



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

## Meeting Minutes

### DICOM WORKING GROUP SEVEN (RADIOTHERAPY)

<b>Meeting Location</b>	Online Meeting	
<b>Dates and Times</b>	Tuesday, August 17, 2021	9:00 – 13:00 EDT
	Monday, August 23, 2021	9:00 – 13:00 EDT
	Tuesday, August 24, 2021	9:00 – 13:00 EDT
<b>Presiding Officers</b>	Christof Schadt, Co-Chair Jim Percy, Co-Chair	
<b>Secretary</b>	Shayna Knazik, MITA	
<b>Dial-in</b>	<a href="https://teams.microsoft.com/l/meetup-join/19:491051b61888460e92d189d7a2fd360b@thread.tacv2/1611348896859?context=%7B%22Tid%22:%22e084e52-e727-4a48-a4dd-b977a442f442%22,%22Oid%22:%227602d386-0c79-4616-9fd0-b470e74716b3%22%7D">https://teams.microsoft.com/l/meetup-join/19:491051b61888460e92d189d7a2fd360b@thread.tacv2/1611348896859?context=%7B%22Tid%22:%22e084e52-e727-4a48-a4dd-b977a442f442%22,%22Oid%22:%227602d386-0c79-4616-9fd0-b470e74716b3%22%7D</a>	
<b>Information</b>		

## Participants

<b>Affiliation</b>	<b>Name</b>	<b>August 17</b>	<b>August 23</b>	<b>August 24</b>
AAPM	Walter Bosch	X	X	X
AAPM	Bruce Curran	X	X	X
AAPM	Yulong Yan	X	X	X
Accuray	Jim Beck			
Accuray	Bob Pekarek	X	X	X
ADAM	Ondrej Sevela	X		
Brainlab	Christof Schadt		X	X
Elekta	Jim Percy	X	X	X
IBA	David Wikler		X	X
Leeds Teaching	Steve Weston			X
Mevion	Bruce Rakes	X		X
MITA/NEMA	Shayna Knazik	X	X	X
Philips	Tulasi Anand			
RaySearch	Marcus Bergman	X	X	X
RaySearch	Stefan Pall Boman	X		
RaySearch	Jon Treffert	X		
Reflexioin	Michael Owens	X		
Royal Marsden NHS Foundation Trust	Rollo Moore			X
Self	Ulrich Busch	X	X	X
Sun Nuclear	Chris Pauer	X		
Varian	Kari Jyrkkälä	X	X	X

## Actual Week Schedule

	8/17	8/23	8/24
Session 1 09:00-09:55	Setup, Administrative, Sup 160 DFT	General Discussions [incl ISO document]	CPs
Session 2 10:00-10:50	Sup 160 DFT	CPs	CPs
Session 3 11:10-12:00	Sup 160 DFT General discussion	CPs	Hybrid Discussion
Session 4 12:05-13:00	-	Hybrid Discussion Overview	Future Meetings

# Topics

## Administrative

- Introductions, identified participants.
- Shayna reminded the group about DICOM antitrust and patent policies.
- Agenda was reviewed and revised.

## Subgroups and related Group Status

Updates presented 8/23/21

- Brachytherapy Subgroup
  - Jim Percy reported on 2<sup>nd</sup> gen development in the Brachy subgroup. Review of requirements for US images and other IODs used in brachytherapy
- Ion Subgroup
  - David Wikler reported. Bruce is working on Ion Treatment Record
- Motion Management Subgroup
  - Work continues on Use Cases
- IHE-RO
  - Walter Bosch reported on preparations for a second Connectathon (2021B) to be held in Nov 2021
- IEC
- WG-28
  - An RDSR informative annex is being prepared
- Other Subgroup reports as needed.

## General Discussions

### ISO/TC 215/WG2 N 1369

This ISO document addresses the reporting Clinical and Biological Evaluation Metrics (CBEM). An overview is given and a corresponding data structure is proposed. Is this something we anyway foresee in the scope of a so-called “Plan Companion” IOD?

There will be a “Technical Committee Review” later this year (8 weeks long) where WG-07 has been identified as a peer review group. Once this period starts, WG-07 should receive a document for review.

The metrics described in this document are the results of dosimetric and radiobiological plan analysis. In its current form, it identifies general content, but contains few details regarding format.

## Hybrid Discussions

The discussions regarding a hybrid 1<sup>st</sup> Gen/2<sup>nd</sup> Gen DICOM RT Objects solution shall be continued:

- [E-R diagram for discussion](#)
- See the corresponding [proposals](#).

Extension of 1<sup>st</sup> Gen RT IODs with 2<sup>nd</sup> Gen concepts.

Use Case Walk-Through. Topics were categorized by clinical need, level of effort for WG-07, state of completion, and assignment to group members for work. See 1stGenHybridTopics.xlsx spreadsheet in Teams Hybrid for details and assignments).

- Volunteers assigned to work items
- Topics were prioritized for the next meeting

## Correction Proposals

See also: [WG-07 CP Status List](#)

### CPs new to WG-07

#### cp RT185 Add Patient to Equipment Matrix Examples

- No progress yet. Uli is gathering examples. Plan to discuss at next WG-07 meeting in October.

#### cp RT187 Multi-layer MLC

- Kari Jyrkkala presented the draft of a CP that adds support for dual-layer MLCs.
  - Add Enumerated Value to RT Beam Limiting Device Type (existing Type 1)
  - Substantial concern for safety with such changes. Incompatible applications MUST break.
- Uli Busch showed an alternative, based on a 1<sup>st</sup> Gen – 2<sup>nd</sup> Gen Hybrid RT Plan object.
  - Enhanced RT Beam Limiting Device Presence Flag (Type 3, Enumerated Value) is used to switch between the existing Beam Limiting Device Sequence and a new, enhanced BLD. When the flag is YES, the existing BLD is absent.
  - Other enhancements, including BLD offsets, and binary MLCs could be supported with this approach.
- Discussion was tabled. Uli will continue work on this CP for consideration at the next meeting.

#### cp RT188 Explanations on RT Radiation Usage and Intent

- The CP addresses usage of the RT Radiation Set Intent, RT Radiation Set Usage, and RT Radiation Usage attributes and their relationship to each other.
- Section C.36.20.1.4 has been replaced with the new text.

#### cp RTNNN Add Referenced Beam Number to CT

- CP-1205 established relationship of image Frame of Reference to treatment device. This CP adds a Referenced Beam Number.
- Discussion regarding scoping.
  - Does a Cone-Beam CT reference more than one beam?
  - Is the identity of the beam needed to compute/display position corrections?
  - Spatial registration (4x4 transformation) is independent of beam, but table corrections (may) depend on beam context.
  - A beam is an essential property of an RT Image, but not of a CBCT.
- Alternative method for conveying the context (intended use) of a Cone-Beam CT
  - The Spatial Registration Instance registers the planning CT and CBCT.
  - The relationship to a treatment beam is workflow information.

- Suggestion to use the Referenced Verification Image Sequence (300C,0040) in the Treatment Session Beam Sequence of the RT Beams Session Record Module to tie images to treatment beams. This approach works for image SOP classes, but not for others, e.g, Surface Mesh.
- This CP has been withdrawn. David Wikler will re-work for consideration at a future WG-07 meeting.

## CPs in Work

### **CP-2151 Add Baseline CIDs To RT Structure Set**

Review the latest changes to annotate ROIs with codes that represent their definition, but not their role.

The purpose of the CP is to encourage the use of codes.

Table C.8-N. provides guidance in mapping RT ROI Interpreted Type to RT Segmented Property Category Code and RT ROI Identification Code CIDs.

- Cavity – are codes needed?
- Brachy Accessory codes need definition (follow-up with Yury and Yulong)

The standard provides two Identity-based codes and two role-based codes.

Christof will draft a table for role-based codes.

WG-07 members to review CP-2151 draft in Teams and identify any missing codes.

Continuing discussion of CP2151 8/24/21

- DOSE REGION – includes Isodose Volume (ROI defined by an isodose surface).
  - Add Radiotherapy Dose Region category, CID CCC3 – Radiotherapy Dose Region . Includes Isodose Volume.
- REGISTRATION
  - Add RT Registration Mark category code
- CONTROL
  - Radiation Dose Shaping Volume, Conformity Shell
- Review ROI category, ROI identification, segmented property type modifier, therapeutic role category, therapeutic role type codes, and ROI Interpreted Type for several examples.
- Discussion of whether the role of ROIs is properly represented in the Segment Annotation. Some concern that this is fundamentally a property of Physician Intent. The role is already embedded in the RT Structure Set and Segment Annotation IODs. Also, the segmentation process is not entirely separable from prescription. This topic should be discussed further.

### **cp RT166 Differentiate Geometric Types of CT Imaging Sources**

Deferred to October meeting

### **cp RT175 Retire Beam Dose Depth parameters**

No news yet.

## Supplements

### Sup 160 DFT

Uli Busch reviewed changes to Sup 160 draft for final text (sup160\_DFT\_01\_PatientSetup) with the group. Sup 160 letter ballot closed on 8/18/21.

Topics discussed included the following:

- Setup photos and references to procedures.
- Parameters for setup devices have been moved inside the Patient Setup Procedure Sequence. The use case for the Patient Setup Procedure (Sub)type Code Sequence (gggg,B805) was unclear. It has been removed.
- The distinction between device parameters and procedure parameters has been removed. The TID for Patient Setup Procedure Parameters now branches, depending on the Setup Procedure Code (Table C.36.m2-2)
- In CID SUP160014 (Patient Alignment Devices), keep LS (Laser Surface Scan)
- Checked descriptions of procedure codes S160200 – S160203 and S160606
- Modality (0008,0060) = PLAN. Currently, the RT Beams Delivery Instruction uses this same Modality. Add note in section C.36.3.1.1:
  - The term “PLAN” annotates SOP Instances describing planned activities. It is not to be confused with radiotherapy treatment plans.
- Replace “RT Patient Treatment Preparation” with “RT Treatment Preparation” in Figure A.86.1.1.1-1.

WG-07 completed their review of sup160\_DFT\_01\_PatientSetup. The Supplement is to be reviewed with WG-06 (Aug 30 – Sep 3).

### Sup 196 Segmentation Creation Template

- Supplement is currently on hold
- Status to be reviewed at the next WG-07 meeting

## General Discussion

### Representation of Dose Rate for FLASH therapy

Options for representing dose rates in existing DICOM IODs

- The difficulty in using RT Dose include the fact that Dose Units is an Enumerated Value.
- Parametric Map is more complicated to implement.
- Safety concerns suggest use of a private SOP Class for dose.



## DSC Discussion

Future vision of DICOM and Medical Imaging (K. O'Donnell)

Day 1 of the meeting adjourned on August 17, 2021 at 11:48am EDT.

Day 2 of the meeting adjourned on August 23, 2021 at 1:00pm EDT.

The final day of the meeting adjourned on August 24, 2021 at 12:54pm EDT.

## Next Meetings

WG-07 Meetings

Oct 4-5, 11-12

Dec 7-8

Agenda Items for WG-06 next week

Sup 160

Sup 213

CP 2152

Agenda Items for WG-07 meeting in Oct 2021

Hybrid

Prescription

CVs

Dose Tracking

Linking from 2<sup>nd</sup> Gen to 1<sup>st</sup> Gen

Enhanced Dose

Treatment Session UID

Sup 213

Sup 196

CPs

Prepared by Walter Bosch and submitted by Shayna Knazik

Reviewed by Counsel 9/14/21