DICOM Change Proposal

STATUS	Final Text
Date of Last Update	2025-09-08
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Submission Date	2024-12-09

Change Number CP-2493
Log Summary: Add missing abbreviation "RDSR" to various Parts
Name of Standard PS3.1, PS3.2, PS3.3, PS3.4, PS3.5, PS3.6, PS3.14, PS3.15, PS3.16, PS3.17, PS3.18 2025c
Rationale for Change: The abbreviation “RDSR” is used in various Parts of the DICOM Standard but not listed in the respective section for “Symbols and Abbreviations”. It is proposed to close this gap by adding “RDSR” to the list and/or replacing it by its long version “Radiation Dose Structured Report”, or by avoiding the abbreviation in some other way. Please note that “SR” stands for “Structured Reporting” and not for “Structured Report” (see PS3.3 Chapter 4), although this “definition” is not repeated in most of the other Parts of the Standard. It is also proposed to harmonize the title of Chapter 4 in the various Parts and the introductory sentence in this Chapter (see below).
Change Wording:

Modify PS3.1 Chapter 4 as indicated

(changes to existing text are bold and underlined for additions and bold and struckthrough for removals):

4 Symbols and Abbreviations

The following symbols and abbreviations are used in this Part of the Standard.

[…]

Modify PS3.2 Chapter 4 as indicated

(changes to existing text are bold and underlined for additions and bold and struckthrough for removals):

4 Symbols and Abbreviations

The following symbols and abbreviations are used in this Part **of the Standard**.

[…]

Modify PS3.3 Chapter 4 as indicated

(changes to existing text are bold and underlined for additions and bold and struckthrough for removals):

4 Symbols and Abbreviations

The following symbols and abbreviations are used in this Part of the Standard.

[…]

RDSR Radiation Dose Structured Report

[…]

SR Structured Reporting

[…]

Modify PS3.3 Section 7.3.1.9 as indicated

(changes to existing text are bold and underlined for additions and bold and struckthrough for removals):

7.3.1.9 Modality Performed Procedure Step

...

Note

1. ...

   A Radiation Dose **Structured Report (RD**SR**)** from the irradiation events of an acquisition could be referenced in the same MPPS Instance as that of the acquired images, again irrespective of where such a Radiation Dose Structured Report might be transmitted, if at all. Alternatively, the modality may treat the production of the Radiation Dose SR as a separate unit of service, and report it in a distinct MPPS.

   ...

2. ….

Modify PS3.3 Section A.35.8.3.1.4 as indicated

(changes to existing text are bold and underlined for additions and bold and struckthrough for removals):

A.35.8.3.1.4 Completion Flag

The Completion Flag (0040,A491) of an X-Ray Radiation Dose S**tructured** R**eport (RDSR)** shall have the value "COMPLETE".

Note

An RDSR must contain all relevant information from its Scope of Accumulation. The value "PARTIAL" is not be used, as it would mean that the RDSR does not contain all the irradiation events within the Scope of Accumulation.

Modify PS3.3 Section C.8.21.1.1.4 as indicated

(changes to existing text are bold and underlined for additions and bold and struckthrough for removals):

C.8.21.1.1.4 Source Irradiation Event Sequence

The Source Irradiation Event Sequence (0008,3011) contains the Irradiation Event UIDs of all the original projection images that were used in the 3D reconstruction process of this X-Ray 3D Image, regardless whether the projection images are encoded as DICOM images or not. Therefore, it allows relating the reconstructed X-Ray 3D image to its contributing irradiation events contained in the Radiation Dose **Structured Report (RD**SR**)**.

The equipment generating the projection images associates these images to one or more Irradiation Event UIDs. All these UIDs are then included in the Radiation Dose **Structured Report (RD**SR**)** as well as in the appropriate projection DICOM images. An X-Ray 3D image reconstructed from a set of projection images will include those Irradiation Event UIDs of the images that participated to that 3D reconstruction. In case the projection images are not encoded as DICOM images, the X-Ray equipment is responsible for including the contributing Irradiation Event UIDs in any further X-Ray 3D image reconstructed on that equipment.

...

Modify PS3.3 Section C.34.14 as indicated

(changes to existing text are bold and underlined for additions and bold and struckthrough for removals):

C.34.14 Performed Storage Module

...

Table C.34.14-1. Performed Storage Module Attributes

Attribute Name	Tag	Type	Attribute Description
>Output Information Sequence	(0040,4033)	1	References to acquired and reconstructed data objects stored as part of this storage protocol element. One or more Items shall be included in this Sequence. Note It is expected that the storage destinations for Radiation Dose **Structured Report (RD**SR**)** Instances and Performed Protocol objects will be managed by direct configuration of the acquisition device rather than using this Sequence on a protocol by protocol basis.

Modify PS3.4 Chapter 4 as indicated

(changes to existing text are bold and underlined for additions and bold and struckthrough for removals):

4 Symbols and Abbreviations

The following symbols and abbreviations are used in this Part of the ~~**DICOM**~~ Standard.

[…]

Modify PS3.5 Chapter 4 as indicated

(changes to existing text are bold and underlined for additions and bold and struckthrough for removals):

4 Symbols and Abbreviations

The following symbols and abbreviations are used in this **Part of the** Standard.

[…]

Modify PS3.6 Chapter 4 as indicated

(changes to existing text are bold and underlined for additions and bold and struckthrough for removals):

4 Symbols and Abbreviations

The following symbols and abbreviations are used in this **Part of the** Standard.

[…]

RDSR Radiation Dose Structured Report

[…]

For reference PS3.6 Annex A (unchanged)

A Registry of DICOM Unique Identifiers (UIDs) (Normative)

[…]

Table A-3 lists the Context Groups and their UID values. For retired Context Groups, the edition of the Standard in parentheses is the edition in which the item last appeared before it was retired.

Table A-3. Context Group UID Values

Context Group UID	Context Group Identifier	Context Group Name	Comment
[…]			
1.2.840.10008.6.1.1364	CID 10074	RDSR Frame of Reference Origin	
[…]			

Modify PS3.14 Chapter 4 as indicated

(changes to existing text are bold and underlined for additions and bold and struckthrough for removals):

4 Symbols and Abbreviations

The following symbols and abbreviations are used in ~~**PS3.14**~~**this Part of the Standard**.

[…]

Modify PS3.15 Chapter 4 as indicated

(changes to existing text are bold and underlined for additions and bold and struckthrough for removals):

4 Symbols and Abbreviations

The following symbols and abbreviations are used in this Part of the Standard.

[…]

RDSR Radiation Dose Structured Report

[…]

For reference PS3.15 Section E.3.4 (unchanged)

E.3.4 Clean Structured Content Option

Instances of Structured Report SOP Classes may contain identifiable information in a Content Sequence (0040,A730) encoded in Content Items. Instances of other SOP Classes may contain structured content encoded in a similar manner in the Acquisition Context Sequence (0040,0555) or Specimen Preparation Sequence (0040,0610).

When this Option is specified in addition to the Basic Application Level Confidentiality Profile, any information encoded in SR Content Items or Acquisition Context or Specimen Preparation Sequence Items corresponding to the Attribute information specified to be removed by the Profile and any other Options specified shall also be removed.

Note

1. For example, the "observer" responsible for a diagnostic imaging report may be explicitly identified in Observation Content related Content Items in an SR.

2. A de-identifier that does not implement this Option creates significant risk when attempting to de-identity a Structured Report unless it is only used to de-identify instances that are known to have no identifying information in the Content Sequence.

3. As this Standard and external coding schemes are maintained, the codes specified as Concept Name Codes may change. The previous codes are considered Retired but implementations may continue to send them and de-identifiers will be expected to be able to continue to recognize and de-identify Content Items with the Retired codes, including the Code Value and Coding Scheme Designator, even if the current Standard does not publish them.

   A notable example is the change throughout the Standard from using "SNOMED-RT style" Code Values with a Coding Scheme Designator of "SRT", "SNM3" or "99SDM", to the use of SNOMED CT numeric Code Values with a Coding Scheme Designator of "SCT". A mapping of retired to new SNOMED codes is found in Annex O “SNOMED Concept ID to SNOMED ID Mapping” in PS3.16.

Table E.3.4-1. Application Level Confidentiality Profile Clean Structured Content Option Content Item Concept Name Codes

Code Meaning	Code Value	Coding Scheme Designator	Value Type	Retd. (from PS3.16)	In Std. Tpl. (from PS3.16)	Basic Prof.	Rtn. UIDs Opt.	Rtn. Dev. Id. Opt.	Rtn. Inst. Id. Opt.	Rtn. Pat. Chars. Opt.	Rtn. Long. Full Dates Opt.	Rtn. Long. Modif. Dates Opt.	Clean Desc. Opt.
[…]													
RDSR Frame of Reference Description	130507	DCM	TEXT	N	Y	X							C

Code Meaning	Code Value	Coding Scheme Designator	Value Type	Retd. (from PS3.16)	In Std. Tpl. (from PS3.16)	Basic Prof.	Rtn. UIDs Opt.	Rtn. Dev. Id. Opt.	Rtn. Inst. Id. Opt.	Rtn. Pat. Chars. Opt.	Rtn. Long. Full Dates Opt.	Rtn. Long. Modif. Dates Opt.	Clean Desc. Opt.
[…]													

Modify PS3.16 Chapter 4 as indicated

(changes to existing text are bold and underlined for additions and bold and struckthrough for removals):

4 Symbols and Abbreviations

The following symbols and abbreviations are used in this Part of the Standard.

[…]

<u>RDSR Radiation Dose Structured Report</u>

[…]

Modify PS3.16 Section TID 10040 as indicated

(changes to existing text are bold and underlined for additions and bold and struckthrough for removals):

TID 10040 Enhanced X-Ray Radiation Dose

This template defines a container (the root) with subsidiary Content Items for documenting the radiation output for an ionizing radiation imaging device. This template supports cone-beam CT, in addition to other modalities.

Type: Extensible
Order: Non-Significant
Root: Yes

Table TID 10040. Enhanced X-Ray Radiation Dose

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1			CONTAINER	EV (113701, DCM, "X-Ray Radiation Dose Report")	1	M		Root Node
2	>	HAS CONCEPT MOD	INCLUDE	DTID 1204 “Language of Content Item and Descendants”	1	M		
3	>	HAS CONCEPT MOD	CODE	EV (121058, DCM, "Procedure reported")	1	M		BCID 10005 “X-Ray Radiation Dose Procedure Type Reported”
4	>>	HAS CONCEPT MOD	CODE	EV (363703001, SCT, "Has Intent")	1	M		DCID 3629 “Procedure Intent”
5	>	HAS OBS CONTEXT	INCLUDE	DTID 1002 “Observer Context”	1-n	M		

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
6	>	HAS OBS CONTEXT	CODE	EV (113705, DCM, "Scope of Accumulation")	1	M		DCID 10000 “Scope of Accumulation”
7	>	CONTAINS	INCLUDE	DTID 10041 “Accumulated Dose Data”	1-n	U		
8	>	CONTAINS	INCLUDE	DTID 10042 “Irradiation Event Summary Data”	1-n	M		
9	>	CONTAINS	INCLUDE	DTID 10043 “Irradiation Details”	1	M		
10	>	CONTAINS	TEXT	EV (121106, DCM, "Comment")	1	U		
11	>	CONTAINS	INCLUDE	DTID 1020 “Person Participant”	1	U		$PersonProcedureRole = EV (113850, DCM, "Irradiation Authorizing")
12	>	CONTAINS	CODE	EV (113854, DCM, "Source of Dose Information")	1-n	M		DCID 10020 “Source of Projection X-Ray Dose Information”

Content Item Descriptions

Row 3	This row describes the general type of radiation-producing procedure from which the content of the RDSR is generated. More specific procedure codes, such as those used for ordering or scheduling, which may affect subsequent processing, may be recorded in the top level Data Set in Procedure Code Sequence (0008,1032) of the General Study Module.
Row 7	TID 10041 may be included once for each source. Summary-level values that may include multiple sources, e.g., Dose Area Product Total from planes A and B of a biplane system, could be described by an instance of TID 10041 where the Identification of X-Ray Source indicates multiple sources, e.g., "A and B".
Row 8	TID 10042 shall be included once for each irradiation event. Irradiation event values that may include multiple sources, e.g., CTDI for a dual-source CT scanner, could be described by an instance of TID 10042 where the Identification of X-Ray Source indicates multiple sources, e.g., "1 and 2".

Modify PS3.17 Chapter 4 as indicated

(changes to existing text are bold and underlined for additions and bold and struckthrough for removals):

4 Symbols and Abbreviations

The following symbols and abbreviations are used in this Part of the Standard.

FHIR HL7 Fast Healthcare Interoperability Resources (draft standard)

RDSR Radiation Dose Structured Report

Modify PS3.17 Section GGGG.1 as indicated

(changes to existing text are bold and underlined for additions and bold and struckthrough for removals):

GGGG.1 Skin Dose Map Example

The following example shows the report of the skin dose map calculated from the dose delivered during an X-Ray interventional cardiology procedure.

The calculation uses a Radiation Dose S**tructured** R**eport (RDSR)** provided by a Single Plane X-Ray Angiography equipment of the manufacturer "A". The R~~adiation~~ D~~ose~~ SR is created during one procedure step, corresponding to the coronary stenting of an adult male of 83 kg and 179 cm height.

The skin dose calculations are performed by an application on a separated workstation of the manufacturer "B", operated by the medical physicist, who is logged into the workstation at the time of the creation of the Patient Radiation Dose Structured Report document.

The dose calculation application generates a Patient Radiation Dose Structured Report document and a Secondary Capture Image containing an image of the dose distribution over the deployed skin of the patient model.

The dose calculation application uses the following settings and assumptions:

- RDSR Source Data:
  - All the Irradiation Event UIDs are used in the calculation of the skin dose map.

[…]

Modify PS3.17 Section GGGG.2 as indicated

(changes to existing text are bold and underlined for additions and bold and struckthrough for removals):

GGGG.2 Dual-source CT Organ Radiation Dose Example

The following example shows the report of the organ dose calculated for a dual-source CT scan.

The calculation uses a Radiation Dose S**tructured** R**eport (RDSR)** provided by a CT system that has dual X-Ray tubes. The R~~adiation~~ D~~ose~~ SR is created during the acquisition of Neck DE_CAROTID CT scan of an adult male of 75 kg and 165 cm height.

The dose calculations are performed on the CT system. The dose calculation application generates a Patient Radiation Dose Structured Report document and a Dose Point Cloud containing an image of the dose distribution for the patient model.

The dose calculation application uses the following settings and assumptions:

- RDSR Source Data:
  - The Irradiation Events associated with the CT Localizer Radiograph are excluded.
  - The Irradiation Event UID from the helical CT series is used in the calculation of the organ dose.

[…]

Modify PS3.17 Annex UUUU as indicated

(changes to existing text are bold and underlined for additions and bold and struckthrough for removals):

UUUU Radiation Dose Structured Reporting (Informative)

This Annex contains information of the use of Radiation Dose Structured Reports **(RDSRs)**, excluding Radiopharmaceutical RDSRs and Patient RDSRs.

UUUU.1 Cone Beam CT (CBCT) Enhanced RDSR in TID 10040

The following is a simple example of a CBCT acquisition. The device acquires data by rotating a source around a table. There are simple assumptions about the filtration and attenuators present. Many optional entries, particularly legacy dose values, are not included in the interest of making it as simple as possible.

This example could apply to C-arm CBCT acquisitions, dental CBCT, on board imagers in RT, and standard CT scanners.

Table UUUU.1-1. Cone Beam CT (CBCT) Enhanced RDSR

Node	Code Meaning of Concept Name	Code or Example Value	TID
1	X-Ray Radiation Dose Report		Section TID 10040
1.1	Language of Content Item and Descendants	(en, IETF4646, "English")	Section TID 1204
1.2	Procedure reported	(702569007, SCT, "Cone Beam Acquisition")	Section TID 10040
1.2.1	Has Intent	(261004008, SCT, "Diagnostic Intent")	Section TID 10040
1.3	Observer Type	(121007, DCM, "Device")	Section TID 1002
1.4	Device Observer UID	2.999.1.2.3.4	Section TID 1004
1.5	Device Observer Manufacturer	Manufacturer X	Section TID 1004
1.6	Device Observer Model Name	Model Y	Section TID 1004
1.7	Device Observer Serial Number	123456789	Section TID 1004
1.8	Scope of Accumulation	(113014, DCM, "Study")	Section TID 10040
1.9	Accumulated Dose Data		Section TID 10041
1.9.1	Identification of the X-Ray Source	1	Section TID 10041
1.9.2	Reference Point Dosimetry		Section TID 10041
1.9.2.1	Reference Point Definition	(113860, DCM, "15cm from Isocenter toward Source")	Section TID 10041
1.9.2.2	Dose (RP) Total	85 mGy	Section TID 10041
1.10	Irradiation Event Summary Data		Section TID 10042
1.10.1	Irradiation Event UID	2.999.2.3.4	Section TID 10042
1.10.2	DateTime Started	20200101120000	Section TID 10042
1.10.3	DateTime Ended	20200101120030	Section TID 10042

Node	Code Meaning of Concept Name	Code or Example Value	TID
1.10.4	Identification of the X-Ray Source	1	Section TID 10042
1.10.5	Irradiation Event Types	(113613, DCM, "Rotational Acquisition")	Section TID 10042
1.11	Irradiation Details		Section TID 10043
1.11.1	DateTime Started	20200101120000	Section TID 10043
1.11.2	DateTime Ended	20200101120030	Section TID 10043
1.11.3	Frame of Reference UID	2.999.1.2.3	Section TID 10043
1.11.4	RDSR Frame of Reference Origin	(130537, DCM, "Equipment Origin")	Section TID 10043
1.11.5	RDSR Frame of Reference Description	Equipment origin located on left-most, rear-most corner of gantry support when viewing equipment from the front. Y-axis is anti-gravity direction. Z-axis is along table travel direction into the gantry. X-axis is cross product of y and z axes (+y × +z).	Section TID 10043
[…]			

Modify PS3.18 Chapter 4 as indicated

(changes to existing text are bold and underlined for additions and bold and struckthrough for removals):

4 Symbols and Abbreviate~~d Term~~ions

The following symbols and abbreviations are used in this Part of the Standard.

ABNF Augmented Backus-Naur Form. See [RFC5234] and [RFC7405].

[…]