



Secretariat: MITA/NEMA
1300 North 17th Street, Suite 900
Arlington, VA 22209, USA
+1-703-841-3259
<http://www.dicomstandard.org>
dicom@dicomstandard.org

MINUTES

DICOM WORKING GROUP SEVEN (RADIOTHERAPY)

Meeting Location	Online Meeting	
Dates and Times	Tuesday, Dec 07, 2021	9:00 – 13:00 EDT
	Wednesday, Dec 08, 2021	9:00 – 13:00 EDT
Presiding Officers	Christof Schadt, Co-Chair Jim Percy, Co-Chair	
Secretary	Shayna Knazik, MITA	

Participants

Name	Affiliation	Dec 7	Dec 8
Jim Percy	Elekta	X	X
Walter Bosch	AAPM	X	X
Yulong Yan	AAPM	X	
Bruce Curran	AAPM	X	X
Bob Pekarek	Accuray	X	X
Kari Jyrkkälä	Varian	X	X
Ulrich Busch	Varian	X	X
David Wikler	IBA	X	X
Christof Schadt	Brainlab	X	X
Stefan Pall Boman	RaySearch	X	
Marcus Bergman	RaySearch	X	X
Chris Pauer	Sun Nuclear	X	
Jon Treffert	RaySearch	X	X
Steve Weston	Leeds Teaching Hosp. NHS	X	
Shayna Knazik	MITA	X	X

Actual Week Schedule

	Tuesday	Wednesday
Session 1 09:00-09:55	Setup, Administrative, Opening Group Status	Hybrid Discussions, RT Plan:- Multi-layer MLC - PhysIntent Reference
Session 2 10:00-10:50	CP RT166, 2187	Hybrid Discussions
Session 3 11:10-12:00	CPs 2185	Data Baseline
Session 4 12:05-13:00	CP RT199	Data Baseline

Topics

Administrative

- Meeting was called to order at 9:05am ET.
- Shayna reminded the group of NEMA anti-trust rules and DICOM Patent Disclosure Policy
- Review the agenda and revise as needed. Items added to agenda:
 - CP RTNNN Add MAMPSEC to Dose Units
 - CP RT196
 - CP2152 – Plan Overview Parameters – discuss the Number of Fractions Included
- Meeting minutes and action items from the October 2021 meeting were reviewed. Minutes were approved by the group without objection or abstention.

Subgroups and related Group Status

Update reports will be only presented as needed:

- Brachytherapy Subgroup
- Ion Subgroup
- Motion Management Subgroup
- IHE-RO
- IEC
- WG-28
- Other Subgroup reports as needed.

Organizational

New Search on DICOM Standard web site. An efficient search mechanism is available in the CHTML version of the Standard.

CPs

The group reviewed the status of CPs. See [WG-07 CP Status List](#)

CPs new to WG-07

Cp RT200 Add milli amp seconds as a choice in Primary Dosimeter Unit

- There is a desire to record radiation exposure to enable reconstruction of imaging dose in RT Image. The Primary Dosimeter Unit (300A,00B3) has Enumerated Values of MU and MINUTE, but these are inappropriate for kV imaging.
- For kV imaging, radiation exposure is measured in units of mA-seconds. Can use DICOM Exposure (0018,9332) attribute. Discussion regarding specified and delivered exposure.
- Alternatives discussed include use of RDSR and addition of attributes in RT Image or RT Beams Treatment Record.
- **Action:** Jim Percy will re-work CP with the Ion Group and bring back

cp RT199 Retirement of unused modules from RT Dose IOD

- Proposal to retire Overlay Plan, Multi-frame Overlay, Modality LUT, Structure Set, ROI Contour, and RT Dose ROI Modules. These modules support representation of dose as iso-dose curves and points. It is not clear if there are any active applications that depend on these Modules.
- **Action:** Kari to send email to WG-07 list server nema1+dicom-wg07-1585@discoursemail.com to inquire about use of these modules.

CP 2152 Add Plan Overview Parameters to RT Dose

- Add Defined Term value of UNREF_PLAN to Dose Summation Type
- There is a safety issue when including the Plan Reference Sequence when the Dose Summation Type is not UNREF_PLAN.
- Discussion of whether/how to allow inclusion of the Plan Reference Sequence when a plan reference is present.
 - Requiring that Number of Fractions Included (RT Dose) equal Number of Fractions Planned (RT Plan) may not work. E.g., approved plan that is not fully delivered in adaptive workflow.
- **Action:** Christof will continue work on CP for January WG-06 meeting.

CPs with WG-06

CP2187 – Describe usage of Configuration and Commissioning Keys

Vendor-specific keys were rejected. Review text for new approach describing usage of the keys.

Revised text to be reviewed with WG-06.

CP 2185 – Add Treatment Session UID to CT Image and RT Objects

Approach as such was rejected. WG-06 wants to see an E-R diagram of how images and other IODs are created/utilized during a treatment session.

- David Wikler reviewed the DICOM Study Concept in RT with the group.
- Study Instance UID is used in some HIS billing systems.
- A Treatment Session UID is needed to bind together instances, e.g., RT Record Set, describing activities or outcomes for a treatment session.
 - Planned Treatment Session (RT Radiation Sets) is not the same as Performed Treatment Session (RT Radiation Records).
 - The Output Information Sequence of a UPS does not adequately group these instances together. (There may be multiple UPSs in a Treatment Session.)
- Added definition of Treatment Session and rationale for including a Treatment Session UID.
- The Study Concept is inadequate to manage instances. There is no guarantee that the Study Instance UID uniquely identifies a treatment session. Study Instance may span multiple treatment procedures and a single treatment procedure may involve multiple Study Instances.
- Discussion of E-R diagrams including RT Treatment Session. Consensus to remove Visit Entities from these diagrams.
- **Action:** David Wikler will revise diagrams for presentation at next WG-06 meeting in January.

CPs in Work

Cp RTNNN - Number of RT Beam Limiting Device Openings

- Number of RT Beam Limiting Device Openings (300A,00657) - discussion of condition: Required if Number of RT Beam Limiting Devices (300A,0641) is present and has a non-zero value and the conditions in Section C.36.2.2.5.1.1 are satisfied.
- Conclusion that the Standard is correct, but that a clarification regarding number of BLD openings would be helpful.
- **Action:** Bob Pekarek to draft CP to create a section or note for number of Beam Limiting Device Openings and number of Wedge Positions.

Cp RT190 – Add References between 1st and 2nd Gen IODs

Uli presented a draft CP that collects the references between 1st and 2nd Gen IODs. (Does not include TBD references to Conceptual Volumes to support dose tracking.)

- Definition Source Sequence is used to reference below the Instance level. Definition Source Sequence contains RT Record Flag, Permitted SOP Class, Sequence Attribute containing the referenced Item, and Attribute containing the referenced item.
- Discussion of references to be supported.
- Tell WG-06 that the list of references will be extended over time.
- Use case discussion for references between 1st and 2nd Gen.
- RT Fraction Scheme Module - Section C.8.8.13.n Definition Source Sequence.
 - This capability is intended for transcoding of 1st and 2nd Gen RT objects, not for derivation or successor of the source instance.
 - References between 1st and 2nd Gen objects are intended to be unidirectional. The Source instance shall not reference the transcoded copy.
 - The distinction between “transcoded” and “derived” was discussed.
 - The CP supports transcoding in both directions. The roles identified in transcoding from 2nd to 1st Gen can be reversed when transcoding from 1st to 2nd Gen.
- **Action:** Uli Busch will make changes as discussed in preparation for reading with WG-06.

cp RT166 Differentiate Geometric Types of CT Imaging Sources

Review of homework by Yulong was deferred to the next meeting.

Supplements

For the status of the Supplements and the corresponding naming conventions and nomenclatures see documents on top level of the Supplement folder on the ftp server:

<ftp://medical.nema.org/MEDICAL/Private/Dicom/WORKGRPS/Wg07/Sup/>

For a document overview see here:

[Project Status](#)

Supplement NNN –Data Baseline

The ad-hoc sub-group on the new Data Baseline has met two times and a draft document is available in the [corresponding Sharepoint folder](#). The “New Workitem Proposal” has been created and forwarded to the DSC. The DSC expects discussion of this proposal with WG-06 from a technical perspective during the WG-06 January meeting. The concerns shall be discussed with WG-07.

Link to first draft of the Supplement: https://nemaorg137.sharepoint.com/:w:/r/sites/DICOMWG-07Radiotherapy/Shared%20Documents/Sup%20NNN%20Data%20Baseline/SupNNN_DataBaseline_v1.docx?d=w7a22429e85284f8488cba022ca49582c&csf=1&web=1&e=WRAx6

- Goal of the Supplement was to create a single IOD to collect instances and make assertions about their state.
- Some comments about “Baseline” in the working title.
- Review of Data Baseline Module
 - High-level identification, concept name code
 - Content-item Macro provides high-level parameters
 - TIDs defined for Document Sequence
 - Annotation is supported at multiple levels: Study, Series, Instance, and sub-Instance level
 - Item State is referenced by index in an Item State Sequence. It uses the Assertion Macro and includes an Assertion Purpose Code Sequence and Active State Indicator.
- Concern expressed by DICOM Standards Committee about combining hierarchical data collection and maintaining the approval state.
 - Data collections are (relatively) static, while approvals are much more dynamic.
- Consensus that data collections and approvals should be separated.
 - Options for representing Approvals
 - By Reference (Collection UID?, index)
 - By Study/Series/Instance UID, ROI number, etc.)
 - Using DICOM Normalized Service?
 - Using FHIR?
 - Christof will present New RT Work Item Proposal to WG-06 on 1/14/22 in preparation for continued discussion with the DSC.

New CPs

CP RTNNN – Retire Robotic Base Location Indicator

- The Robotic Base Location Indicator (3010,0090) Attribute has been determined to be unnecessary (and unused) in the RT Robotic Arc Radiation IOD.
- This Type 1 Attribute can be retired. Implementation is currently limited.
- Bob Pekarek will clean up draft for presentation to WG-06 in Jan 2022.

Other Discussions

The following topics will be discussed in future meetings:

- Multi-layer MLC definitions using the Beam Limiting Device Definition Macro in the RT Plan
- Reference to the RT Physician Intent from the RT Plan

Future Meeting Dates, Agenda for the Next Meeting and other Administrative Topics

Schedule

The list should be reviewed again, whether any adaptations are required since the last meeting.

[Teams Meeting List](#)

Appendix: General Information

I. Project List

The list of major projects pursued by WG-07 can be found [here](#).

II. Presentation Material for 2nd Generation RT Objects

A folder is maintained containing material of presentations on 2nd Generation topics.

Everyone is invited to use any material out of that folder for presentations.

In turn everyone should to add his presentations to this folder, if they could be of general use. As needed, take care to remove any company- or institution-confidential parts before posting.

<ftp://medical.nema.org/MEDICAL/Private/Dicom/WORKGRPS/Wg07/2ndGeneration/Presentations>

Prepared by Walter Bosch

Submitted by Shayna Knazik

Reviewed by Counsel 12/20/21