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Minutes

DICOM WORKING GROUP SEVEN (RADIOTHERAPY)

Meeting Location	Brainlab, Inc. 400 N. Michigan Avenue Suite 1200 Chicago, IL 60611
Dates and Times	Monday, July 29, 2019 8:30 – 17:30 Tuesday, July 30, 2019 8:30 – 17:30 Wednesday, July 31, 2019 8:30 – 17:30 Thursday, August 1, 2019 8:30 – 17:30 Friday, August 2, 2019 8:30 – 12:00
Presiding Officers	Christof Schadt, Co-Chair Jim Percy, Co-Chair
Secretary	Luiza Kowalczyk, DICOM Secretary

Attendees

Name	Affiliation	Mon	Tue	Wed	Thur	Fri
Jim Percy	Elekta	X	X	X	X	X
Bob Pekarek	Accuray	X	X	X	X	X
Yulong Yan	AAPM	X	X	X	X	X
Stefan Pal Bomann	RaySearch	X	X	X	X	X
Luiza Kowalczyk	MITA	X	X	X	X	X
Kari Jyrkkälä	Varian	X	X	X	X	X
Mark Pepelea	Philips	X	X	X	X	X
Walter Bosch	AAPM	X	X	X	X	X
Christof Schadt	Brainlab	X	X	X	X	X
Ulrich Busch	Varian	P	P	P	P	P
Chris Pauer	Sun Nuclear	P	P	P	P	P
Jim Beck	Accuray	-	P	-	-	-
Thomas Schwere	Varian	-	-	-	P	-

Details

1. Administrative

- Introductions, identify participants.
- Remind anti-trust rules and DICOM Patent Disclosure Policy
- Review the agenda and revise as needed. The proposed agenda was reviewed and approved without objections.
- Minutes from WG-07 meeting March 4-8, 2019 in Munich were reviewed and approved without objections.
- Updates from WG-06 meetings
 - Sup 175 has been approved for Final Text.
 - Sup 176 has been reviewed through Part 16.
 - Review of Sup 199 is anticipated in September 2019.

2. Subgroups and related Group Status

- Brachytherapy Subgroup
 - The Brachy sub-group has focused on development IHE-RO TPPC-Brachy Profile (1st Gen RT). It is anticipated that the Profile will be ready for review at the next F2F TC meeting.
 - There are currently substantial interoperability issues in 1st Gen Brachy. Concern was expressed that the Profile may not be sufficiently strict to insure safe, interoperable behavior. The IHE-RO TC should be aware of these hazards and may need to revise the Profile to address weaknesses.
 - Usage of 1st Gen RT objects for brachytherapy varies among vendors. E.g., treatment geometry (including applicator shape) can be represented in RT Structure Set and/or RT Plan.
- Ion Subgroup
 - B. Rakes presented the TPPC-Ion Profile draft (v. 0.14) at the last TC F2F meeting.
 - Sup 215 draft (2nd Gen RT Ion) is in development. IODs are defined per beam type to minimize the number of optional elements. Current IODs cover only spot-scanning Ion treatments.
 - Jim to create forward-looking Supplements for 2nd Gen Ion therapy.
- Motion Management Subgroup
 - Motion management and monitoring has been factored out of Sup 160. Sup 160 addresses the positioning workflow.
 - The new NN6 Motion Management Supplement that addresses motion monitoring and compensation has been created on the FTP server.
- IHE-RO
 - W. Bosch reported on IHE-RO activities. The IHE-RO TC met in San Antonio. Agenda included the following:
 - Legacy Profiles (ARTI, BRTO, MMRO-II) were retired.
 - Work started on the Radiation Oncology Treatment History (ROTH) Profile. More work is needed to define the Use Cases.

- Work continued on the HIS Profile (HL7/FHIR) to communicate treatment information to a HIS.
- RXRO – multiple layers of specification
- TPPC-Ion – multiple aperture issue was addressed.
- TPIC – voted to trial implementation
- DSRO sub-group is developing a Deformable Registration in Radiation Oncology (DRRO) Profile – draft in preparation.
- AAMI/AdvaMed RT-03 Machine Characterization
 - J. Percy reported that the Public Comments are under review – a final version is expected by the end of 2019 – to be published on AAMI website.
 - IHE-RO TC to consider how RT-03 standard is to be incorporated in new and existing Profiles. E.g., reference in TPPC, define Machine Characterization Comparator, Validator?
- IEC
 - IEC 60601
 - IEC 62083 – Treatment Planning safety is currently reworked
 - IEC 62274 – TMS standard to be updated
 - WG-07 has concerns regarding proposed changes to IEC 61217 RT Coordinates, movements, etc. Particularly concerned at the continued use of the 61217 numbering when the standard is changing so much- it begs a new number. J Percy to bring this issue up at the US TAG meeting in September.
 - Discuss IEC TR 61852? Should this be withdrawn? 62266 has been withdrawn already.
- WG-28 meets with WG-02
 - CP1319 – Frame of Reference

Reviewed by counsel: CRS, August 15, 2019.

3. General Topics

3.1 Project Review

The group reviewed the current project list.

- Sup 175 was removed (FT)
- Sup 176 – reading for LB – priority 1
- Sup 177 – priority 3
- Sup 199 – draft ready for PC – priority 2
- Sup 160 – consider raising priority to 1
- Sup 215 (Ion), Sup 216 (Brachy) are priority 4

3.2 Structure/Segment Colors

It is proposed to discuss the general opinion of DICOM WG-07 towards consistently preserving colors of structures/segments throughout an RT workflow. Although this is more of an IHE-RO topic that should be reflected in an IHE profile, the Segmentation Template Supplement is an actual base for this topic and therefore also affects DICOM WG-07.

The group discussed the desirability of requiring specification of ROI Display Color (RT Structure Set) and Recommended Display CIELab Value (Segmentation).

The consensus of WG-07 was to recommend to the IHE-RO TC to revise the BRTO-II Profile to require (a) that the display color of all displayable structures to be specified (ROI Display Color is R+) in the RT Structure Set and (b) that a consumer of a structure set be able to display structures as specified in the RT Structure Set. J Percy will bring this as a proposed CP for BRTO to IHE-RO Technical Committee

3.3 SNOMED Codes

U. Busch recently presented the change from SNOMED RT style to SNOMED CT style (see ftp://medical.nema.org/medical/dicom/final/cp1850_ft_replacingsrtwithsct.pdf).

Dissemination of codes is addressed in Sup 196.

AAPM TG-263 (now SC-263) extends the Foundational Model of Anatomy (FMA) codes for RT.

SNOMED codes that are in Part 16 are free to use.

The consensus of WG-07 was to recommend to the IHE-RO TC to revise the BRTO-II Profile to define a Structure Coding Option for the BRTO-II Profile. This option would require consumer Actors to consume, preserve, display codes in RT Structure Set and Segmentation/RT Segment Annotation objects.

The choice of Coding Schemes is beyond the scope of IHE-RO. However, it is not advisable to create a new, private Code Scheme for this purpose. The IHE-RO TC could consider following AAPM TG-263 and recommend the usage of the FMA.

J Percy will bring this as a proposed CTP to the IHE-RO TC.

3.4 Implementation of 2nd Generation RT Objects

With the definitions of Supplements 147, 175, 176 and 199 to be available in the near future an actual potential implementation could also be foreseen. Though, with the new design the concept of the “Setup Beams” is gone. T. Schwere and C. Schadt have prepared a proposal (see ppt on ftp) for discussion in WG-07 to expedite the development of the “Positioning Instruction” from Supplement 160 in order to overcome the definition gap for an actual implementation.

Supplements 147 and 175 are in the Standard, 176 is expected later in 2019, 199 soon thereafter. This set of objects cover the core of planning and delivery workflow.

Setup beams have been removed from these supplements. Thus, Patient Setup represents a gap in this coverage. There is concern that, if the new Supplements are implemented, this gap will be filled by one or more non-standard workarounds.

The group needs to decide if there is a critical need to provide a facility for patient position verification.

The current version of Sup 160 is very detailed. The proposal is to narrow the scope of Sup 160 to focus on setup beams. Details regarding patient positioning would be moved to a future Supplement.

Radiation IODs can reference this Setup IOD.

4. CPs

See also in Appendix: List of CPs which are already moved in the WG-06 process. More details also in the CP Status Document referenced in the Appendix.

4.1 CPs new to WG-07

CP RT135

New CP by Kari about order of pitch and roll. The CP adds sentence “The Pitch Angle rotation is applied before the Roll Angle rotation” at the end of Section C.8.8.14.12.

WG-07 agreed to forward this CP to WG-06.

CP RT136

Make Frame Anatomy in Parametric Map optional.

For the use of Parametric Maps as a container for dose values, the Frame Anatomy cannot always be provided and would force users to make up a value in order to satisfy the DICOM Standard. The CP proposes a breaking change of the DICOM Standard to make these attributes optional.

The current requirements for Frame Anatomy is awkward to use for non-anatomic instances, e.g., dose grids. The mandatory Frame Laterality (0020,9072) attribute must have a value. Enumerated values are “R”, “L”, “U” (unpaired), “B” (both). Dose does not fit naturally into these categories. The CP is intended to raise the issue with WG-06.

Anatomy and laterality cannot be made optional for Parametric Maps – some (workaround) is needed to satisfy PM requirements for use as dose.

Discussion of Parametric Maps was tabled.

Homework for all for next meeting: evaluate appropriate codes for Frame Anatomy and trade-offs in using Parametric Maps vs. re-implementing multi-frame dose image.

CP RT137

Align Beam Type attribute description of RT Ion Plan with RT Plan. This CP makes the definition of Beam Type (300A,00C4) consistent.

CP RT138

Clarify term VERIFY in BDI.

This topic came up at the IHE-RO TC meeting in Florida: Make it more explicit in the RT Beams Delivery Instruction what the term VERIFY means. Currently it states “Beam verification only”. Make sure that this includes the verification of a beam for a given patient position and not the verification of the beam. Implicitly, VERIFY refers to verification of patient *position*.

C. Schadt drafted a CP to clarify the meaning of VERIFY as *position* verification. It is not clear how dosimetric verification of a beam is signaled.

K. Jyrkkälä to check how dosimetric verification of a beam is indicated before moving forward with the CP.

The draft CP is on the FTP server.

4.2 CPs in Work (Uli reviewed the following draft CPs with the group)

cp1905 - Additional Category codes for CID 9502

During first implementations of the RT Segment Annotation IOD it was noted, that there are no codes for Tissue and Anatomical Structures in the CID of Segment Annotation Category Code Sequence (3010,002B). Therefore, codes for such categories are added to CID 9502.

cp1906 - Add Treatment Site Laterality

The C.36.5 RT Physician Intent Module contains a coded description of the treatment site. However, a definition of the laterality is missing. This is especially useful when laterality-specific codes of the treatment site are not available respectively may not be used in a certain context in favor of specifying the laterality separately. Therefore, a code for laterality is added.

cp1345 - Add Related UPS Sequence

The CP supports grouping of UPS steps. CP has been and continues to be discussed at WG-06.

5. Supplements

5.1 Status

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/>

5.2 Supplement 175 – C-Arm Radiation

Supplement 175 has reached Final Text.

5.3 Supplement 176 – Tomotherapeutic, Multiple Fixed Source, and Robotic Radiation

Supplement 176 is in reading for Letter Ballot which is already well advanced. Work on any topics that came up during the WG-06 review in June in Dublin, especially details on the Tomotherapeutic Beam Module.

Supplement 199 (RT Radiation Records) contains an open issue regarding the recording of a manually adjusted Multi-Source delivery device (namely the “helmet”)

- Radiation IODs and Radiation Record IODs both contain Device Module (defines delivery device) and Beam Module (contains device parameters). The delivery device Sequence in the Radiation Record IOD can reference devices in a Radiation Instance by means of a Referenced Defined Device Index (300A,0602).
- For manually-loaded (helmet style) Multiple Fixed Source Beams Treatment, it is not possible to record automatically. First generation fixed source devices are checked manually.
- The group decided to investigate the implications of removing support for manually-loaded multiple fixed source devices in both Radiation and Radiation Record IODs.
- It was decided to leave the planning of the “helmet” device in the IOD, but the requirement for recording was changed and this is no longer necessary.
- During this discussion it was noted that the multiple fixed source devices for breast treatments (GammaPod) differ from the cranial devices (GammaKnife) in that sources *move* during treatment. 25 sources and an array of 15- and 25-mm collimators rotate (1 rev/min) around iso-center. Sources align with either 15- or 25-mm collimators with beam on. Couch moves to locate target at iso-center (dose painting). Metallic wire is used to index planning CT (HFP) with delivery. These devices would need their own IODs for Radiation and Record.

The group discussed editorial changes to clarify referencing of radiation devices. Clarifying text is to be included in Sup 199.

C. Schadt discussed issues from WG-06 review:

Multiple Fixed Source Beams

Defined Device References were discussed for Multiple Fixed Source Beams.

The Number of RT Control Points for Multiple Fixed Source Beams was discussed by the group.

- A Pattern represents the machine state (position of each Sector) at a Control Point.
- The Multiple Fixed Source Pattern Sequence shall contain exactly one Collimator Pattern for each and every Device Holder.

- Typically, the last CP of a Multiple Fixed Source Beam will contain either no Collimator Pattern, or a Collimator Pattern with all collimators closed.
- The restriction to have only 2-2n Control Points was removed to allow for more dynamic capabilities as it was described by Y.Yan.

Based on re-examination of the revised definition for Multiple Fixed-Source Beams, C. Schadt reorganized the structure of the IOD to resolve an inconsistency. The new IOD structure uses two Modules: one defining the Device, the other defining Beams. Each Sector is now indexed as a Device.

Tomotherapeutic Beams

The group discussed an issue raised in reading with WG-06 re Tomotherapeutic Leaf Open Fractions and Tomotherapeutic Leaf Initial Closed Fraction attributes. A clarifying note was added to indicate that when the Initial Closed Fraction is not present, the Open Fraction vector specifies the leaf open fraction *centered* between the two Control Points.

Attribute definitions were reviewed: existing attributes Table Speed, Revolution Time were introduced instead of the ones proposed in Supplement 176.

Christof to cleanup Sup 176 in preparation for WG-06 review.

5.4 Supplement 199 – RT Treatment Records

The Supplement contains IODs extracted from Supplements 175 and 176. It was decided to move these IODs out to get the originating Supplements to final text faster. In order to be able to implement the 2nd Generation IODs in a clinical workflow, it was decided by the group that the treatment record IODs are required to be available for Public Comment as soon as the RT Radiation IODs are done. Therefore, work on this Supplement has to continue to be ready once Supplement 176 is as been reviewed by WG-06.

U. Busch presented text describing the method used for referencing devices in Radiation Records in Sup 199.

- The Device Index identifies a device in the Radiation Record, while the Referenced Defined Device Index identifies the *corresponding* device definition (if it exists) in the Radiation Instance.
- This mechanism for defined device references is general and is used in multiple contexts.

Wording clarifying referencing of devices was revised by the group.

On Tuesday afternoon, Uli did a walk-through of Sup 199 with the group and reviewed open issues.

1. Frame of Reference Module in RT Radiation Record – identifies the position of the patient during the time when the therapeutic radiation that was recorded by the current Radiation Record instance was applied. Coordination of Frame of Reference UIDs among devices is managed by Spatial Registration.
2. The Manual RT Radiation Record IOD Description was reviewed and revised.
3. Radiotherapy Treatment Delivery Person Roles CID – SNOMED RT codes should be replaced with SNOMED CT codes.

Revision of introductory text for Radiation Record IODs for consistency with corresponding Radiation IODs: *The ... Radiation Record IOD contains the record of a radiotherapy treatment that has been performed using a ... Radiation IOD.*

Synchronization Module has been added – Conditional: required if time synchronization was applied.

- Text added to RT Common: *For IODS that include the RT Radiation Record Common Module, the Acquisition Time Synchronized (0018,1800) specifies whether the following Attributes represent an accurate synchronized timestamp: (1) Treatment Control Point Start DateTime, (2) Treatment Control Point End DateTime, (3) Interlock Signal DateTime.*
- Intent to add synchronization to existing image of interest in RT, including RT Image and (conventional) CT Image.

Manual RT Radiation Record referencing 2nd Gen RT Instances is included, but Manual recording without DICOM representation of Radiation IODs is not. The latter approach may be incorporated into a separate IOD later, if needed.

The RT Radiation Record Set is device-neutral. It is instantiated at the closure of a Treatment Session. Each Record references exactly one Radiation Instance.

- **Each Radiation Record Instance is referenced by only one Radiation Record Set.** Note, that Records differ from Radiations in that Radiations may be included in multiple Radiation Sets, but Radiation Records may be included in only one Radiation Record Set.
- Radiation Records can reference Radiation Record Set Instance *or* a Radiation Record Set UID could be used to tie Records to a Record Set.
- The Treatment Session UID identifies the Treatment Session the Record Set belongs to. A Treatment Session is defined by a patient visit. A treatment session is opened/closed by the treatment delivery device or Treatment Session Manager.
- All Radiation Records referenced in an RT Radiation Record Set shall be recorded by the same treatment device.
- A Radiation Record Set references one or more Radiation Records.
- The requirement for referencing was formulated as follows: *An RT Radiation Record SOP Instance shall be referenced in exactly one RT Radiation Record Set SOP Instances.*

The group discussed Fraction Completion Status for a Radiation Record Set.

- Three states were discussed: ENTIRE = successful completion of an entire fraction, COMPLETION = successful delivery of resumption, completing a fraction, INCOMPLETE = other
- More than one concept is combined here. Completion of the delivery of a fraction is distinct from successful delivery of a Radiation Set.
- After considerable debate, the group voted for the following Attribute in the RT Radiation Record Set:
 - RT Radiation Set Completion Status (,) Type 1
 - Status indicating whether the RT Radiation Set was completely delivered.
 - Enumerated Value:
 - YES = All the RT Radiation instances of the referenced RT Radiation Set have been delivered with a Treatment Termination Status value of NORMAL.
 - NO = otherwise.

Other topics in the RT Radiation Record discussed by the group:

- The Frame of Reference in which Radiation Dose point coordinates are specified. Dose values are weighted contributions from a delivered Radiation (not cumulative across session). This topic will be revisited again at the next meeting end of August.
- RT Radiation Record Common

- Synchronization Module – Interlocks
- High-Frequency Log data – Raw Data/Additional Parameter Recording Format
- Recorded RT Control Point DateTime – renamed, removed Start and End times.
- Identification of Fractions
 - Technical Fraction Number – counts fractions for delivery of the current Radiation Set SOP Instance
 - Clinical Fraction Number – counts fractions in the current prescription (allows sufficient flexibility to account for variations in clinical practice)

The group revised wording of Device and Beam Modules to accommodate both specification and recording of static and dynamic device parameters. Christof will apply this wording to the other devices.

The group discussed fraction number and related concepts.

- RT Radiation Set Delivery Number – Ordinal count of delivery for the referenced RT Radiation Set as represented in the current SOP Instance.
- Clinical Fraction Number – number that expresses the progress of the delivery with respect to the prescribed number of fractions, irrespective of the number of RT Radiation Sets used to deliver the dose.

Add RT Radiation Set Usage Type – shares the same Defined Terms as RT Radiation Set Intent (300A,0637), see Table C.36.10-2

The group reviewed Override Sequence in the RT Radiation Record IOD.

- It is not clear what is the role of the Alternate Specified Value Sequence (gggg,753E)?
- Should the Alternate Specified Value be moved inside the Override Sequence (3008,0060)?
 - Why only a single item? Should be one or more.

Reorganize to distinguish whether there is an override or if an alternate value has been used for the delivery.

Exception Sequence

- Selector Attribute
- Override Flag
- Override Reason and Code
- Alternate Value Flag
- Alternate Value
- Override sign-off – who, when, where

While reviewing RT Radiation Record Set in Supplement 199 K. Jyrkkälä noted that the Frame of Reference has been left out, but also it is missing in the RT Radiation Set IOD in Supplement 175. As this is needed to define the coordinates present in the IOD the Frame of Reference IE was added to the RT Radiation Record Set IOD. In addition, it was proposed to add the Frame of Reference Module to the RT Radiation Set IOD as a Mandatory Module, introducing it with Supplement 176. This will be presented to WG-06 in the next meeting. C. Schadt has updated Supplement 176 accordingly.

B. Pekarek will clean up draft Sup 199 and prepare (version 9) for WG-07 F2F meeting in Aug 2019.

5.5 Supplement 160 – Patient Setup and Positioning

U. Busch presented the outline and scope of this Supplement (rev 20). This version of the Supplement has been trimmed to exclude monitoring. Current scope includes IODs for (a) Delivery Instructions, (b) Treatment Setup, and (c) Position Reference Acquisition (i.e., instructions for Imaging, etc.).

The group (including U. Busch and T. Schwere) focused on a discussion of the Position Reference Acquisition IOD. (Other IODs can be reviewed by members off-line.)

Position Reference Acquisition Instructions

- The Position Reference Acquisition IOD defines Devices for Patient Support, Accessory Holders, General Accessories, and RT Beam Limiting Devices.
- The same approach (device configuration and task parameters) used for Radiation IODs is used here.
- Some aspects of device behavior are specified by reference to acquisition protocols, rather than being spelled out in detail.
- The Applicability of position acquisitions is specified by RT Radiation Sequence OR the Treatment Position Group Sequence (but NOT BOTH). Uli to edit offline.
- Patient Setup UID – Sup 175 references the Patient Setup UID and includes a reference to a Setup SOP Instance (if known). The same mechanism is used for the Acquisition Instruction.
- Acquisition Device Tolerances are maintained in the RT Common Module
- Multiple work items can be included in the Acquisition Task Sequence. How is the order of Tasks specified?
- Acquisition Protocols are specified by name or code.
- Acquisition Patient Position Sequence can represent the starting position of the couch (Type 2).
- It was discussed whether multiple tasks should be represented in an Acquisition Subtask Sequence. This would allow to bundle multiple steps and the number of UPSs can be limited. It is still though possible for an implementation to factor out subtasks and create instances with one task each.
- Acquisition Trigger Type and Parameter Values, Units – consider using codes for Type and Parameter Units.
- Image Dimension Macro was removed.
- Imaging Acquisition Parameters are defined in Macros – blocks are switched by imaging modality / technique.
- General Imaging Geometry Macro is used for 2D, 3D, 4D. Describes location (and orientation) of the source in the equipment coordinate system; image receptor is in Base Beam Modifier coordinate system. The group reviewed the design of this macro.
- Relative Imaging Aperture positioning was deleted, pending review with WG-06.
- 3D Radiation Imaging Geometry – all attributes are Type 3 (expected to be specified by Protocol).
- 4D CT parameters overlap with motion management – leave out for now.
- Tolerance Values for Position Reference (Imaging) Acquisition were removed. (May be restored later.)
- Referenced Reference Instance Sequence was added to include references to reference images.

U. Busch will save the document as version 20.

C. Schadt will take over edits of the Supplement in coordination with U. Busch and T. Schwere.

5.6 Supplement 215 – RT Ion Radiations

J. Percy worked on this Supplement together with the Ion sub-group. The overall structure was presented.

J Percy posted the latest draft on the ftp site.

5.7 Supplement 177 – Dose Objects

The Supplement is in preparation for Reading for Public Comment. Various issues still have to be discussed and resolved. The goal is to continue reducing open Items and move towards a consolidated supplement status.

Walter to summarize open issues in Sup 177

Review Open Issues at Aug F2F

Schedule Tcon before Nov 2019 meeting to coordinate preparation

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

6.1 Schedule

For the current list of Meetings see the MeetingsList.xlsx sheet under <ftp://medical.nema.org/MEDICAL/Private/Dicom/WORKGRPS/Wg07/Meetings/> on the ftp server.

Meeting	Start	End	Location	City, State	Comment
WG-07	26.08.2019	30.08.2019	MITA	Arlington, VA	
WG-06	09.09.2019	13.09.2020	MITA	Arlington, VA	Christof and Jim will call in
ASTRO	15.09.2019	18.09.2019		Chicago, IL	
IHE-RO	07.10.2019	12.10.2019	RaySearch	Stockholm, Sweden	
WG-06	04.11.2019	08.11.2019	MITA	Arlington, VA	Christof and Jim will call in
WG-07	18.11.2019	22.11.2019	Sun Nuclear	Melbourne, FL	
RSNA	01.12.2019	06.12.2019		Chicago, IL	
IHE-RO	09.12.2019	13.12.2019	Reflexion	Hayward, CA	
WG-06	06.01.2020	10.01.2020	MITA	Arlington, VA	Christof and Jim will call in
WG-07	09.03.2020	13.03.2020	UTSW	Dallas, TX	WUSTL/St. Louis as fallback
WG-06	30.03.2020	03.04.2020		Japan	
ESTRO	03.04.2020	07.04.2020		Vienna, Austria	
IHE-RO	07.04.2020	10.04.2020	AAPM SCM	Minneapolis, MN	
PTCOG	04.05.2020	09.05.2020		Linkou, Taiwan	
WG-07	01.06.2020	05.06.2020	Elekta	St. Louis, TX	WUSTL/St. Louis as fallback
WG-06	15.06.2020	19.06.2020	MITA	Arlington, VA	
AAPM	12.07.2020	16.07.2020		Vancouver, BC, Canada	
IHE-RO	15.07.2020	17.07.2020	AAPM AM	Vancouver, BC, Canada	
WG-07	03.08.2020	07.08.2020	Brainlab	Chicago, IL	tentative, MITA/Arlington as fallback
WG-06	31.08.2020	04.09.2020	MITA	Arlington, VA	
IHE-RO	28.09.2020	02.10.2020	AAPM HQ	Alexandria, VA	
WG-07	12.10.2020	16.10.2020	Elekta	Crawley, UK	tentative, RaySearch/Stockholm as fallback
ASTRO	25.10.2020	28.10.2020		TBD	
WG-06	09.11.2020	13.11.2020	MITA	Arlington, VA	
IHE-RO	16.11.2020	20.11.2020	TBD	TBD	
RSNA	29.11.2020	04.12.2020		Chicago, IL	

Also see the DICOM Calendar:

<http://workspaces.nema.org/dicom/Lists/Calendar/calendar.aspx>

Submitted: Christof Schadt, Co-Chair of WG-07

Reviewed: Luiza Kowalczyk, Secretary

Reviewed: Clark Silcox,