Sequence.
>Include Table 10.2.1-1 "Content Item with Modifiers Macro"			See C.A.2.2.1.3 for Baseline TIDs.
Assertion Collection Item State Sequence	(gggg,0002)	2	Item State of this Assertion Collection Instance. See C.A.2.2.1.4. Zero or more Items shall be included in this Sequence.
>Include Table C.A.1-1 "Item State Macro Attributes"			*Baseline CID for Assertion Code Sequence (0044,0101) is CID NNN4 "Review Item States"*

Commented [CSH2]: Check for existing sequence

Assertion Collection Predecessor Sequence	(gggg,0010)	2	The direct predecessor Instance of this Assertion Collection Instance. See. C.A.2.2.1.5 One or more Items shall be present in this Sequence.
>Include Table 10-11 "SOP Instance Reference Macro Attributes"			
Assertion Collection Reference Sequence	(gggg,0001)	1	References to other SOP Instances that are asserted in this Assertion Collection Instance. One or more Items shall be included in this Sequence.
>Study Instance UID	(0020,000D)	1	Uniquely identifies the referenced Study.
>Modalities in Study	(0008,0061)	1	
>Include Table C.A.1-2 "Assertion Collection Reference Information Macro Attributes"			
>Referenced Series Sequence	(0008,1115)	1C	Sequence of Items each providing a reference to a Series that is part of the Study identified by Study Instance UID (0020,000D). Required if Study information is not sufficient and Series or Instance information provides more details. One or more Items shall be included in this Sequence.
>>Series Instance UID	(0020,000E)	1	Uniquely identifies the referenced Series.
>>Modality	(0008,0060)	1	Modality of the referenced Series.
>>Include Table C.A.1-2 "Assertion Collection Reference Information Macro Attributes"			
>>Referenced Instance Sequence	(0008,114A)	1C	Sequence of Items each providing a reference to an Instance that is part of the Series identified by Series Instance UID (0020,000E). Required if Study and Series information is not sufficient and Instance information provides more details. One or more Items shall be included in this Sequence.
>>>Include Table 10-11 "SOP Instance Reference Macro Attributes"			
>>>Creator-Version UID	(0008,9123)	1C	Unique identification of the equipment and version of the software that has created the Raw Data information. The UID allows one to avoid attempting to interpret raw data with an unknown format. Required if Referenced SOP Class UID (0008,1150) equals 1.2.840.10008.5.1.4.1.1.66 ("Raw Data Storage").
>>>Include Table C.A.1-2 "Assertion Collection Reference Information Macro Attributes"			
>>>Sub-Instance Item Sequence	(gggg,0014)	1C	Sequence of Items each providing a reference to an Item within an Instance that is part of the Instance identified by Referenced SOP Instance UID (0008,1155). Required if Study, Series and Instance information is not sufficient and sub-instance information provides more details. One or more Items shall be included in this Sequence.

Commented [CSH3]: Add Study Date/Time as well?

Commented [CSH4]: See comment by Uli below.

Commented [CSH5]: Add Series Date/Time as well?

Commented [UB6]: In my mind the modality information is useful, e.g. to allow the receiver up front to find out whether can deal with the series.
In case we keep the modality information, we may add be Modalities in Study (0008,0061) to the Study level to provide the same kind of information when we allow to reference Study level only.

Commented [CS7R6]: But then as a sequence of Modalities?!

Commented [CSH8R6]: Modalities in Study is a query key and is not used in any Composite SOP Class – I wonder what WG-06 will say…

Commented [CSH9]: Add Content Date/Time as well?

>>>>Referenced Frame Number	(0008,1160)	1C	Identifies the frame numbers within the Referenced SOP Instance to which the reference applies. The first frame shall be denoted as frame number 1. Required if the Referenced SOP Instance is a multi-frame image and the reference does not apply to all frames. See C.A.2.1.3.
>>>>Referenced Segment Number	(0062,000B)	1C	Identifies the segments to which the reference applies identified by Segment Number (0062,0004). Required if the Referenced SOP Instance is a Segmentation or Surface Segmentation and the reference does not apply to all segments. See C.A.2.1.3.
>>>>Referenced Regions of Interest	(gggg,0011)	1C	Identifies the ROIs to which the reference applies identified by ROI Number (3006,0022). Required if the Referenced SOP Instance is an RT Structure Set and the reference does not apply to all ROIs. See C.A.2.1.3.
>>>>Referenced Waveform Channels	(0040,A0B0)	1C	List of channels in Waveform to which the reference applies. Required if the Referenced SOP Instance is a Waveform that contains multiple Channels and the reference does not apply to all Channels of all Multiplex Groups. See Section C.18.5.1.1. See C.A.2.1.3.
>>>>Include Table C.A.1-2 "Assertion Collection Reference Information Macro Attributes"			
Assertion Collection References Item State Sequence	(gggg,0007)	2	Item State of references in Assertion Collection Reference Sequence (gggg,0001). TODO: index is used to correlate… Zero or more Items shall be included in this Sequence. See C.A.2.2.1.6.
>Item State Index	(gggg,0008)	1	The index of the Item State. The value shall start at 1 and increase monotonically by 1 within this Sequence.
>Include Table C.A.1-1 "Item State Macro Attributes"			*Baseline CID for Assertion Code Sequence (0044,0101) is CID NNN2 "Reference Item States"*

C.A.2.2.1 Assertion Collection Attribute Description

C.A.2.2.1.1 Concept Name Code Sequence

The code provided by Concept Name Code Sequence (0040,A043) shall represent the outcome of a process or reflect the current state. It shall not be forward-looking with an intention for which this Instance is to be used.

C.A.2.2.1.2 Assertion Collection Identification Content Item Sequence

The content items included in the Assertion Collection Identification Content Item Sequence (gggg,0006) are intended to provide a high-level identification of included references. This may be for example a single prescription dose value or an anatomic region. It is not intended to just duplicate information in the referenced Instances, but to actively pick information that helps identification.

For a detailed analysis it is expected that the referenced SOP Instances are evaluated accordingly.

C.A.2.2.1.3 Assertion Collection Content Item Sequence

The content items included in the Assertion Collection Content Item Sequence (gggg,0012) are providing information that was created during collection of this Assertion Collection Instance but cannot be located in any of the referenced Instances.

Table C.A.2-2
Assertion Collection Mapped TIDs

Concept Name Code Sequence (0040,A043)	TID
(128189, DCM, RT Planning Result)	Defined TIDNNN2 Treatment Planning Annotation
(128192, DCM, RT Treatment Session Result)	Defined TIDNNN3 Treatment Session Annotation
	No other DTIDs defined.

C.A.2.2.1.4 Assertion Collection Item State Sequence

The Assertion Collection Item State Sequence (gggg,0002) defines Item States for the entire collection of information represented in an Instance. An Item State defined on this level is to be interpreted independently from the Item States defined in the Assertion Collection References Item State Sequence (gggg,0007) and does not override them. No further business logic is implied and shall not be derived.

Example

During a post-acquisition/pre-planning step, references to different Instances are added to a Assertion Collection Instance along with Item States defined by multiple individuals participating in this clinical workflow step. Once the Assertion Collection Instance is finalized an Attending Physician will review the collection and approve it for subsequent use in treatment. This may or may not include detailed review of specific Instances.

In a radiotherapeutic workflow this may be the case that Physician A approved the contouring of the anatomy, Radiologist B approved the registration of the image data sets, Medical Physicist C approved the RT Plan and the RT Dose. The responsible Physician D may then review the DVH information which is derived from the RT Dose and the contours, as well as the contours overlayed on different image data sets, thus relying on former approvals. Once the review is done and successful, the responsible Physician D will the approve the entire Instance for radiotherapeutic treatment.

C.A.2.2.1.5 Assertion Collection Predecessor Sequence

An Instance is considered a predecessor when the content of such an Instance changes, but the semantic scope and context does not change. For example, an Assertion Collection defined during a contouring session may be appended with additional segments but stays semantically the same. If such a contouring Assertion Collection is utilized in a next step as input in treatment plan creation, the contouring Assertion Collection shall not be the predecessor of a planning result Assertion Collection, as the scope changed.

The contouring Assertion Collection Instance may or may not be included in the planning result Assertion Collection Instance as a referenced content.

As an example, a predecessor is created if for any of the referenced Studies, Series or Instances an Item State is changed, e.g. an Assertion that approves is added.

C.A.2.2.1.6 Assertion Collection References Item State Sequence

If a referenced SOP Instance contains the Approval Module, then the information in the referenced Instance's Approval Status (300E,0002) is overridden in case an Item State with a code from CID NNN4 "Review Item States" is present.

C.A.2.2.2 Assertion Collection Examples

C.A.2.2.2.1 Post-imaging/pre-planning Example

An Assertion Collection Instance created on a station where post-acquisition/pre-planning steps are performed:

- Concept Name Code Sequence: (128184, DCM, Pre-Planning Result)
- CT Series with code TODO
- MR Series with code TODO
- REG instance "approved"
- SEG instances with anatomy outlined and "approved"

C.A.2.2.2.2 Planning Example

An Assertion Collection Instance created on an RT Treatment Planning station:

- Concept Name Code Sequence: (128189, DCM, RT Planning Result)
- CT Series with code TODO (Reference CT)
- MR Series with code TODO
- REG Instance (approved)
- RT Structure Set with anatomy and planning volumes "approved"
- RT Plan "approved"
- RT Dose "approved"

C.A.2.2.2.3 Treatment Example

An Assertion Collection Instance created during a radiotherapeutic treatment delivery

- Concept Name Code Sequence: (128192, DCM, RT Treatment Session Result)
- CBCT Series
- RT Structure Set
- RT Images
- REG instance
- Waveform Instance
- Raw Data Storage (for proprietary machine information)

Commented [MB10]: Should the Approval Module be retired in the RT IODs?

Commented [CSH11R10]: I personally would not have been so bold right now, but I agree with the intention. Still I think we have to provide such a text for backward compatibility.

Commented [CSH12]: This section requires rework.

Add the following data elements to PS3.6:

Tag	Name	Keyword	VR	VM
(gggg,0001)	Assertion Collection Reference Sequence	AssertionCollectionReferenceSequence	SQ	1
(gggg,0002)	Assertion Collection Item State Sequence	AssertionCollectionItemStateSequence	SQ	1
(gggg,0003)	Item State Sequence	ItemStateSequence	SQ	1
(gggg,0004)	Active Item Indicator	ActiveItemIndicator	CS	1
(gggg,0005)	Assertion Purpose Code Sequence	AssertionPurposeCodeSequence	SQ	1
(gggg,0006)	Assertion Collection Identification Content Item Sequence	AssertionCollectionIdentificationContentItemSequence	SQ	1
(gggg,0007)	Assertion Collection References Item State Sequence	AssertionCollectionReferencesItemStateSequence	SQ	1
(gggg,0008)	Item State Index	ItemStateIndex	US	1
(gggg,0009)	Referenced Item State Index	ReferencedItemStateIndex	US	1
(gggg,0010)	Assertion Collection Predecessor Sequence	AssertionCollectionPredecessorSequence	SQ	1
(gggg,0011)	Referenced Regions of Interest	ReferencedRegionsofInterest	IS	1-n
(gggg,0012)	Assertion Collection Content Item Sequence	AssertionCollectionContentItemSequence	SQ	1
(gggg,0013)	Content Creator's Person or Device Sequence	ContentCreatorsPersonOrDeviceSequence	SQ	1
(gggg,0014)	Sub-Instance Item Sequence	SubInstanceItemSequence	SQ	1
(gggg,0015)				

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Add to Part 6 Annex A, Table A-3

Annex A Registry of DICOM unique identifiers (UID) (Normative)

Table A-1
UID VALUES

UID Value	UID Name	UIDKeyword	UID Type	Part
1.2.840.10008.5.1.4.1.1.N	Assertion Collection Storage	AssertionCollectionStorage	SOP Class	PS 3.4

Table A-3
CONTEXT GROUP UID VALUES

Context UID	Context Identifier	Context Group Name
1.2.840.10008.6.1.NNN.1	NNN1	Assertion Collection Concept Names
1.2.840.10008.6.1.NNN.2	NNN2	Reference Item States
1.2.840.10008.6.1.NNN.3	NNN3	Reference Inclusion Item States
1.2.840.10008.6.1.NNN.4	NNN4	Review Item States
1.2.840.10008.6.1.NNN.5	NNN5	Approval Item States
1.2.840.10008.6.1.NNN.6	NNN6	Assertion Collection Purposes of Reference
1.2.840.10008.6.1.NNN.7	NNN7	Assertion Collection Item State Roles
1.2.840.10008.6.1.NNN.8	NNN8	Assertion Purposes
1.2.840.10008.6.1.NNN.9	NNN9	
1.2.840.10008.6.1.NNN.10	NNN10	

Add to Part 16, Annex A

TID TNNN1 ASSERTION COLLECTION IDENTIFICATION

TID NNN1

Assertion Collection Identification

Type: Extensible Order: Non-Significant

	NL	Value Type	Concept Name	VM	Req Type	Condition	Value Set Constraint	Notes
1		NUMERIC	EV (SNNN500, 99SUPNNN, “Nominal Prescription Radiation Dose”)	1	U		Units = EV (Gy,UCUM,"Gray")	
2		CODE	EV (123014 , DCM, “Target Region”)	1	U		BCID CID 4030 “CT, MR and PET Anatomy Imaged”	
3		NUMERIC	EV (121386, DCM, “Number of Fractions Planned”)	1	U		Units= EV (1, UCUM, "no units")	

4								

TID TNNN2 RT TREATMENT PLANNING ANNOTATION

TID NNN2

RT Treatment Planning Annotation

Type: Extensible Order: Non-Significant

	NL	Value Type	Concept Name	VM	Req Type	Condition	Value Set Constraint	Notes
1		TEXT	EV (130025, DCM, "Special Procedure Note")	1	U			
2		TEXT	EV (130026, DCM, "Patient Positioning Note")	1	U			
3		TEXT	EV (130028, DCM, "Patient Setup Note")	1	U			
4		TEXT	EV (130031, DCM, "Delivery Verification Note")	1	U			
		CODE	DT (130035, DCM, "Patient Positioning Procedure Note")	1	U			
		TEXT	EV (130027, DCM, "4D Radiation Treatment Note")	1	U			
		TEXT	EV (130039, DCM, "Adaptive Radiation Therapy Note")	1	U			

TID TNNN3 TREATMENT SESSION ANNOTATION

TID NNN3

Treatment Session Annotation

Type: Extensible Order: Non-Significant

	NL	Value Type	Concept Name	VM	Req Type	Condition	Value Set Constraint	Notes
1		UID	EV (SNNN510, 99SUPNNN, “Treatment Session UID”)	1	U			
2		DATETIME	EV (SNNN511, 99SUPNNN, “Treatment Session Start DateTime”)	1	U			
3		DATETIME	EV (SNNN512, 99SUPNNN, “Treatment Session End DateTime”)	1	U			
4		CODE	EV(SNNN513, 99SUPNNN, “Attending Personnel”)	1-n	U		BCID TODO	
	>	PNAME	EV (121008, DCM, "Person Observer Name")	1	M			
	>	CODE	EV (121010, DCM, "Person Observer's Role in the Organization")	1	U		BCID 7452 “Organizational Roles”	

		TEXT	EV(TODO, 99SUPNNN, "Treatment Device Name")	**1**	**U**			
		TEXT	EV (SNNN514, 99SUPNNN, "Treatment Session Notes")	**1**	**U**			
		CODE	EV(SNNN515, 99SUPNNN, "Performed Check")	**1-n**	**U**		No Baseline CID is specified.	
	>	**DATETIME**	EV(SNNN516, 99SUPNNN, "Performed Check DateTime")	**1**	**M**			
	>	**CODE**	EV(SNNN517, 99SUPNNN, "Performed Check Outcome")	**1**	**M**		DCID 6042 "Status of Results"	
	>	**INCLUDE**	DTID 1002 "Observer Context"	**1-n**	**U**			
	>	**TEXT**	EV (SNNN518, 99SUPNNN, "Performed Check Note")	**1**	**U**			

Commented [CSH13]: What else do manufacturer's expect here for identification of the hardware?

TID TNNN4 PRE-TREATMENT QUALITY EVALUATION ANNOTATION

Commented [CSH14]: Homework Christof

Commented [CSH15R14]: There is the pertinent documents sequence within the Assertion Macro which serves the purpose to provide such an Instance. Thus I would propose to not add it here.

TID NNN3

Treatment Session Annotation

Type: Extensible Order: Non-Significant

	NL	Value Type	Concept Name	VM	Req Type	Condition	Value Set Constraint	Notes
1		**COMPOSTE**	EV (TODO, DCM, "Content Assessment Result Instance")	**1**	**U**			

TID TNNN5 POST-TREATMENT QUALITY EVALUATION ANNOTATION

Commented [CSH16]: Homework Uli:

Commented [UB17R16]: Included the most likely parameters.

TID NNN3

Treatment Session Annotation

Type: Extensible Order: Non-Significant

	NL	Value Type	Concept Name	VM	Req Type	Condition	Value Set Constraint	Notes
1		COMPOSTE	EV (TODO, DCM, "Content Assessment Result Instance")	1	U			
2		TEXT	EV (TODO, DCM, "Treatment Delivery Note")					

3		TEXT	EV (130026, DCM, “Patient Positioning Note”)	1	U			
4		NUMERIC	EV (TODO, DCM, “Treatment Position Shift”)	1-n	U			
5	>	INCLUDE	TID 15302. “Patient Support Position Parameters”	1	M			

Row 5	The parameters of Row 3 are to be applied as delta values to the Treatment Position specified for the future Fractions to be treated. The Treatment Position specified are contained in the RT Radiation SOP Instances or, if present, in the RT Radiation Set Delivery Instruction SOP Instance as provided for the Treatment Fraction.

sup238_01_AssertionCollection.docx

Add to Part 16, Annex B

CID NNN1 ASSERTION COLLECTION CONCEPT NAMES

Resources: **HTML | FHIR JSON | FHIR XML | IHE SVS XML**
Type: **Extensible**
Version: **YYYYMMDD**
UID: **1.2.840.10008.6.1.NNN.1**

Table CID NNN1 Assertion Collection Concept Names

Coding Scheme Designator	Code Value	Code Meaning
Include CID 7023 "RT Process Output"		

CID NNN2 REFERENCE ITEM STATES

Resources: **HTML | FHIR JSON | FHIR XML | IHE SVS XML**
Type: **Extensible**
Version: **YYYYMMDD**
UID: **1.2.840.10008.6.1.NNN.2**

Table CID NNN2 Reference Item States

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
Include CID NNN3 Reference Inclusion Item States		
Include CID NNN4 Review Item States		
Include CID NNN5 Approval Item States		

CID NNN3 REFERENCE INCLUSION ITEM STATES

Resources: HTML | FHIR JSON | FHIR XML | IHE SVS XML
Type: Extensible
Version: YYYYMMDD
UID: 1.2.840.10008.6.1.NNN.3

Table CID NNN3 Reference Inclusion Item States

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
99SUPNNN	SNNN001	Reference Added
99SUPNNN	SNNN002	Reference Removed

CID NNN4 REVIEW ITEM STATES

Resources: HTML | FHIR JSON | FHIR XML | IHE SVS XML
Type: Extensible
Version: YYYYMMDD
UID: 1.2.840.10008.6.1.NNN.4

Table CID NNN4 Review Item States

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
99SUPNNN	SNNN010	Unreviewed
99SUPNNN	SNNN011	Reviewed

CID NNN5 APPROVAL ITEM STATES

Resources: HTML | FHIR JSON | FHIR XML | IHE SVS XML
Type: Extensible
Version: YYYYMMDD
UID: 1.2.840.10008.6.1.NNN.5

Table CID NNN5 Approval Item States

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
99SUPNNN	SNNN020	Approved
99SUPNNN	SNNN021	Rejected

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
99SUPNNN	SNNN022	Demoted

CID NNN6 ASSERTION COLLECTION PURPOSES OF REFERENCE

Resources: HTML | FHIR JSON | FHIR XML | IHE SVS XML
Type: Extensible
Version: YYYYMMDD
UID: 1.2.840.10008.6.1.NNN.6

Table CID NNN6 Assertion Collection Purposes of Reference

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
Include CID 7004 "Waveform Purposes of Reference"		
Include CID 7022 "Radiotherapy Purposes of Reference"		
Include CID 7202 "Source Image Purposes of Reference"		
Include CID 7013 "Non-Image Source Instance Purposes of Reference"		

CID NNN7 ASSERTION COLLECTION ITEM STATE ROLES

Resources: HTML | FHIR JSON | FHIR XML | IHE SVS XML
Type: Extensible
Version: YYYYMMDD
UID: 1.2.840.10008.6.1.NNN.7

Table CID NNN7 Assertion Collection Item State Roles

Commented [BP18]: NNN6 for table header

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
Include CID 7452 "Organizational Roles"		
Include CID 9555 "Radiotherapy Treatment Planning Person Roles"		

CID NNN8 ASSERTION PURPOSES

Resources: HTML | FHIR JSON | FHIR XML | IHE SVS XML

Type: Extensible

Version: YYYYMMDD

UID: 1.2.840.10008.6.1.NNN.8

Table CID NNN8 Assertion Purposes

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
99SUPNNN	SNNN030	For Contouring
99SUPNNN	SNNN031	For Registration
99SUPNNN	SNNN032	For Positioning
99SUPNNN	SNNN033	For Planning
99SUPNNN	SNNN034	For Delivery
99SUPNNN	SNNN035	For Treatment Continuation
99SUPNNN		
99SUPNNN		

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

Annex D Dicom controlled terminology definitions (normative)

Code Value	Code Meaning	Definition	Notes
SNNN001	Reference Added		
SNNN002	Referenced Removed		
SNNN010	Unreviewed		
SNNN011	Reviewed		
SNNN020	Approved		
SNNN021	Rejected		
SNNN022	Demoted		
SNNN030	For Contouring		
SNNN031	For Registration		
SNNN032	For Positioning		
SNNN033	For Planning		

Code Value	Code Meaning	Definition	Notes
SNNN034	For Delivery		
SNNN035	For Treatment Continuation		
SNNN500	Nominal Prescription Radiation Dose		
SNNN510	Treatment Session UID		
SNNN511	Treatment Session Start DateTime		
SNNN512	Treatment Session End DateTime		
SNNN513	Attending Personnel		
SNNN514	Treatment Session Notes		
SNNN515	Performed Check		
SNNN516	Performed Check DateTime		
SNNN517	Performed Check Outcome		
SNNN518	Performed Check Note		
SNNN530			