

**IHE-RO Technical Committee
Face-to-Face
January 14-17, 2019 8:30 – 5:30 EST
January 18, 2019 8:30-12:00 EST
Sun Nuclear Corporation
3275 Suntree Blvd. Melbourne FL
Room: MapCheck**

**Technical Committee Chairs:
Scott Hadley, PhD, University of Michigan
Chris Pauer, Sun Nuclear**

**IHERO Task Force Co-Chairs
Bruce Curran, MS, ME, FAAPM, FACMP, FACR, AAPM / VCU Health
Bridget Koontz, MD, Medical Director, RO Services, Duke Regional**

Mission Statement: *The American Association of Physicists in Medicine (AAPM) sponsors a multi-society Task Force to undertake an initiative to promote the Integration of the Healthcare Enterprise (IHE) – Radiation Oncology (RO). Originally formed by the American Society for Radiation Oncology (ASTRO), it fosters seamless connectivity and integration of radiotherapy equipment and the patient health information systems. The Technical Committee of IHE-RO will undertake use cases defined by members from ASTRO, RSNA, American Association of Physicists in Medicine (AAPM), the American College of Radiology (ACR) and the Medical Imaging and Technology Alliance (MITA). In addition, members of the International community have also been invited to participate in IHE-RO. The IHE-RO Task Force, in close collaboration with radiotherapy product manufacturers, will develop appropriate integration profiles for radiation therapy and setup a demonstration of seamless communication among the full array of radiotherapy products.*

Attendees:

Name	Affiliation	Email	1/14	1/15	1/16	1/17	1/18
Chris Pauer	Sun Nuclear	chrispauer@sunnuclear.com	T	T	T	T	T
Scott Hadley	U. Mich.	swhadley@umich.edu	X	X	X	T	T
Walter Bosch	Wash. Univ.	wbosch@wustl.edu	X	X	X	X	X
Jill Moton	AAPM	Jill@aapm.org	T	T	T		T
Koua Yang	Philips	Koua.yang@philips.com	X	X	X	X	X
Stefan Pall Boman	Raysearch Labs	Stefan.p.boman@raysearchlabs.com	X	X	X	X	X
Rickard Holmberg	Raysearch Labs	Rickard.Holmberg@raysearchlabs.com	X	X	X	X	X
Thomas Schwere	Varian	Thomas.Schwere@varian.com	X	X	X		
Bob Pekarek	Accuray	bpekarek@accuray.com	X	X	X	X	
Jim Percy	Elekta	Jim.percy@elekta.com	X	X	X	X	X
Jon Treffert	Raysearch Labs/ ProNova	Jon.treffert@raysearchlabs.com	X	X	X	X	X
Tucker Meyers	EPIC	tucker@epic.com		X	X		

Chelsea Wezensky	EPIC			X	X		
Sven Siekmann	(Brainlab)		T	T			
Harold Beunk	ICT		T	T	T	T	T
Stina Svensson	Raysearch Labs	Stina.svensson@raysearchlabs.com		T	T		
Sanjay Bari	Elekta			X	X	X	X
David Wikler	IBA			T			T
Bruce Curran	AAPM / VCU	bhcurran@gmail.com		T		T	T
Rishabh Kapoor	VCU/VHA	Rishabh.kapoor@va.gov		T	T		
Howie Richmond	MIM				T		
Bruce Rakes	Mevion	rbrakes@mevion.com					T
Eric Malotaux	IBA						T
Staffan Engdahl	RaySearch Labs						T

X = In person, T = Via teleconference

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Minutes:

40 I. Call to Order at 8:45 am EST, Mon. Jan. 14, 2019

- a. Settling and Setup
- b. Preliminary Business
 - i. Procedures / Locations
 - ii. New Attendees were introduced.
 - 45 iii. Review Agenda
 - iv. Any adjustment or added items
 - v. Minutes from the IHE-RO TC December 20, 2018 teleconference were approved without objection.

50 II. Topic 1: Goals for the Week

- a. HIS Advancement
- b. Consensus on RXRO Profile
- c. Directives on IHE main web page changes
- d. Technical Framework-ready Profiles
- 55 e. Address new Use Cases
- f. BQAW Review

III. Topic 2: Updates

- a. IHE-RO activities
 - 60 i. Planning – Use Cases to be reviewed.
 - ii. Oversight, Steering Committees – Invoices have been distributed to participating vendors.
 - iii. Domain Coordination Committee – The next interaction involves incorporation of several Profiles into the Technical Framework
- 65 b. AAPM – Next face-to-face TC meeting is Apr 2-5, 2019 after AAPM SCM in Orlando, FL.

- c. DICOM WG-7 Update – Supplement 147, defining DICOM 2nd Generation RT prescription and segmentation objects, has been approved.
- d. AdvaMed and Standards Efforts
 - i. Comments on the AdvaMed committee draft are due January 18, 2019.
 - ii. Sections on the in-room imager are to be removed from the current draft for re-work and subsequent addition as a supplement.

IV. Topic 3: Profile Status Review

- a. The TC reviewed the current state of IHE-RO Profiles and goals for this meeting:
 - i. ARTI – retired (TPPC)
 - ii. BQAW – draft
 - iii. BRTO – retired (BRTO-II)
 - iv. BRTO-II – TI, tested
 - v. CDEB – passed PC, to be reviewed 1/15
 - vi. CPRO – revisit once HIS is more mature
 - vii. DRRO – draft in preparation, active work in sub-group
 - viii. DPDW – in development, awaiting DICOM standard (2nd Gen), design issues remain
 - ix. DCOM – TI, tested – review for FT
 - x. FDII – create CP for IHE-RAD Profile to encode 4-D respiratory phase information?
 - xi. IPDW - in development, current version uses template approach
 - xii. MMRO-II – retired (MMRO-III)
 - xiii. MMRO-III – TI, tested
 - xiv. RXRO – draft, review scope, prepare for PC
 - xv. QAPV – TI, awaiting implementation/testing
 - xvi. QRRO – draft, scope of profile still in discussion, attribute specification is underway
 - xvii. ROIT – draft, awaiting progress on DICOM Sup 196
 - xviii. ROTH – draft
 - xix. TDIC – PC, proposal to include registration to enable offline review
 - xx. TDPC – TI, not yet tested
 - xxi. TDRC – PC, review for TI
 - xxii. TDW – retired (TDW-II)
 - xxiii. TDW-II – TI, tested informally
 - xxiv. TPIC – PC, review for TI (testing issues?)
 - xxv. TPPC – TI
 - xxvi. TPPC-Ion – draft for review by TC
- b. Missing Clinical Impact Statements
 - i. CDEB
 - ii. TDRC
 - iii. TPPC-Ion

V. Topic 4: RXRO Advancement

- a. Review and Lock Down intent of the Profile
 - i. The intent of the Profile is to communicate physician intent and prescription information.
 - ii. Three levels of content currently specified in the Profile
 - 1. Basic – Physician Intent (1.1)
 - 2. Enhanced – Physician Intent (1.1) + Prescription (2.1)
 - 3. Planning Physician – Physician Intent (1.2) + Prescription (2.2) + Treatment Phase
 - iii. The TC discussed the source of Physician Intent and Prescription information (TMS, TPS) and whether the Profile matches the anticipated implementations of prescription information.

- iv. Some concern was expressed about the level of agreement between the Profile and the content implemented by actual products.
- v. Prescription display requirements could be handled by (a) reference to the ROSSI specification document or (b) by adding requirements to the Profile itself.
- b. Review of the Profile for Public Comment
 - i. Add Actor Definitions in Appendix A for Basic Physician Intent Producer/Consumer, Enhanced Physician Intent Producer/Consumer, and Planning Physician Intent Producer/Consumer.
 - ii. Chapter 7 content requirements for Physician Intent, Prescription, and Treatment Phase were reviewed and updated.
- c. **ACTION 190101**: Jim Percy to take on editorship of RXRO and clean up the Profile draft for the April 2019 F2F meeting.

VI. Topic 4.2: TDW-II

- a. Thomas reviewed two changes to the TDW-II Profile (v2 Rev 15).
 - i. Make the SOP Class UID mandatory in C-MOVE Request To enable the TDD, TMS to operate in either TDW and TDW-II mode.
 - ii. Fix the Value Type of the C-FIND Response for processing parameters of type "NUMERIC".

VII. Topic 4.4: DPDW

- a. A dedicated sub-group has restarted meetings to work on DPDW
- b. Four sub-profiles have been defined to address the following Use Cases:
 - i. DPDW 1 – Subscription / starting and ending treatment sessions
 - ii. DPDW 2 – Patient positioning
 - 1. PPAS Actor acquires patient position
 - 2. Need to communicate the position of the table (not worked out yet)
 - 3. PPDS defines registration to be applied to patient (may not use all DOF) – this Actor may not be needed.
 - iii. DPDW 3 – Delivery
 - iv. DPDW 4 – Monitoring
 - 1. Proposal to drop the DPDW 4 (Monitoring) component for the current version of the Profile. No manufacturer for monitoring has been identified. It could be added to a later version.

VIII. Topic 8: How handle contours extended past image boundaries

- a. The specific Use Case involves contours defining the treatment couch geometry lying outside of an image plane. Dose may be calculated using density override for structures that extend outside the bounds of the image.
- b. Structures defined outside the extent of an image may not be (properly) displayed by some contour consumers.
- c. ROI Interpreted Type is not used consistently to define structures for dose calculation.
- d. This topic was tabled.

IX. Topic 11: 2019 Connectathon

- a. Oct 7-12, 2019 in Stockholm, Sweden (hosted by RaySearch Labs) – location has been confirmed by RaySearch Labs.

X. Topic 4.5: Technical Framework for BRTO-II, MMRO-III, TPPC – Sven presented

- a. BRTO-II has two open issues
 - i. Adaptation in section 7.1.2 and 7.1.4 – attribute requirement definitions / notation. (Text may be removed.)

- ii. Dose Displayer – accepts and displays an RT Dose instance without an associated Plan - defer changes to future CP.
- iii. **DECISION:** move BRTO-II (v. 1.10) to TF (Final Text). (Profile text for BRTO-II is to replace BRTO text in the TF.) Approved without objection.
- b. MMRO-III has one open issue
 - i. Identifier for registration – add a content requirement for Content Description (0070,0081) – shall not be empty. Content Label (0070,0080) is Type 1.
 - ii. **DECISION:** move MMRO-III (v. 1.12) to TF (Final Text) with change (above). Approved without objection.
- c. TPPC – no open issues
 - i. Attribute note for Target Prescription Dose (300A,0026) was updated to clarify that dose type must agree with Beam Dose Type (300A,0090) in the RT Fraction Scheme Module.
 - ii. **DECISION:** move TPPC (v. 1.7) to TF (Final Text). Approved without objection.
- d. **ACTION 190102:** Chris to submit revised supplements to Mary Jungers.

XI. Topic 4.3: IPDW

- a. Thomas reviewed version 2.1 of the IPDW supplement with the TC. The Profile has been restructured to use Chapter 7 for content requirements. There is no longer any reference to DICOM 2nd Gen. A new version (or new Profile) can be created later to incorporate 2nd Gen.
- b. All actions for imaging, registration, position correction, and delivery are performed by a single device.
- c. The group discussed how to schedule/specify imaging, registration, correction, and delivery operations.
 - i. How can *ad hoc* operations in the imaging/registration/correction/delivery workflow be accommodated? Three options were discussed.
 - 1. The TMS re-schedules imaging, positioning steps as needed.
 - 2. The TMS schedules multiple imaging, positioning techniques (e.g., 2D and 3D) and the PDS selects from these (and cancels the others).
 - 3. Allow the PDS to create new imaging, registration, or positioning UPS (but *not* treatment UPS) for *ad hoc* steps. (Where would the necessary information come from?) ← This option appears workable.
 - ii. Current work item codes are specific to technique.
 - iii. The added value of IPDW (with respect to TDW) is the ability to schedule specific imaging technique to be used and recording the actual procedure steps used.
 - 1. Imaging, registration, positioning steps may be cancelled.
 - 2. Ad hoc imaging, registration, positioning steps may be scheduled by the PDS.
 - 3. Actual values for performed procedure steps are captured in the treatment record (and possibly in output SOP instances).
 - iv. **ACTION 190103:** Thomas to add Use Cases for (a) ad-hoc imaging/correction, (b) multi-isocenter with re-positioning and (c) multi-isocenter without re-positioning. Define what ad-hoc UPSs may be created. Clarify UPS state sequence.

XII. Topic 2.5: TDIC 2D Image Registration

- a. Thomas presented a proposal to add Transactions for storage and retrieval of Spatial Registration objects in TDIC to enable review of image registration and resulting position corrections. The proposal adds a Patient Position Registration option to TDIC Producers and Consumers. This option also requires retrieval of reference (planning) images.
- b. The group discussed cross-profile dependencies between TDIC and TPIC (as well as TPPC and TDPC).
- c. Bed-mounted or in-room CT imaging requires additional frame-of-reference information to interpret images.

- i. **ACTION 190104**: Thomas to adapt the approach described in the Varian white paper on encoding couch shifts for imaging.

XIII. Topic 6: HIS Profile

- a. Revisit discussion from December and lock down intentions of profile
 - i. Prior authorization and simulation information not in scope at present.
 - ii. Current effort focuses on *content* – workflow aspects can be handled in future profiles.
- b. Work on refining content
 - i. Priorities for HIS → OIS
 - 1. Pregnancy
 - 2. Pacemaker
 - 3. Contrast allergy
 - 4. Pathology report
 - 5. Radiology report
 - 6. Chemotherapy information
 - 7. Patient Consent for RT
 - 8. Patient Clinical Appointments for RO
 - ii. Priorities for OIS → HIS
 - 1. Prescription
 - 2. Radiation Dosimetry Treatment Summary
 - 3. Physician's Treatment Completion Notes
 - iii. Methods for communicating information from HIS
 - 1. Review HL7 specs and identify associated fields
 - 2. Rely on OBX segments
 - iv. Segment from HL7v2 message mapping EPIC and OIS identifiers
 - 1. OBR|1|12345^EPC|45678^OIS|
- c. Transactions – The group discussed content for Intent, Prescription, Session HL7 messages. Updated details in document maintained by Tucker Meyers. A summary is shown below.
 - i. Intent Message
 - 1. Intent UID
 - 2. Patient identification
 - 3. Provider identification
 - 4. Date of order
 - 5. Date of approval
 - 6. Intent narrative (free text)
 - 7. Concurrent therapy (free text)
 - 8. General methods (free text)
 - 9. Therapeutic goal (“intent type”) (free text)
 - ii. Prescription Message
 - 1. Prescription UID
 - 2. Source Intent UID
 - 3. Related Prescription
 - a. Prescription UID
 - b. Relation ‘predecessor’ or ‘concurrent’
 - 4. Patient identification
 - 5. Consent identification
 - 6. Provider identification
 - 7. Date of order
 - 8. Date of approval
 - 9. Intent narrative (free text)
 - 10. Concurrent therapy (free text)
 - 11. Status ‘new’, ‘completed’, ‘completed early’, ‘updated’
 - 12. Status date/time (TBD)

- 13. General methods (free text)
- 14. Therapeutic goal (“intent type”) (free text)
- 15. Site Group

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 - a. Site Group UID
 - b. Site (free text)
 - c. Diagnosis (ICD-10)
 - d. Stage (free text)
 - e. Prescription Group
 - 285
 - i. Prescription Group UID
 - ii. Is boost? (Boolean)
 - iii. Technique (predefined list + free-text option)
 - iv. Protocol (free text)
 - v. Dose per fractions (number + unit)
 - 290
 - vi. Number of fractions (integer)
 - vii. Frequency of delivery
 - viii. Total prescription dose (number + unit)
 - ix. Energy (free text, e.g., 6X, 16X, 6E, 6FFF)
 - x. Treatment device (free text)
 - 295
 - xi. Modality
 - xii. Intended start date (optional)
 - f. Total dose to site (number + unit)
 - iii. Session Message (TBD)
 - d. The OIS is the source of truth for Prescription data.

300 XIV. Topic 7: DRRO Update / Discussion

- a. Stina Svensson reported on progress of the DRRO sub-group. The group has met monthly, starting in Aug 2018.
- b. The group surveyed current usage of DICOM in existing software products in vendors and academic groups.
- 305 c. The group has begun work on a preliminary draft for the DRRO Profile starting from MMRO and DCOM.
- d. Stina reviewed the Use Cases that have been identified in the Profile:
 - 310
 - i. Deformable Registration Creation
 - ii. Deformable Registration Editing
 - iii. Multimodality Contouring I (segmentation on fused images with display)
 - iv. Multimodality Contouring II (propagation of structures – deformation of segmentation)
 - v. Dose Deformation
 - 315
 - vi. Image Deformation (instantiate deformed image)
 - vii. Image Distortion Correction (deform image with known displacement field)
 - viii. Dose Compositor (dose deformation and accumulation)
 - ix. Composite Planning, Recurrence Planning, Adaptive Planning
- e. Survey has included usage of pre- and post-deformation transformations.
- 320 f. **ACTION 190105**: Chris to post the DRRO draft profile on the ihe-ro.org wiki. Open issues are to be tracked in the draft Profile.

XV. Topic 7.5: Recording of offline treatment delivery

- a. Offline recording issues for the TDW-II Profile
 - 325
 - i. No connection between treatment and scheduling
 - ii. No output information sequence to reference related instances
 - iii. Need a means to annotate that treatment was performed in a disconnected mode
 - iv. Asynchronous recording on TMS in disconnected mode is not associated with a treatment session UPS.

- 330 v. It is not clear that the TDD has the context needed to infer the correct fraction number.
vi. It is assumed that the plan is known.
- b. Use Cases
- 335 i. Recording of offline treatment delivery *for treatment starting in connected mode*
ii. Recording of (anticipated) offline treatment with downloaded plans and batched, post-treatment update of treatment records.
iii. (Other use cases?)
iv. **ACTION 190112**: Thomas to incorporate two Use Cases for offline treatment delivery in the TDW-II Profile.
- 340 XVI. Topic 6: HIS Profile (continued)
- a. Further discussion of Intent, Prescription, Session messaging between HIS and OIS.
- i. The purpose of the Profile is to enable mirroring of information between the Actors.
ii. The preferred messaging uses a push model.
345 iii. Fields that are owned (can be edited) by HIS and OIS are defined in configuration.
1. For each field, define ownership.
a. HIS and OIS configuration pairs must be complementary. I.e., the pair of configurations must ensure that each field has exactly one owner.
b. Misconfiguration can result in inconsistencies between the state of HIS and OIS.
350 2. The Intent Message is a proper subset of Prescription Message
a. Intent content is required to create a Prescription.
b. Example: the OIS could create initial Intent content in the HIS using an Order Number Request/Number Assigned (Control Codes: SN/NA) message pair.
- 355 b. Actor definitions
- i. HIS, OIS
ii. By Message
360 1. Intent Producer
2. Intent Consumer
3. Prescription Producer
4. Prescription Consumer
5. Session Producer
6. Session Consumer
365 iii. Separate “passive” consumer Actor?
- c. Next steps
- i. Create content specification in terms of HL7 message structure
ii. Actor definitions – continue discussion in sub-group
370 iii. Messaging dataflow diagrams
iv. Profile name?
- d. Timeline
- i. Use HIS group tcons to draft Profile for April 2019 F2F meeting.
ii. Recruit OIS vendors and other HIS vendors as test partners.
- 375 XVII. Topic 9.5: ICT Content Validator Development
- a. Harold Beunk reported on ICT efforts and proposed development strategy
- i. Status of the IHE-RO Content Validator software v. 1.1
380 1. Data set profile validator for current Profiles
a. DICOM Viewer
b. DICOM Q/R tool
c. Command-line scripting

2. Current restrictions: Windows only, single user, classic UI, limited integration (automation), simple data management, installation issues
3. Environment: Windows 10, .Net framework 2010, DVTk library dll's, C++ and Windows only
- ii. New Use cases: (single user interactive, automated testing, multi-user test event)
 1. Multiple platforms
 2. Better integration
 3. Sharable service – stand-alone, local or public
 4. Improved test management: central server for Connectathons, automated test server, review
 5. Data set management – store/reuse datasets
 6. User management, roles & access
 7. Security, access and transfer
- iii. Technologies to be used (Dockerized server, Interactive web interface / API)
- iv. Security / access control to support subscription, data sharing
- b. The TC discussed current test tool needs for software and provided the following guidance regarding priorities for ICT development:
 - i. TDW-II test tool
 1. Packet capture and review capability
 2. Smart simulator – generate new object instances that are consistent with source data
 - ii. IPDW test tool
 - iii. Test tool source code
- c. The TC discussed ICT development issues
 - i. Current
 - ii. Evaluation/update of contract language, as necessary.
 - iii. The TC created a sub-group to direct ICT efforts. Group members to include Bob Pekarek, Stefan Boman, Sanjay Bari, Chris Pauer, Walter Bosch, Bruce Curran
 1. The group will meet to further define priorities before regular meetings with ICT.
 2. Anonymized Data Access for ICT also to be discussed.
 3. **ACTION 190106**: Jill to schedule t-con to review ICT development priorities. Doodle poll to schedule.
 4. **ACTION 190113**: Harold to provide input to the group regarding options for further development of TDW-II test tools.

XVIII. Topic 5.5: CDEB

- a. Chris reviewed updates in the CDEB Profile draft (rev 0.1.1) based on input from public comment. TC members to review CDEB Profile draft in preparation for promotion to TI.
- b. Some confusion was noted in description of target multiplicity options.
- c. **ACTION 190114**: Bob to examine options for target multiplicity in CDB and propose clarifications.

425 XIX. Topic 10: BQAW Review

- a. Chris reviewed BQAW Profile draft version 0.10
- b. Transport of treatment planning artifacts
 - i. C-STORE triggered by Planning Data Provider or Delivery Data Provider
 - ii. A DICOM Key Object Selection instance can be used as a manifest for QA data
 - iii. Machine log information transport as DICOM Raw IOD. Acquisition Context can be used to encode log file format. Log files can also be sent using alternative transport (FTP, etc.) – how to maintain relationship to RT Plan instance?

XX. Topic 12.5: QRRO Review

- a. Koua presented an update of the QRRO Profile draft rev. 1.8
- b. The group reviewed a document outlining QRRO use cases (v. 1.1). Several Use Case examples were discussed. E.g., “Find images, structures, dose instances associated with a plan” or “Find Approved Plans”.
- c. Assumptions include the following
 - i. SCPs return attribute values: no internal computation or following of references.
 - ii. Two query modes are to be supported: HIERARCHICAL and RELATIONAL.
 - iii. The hierarchical query mode uses multiple C-FINDs at Study, Series, *and Instance* level to build a graph (tree) of instances for the patient.
- d. Actors
 - i. Hierarchical Query User
 - ii. Hierarchical Query Provider
 - iii. Relational Query User
 - iv. Relational Query Provider
- e. The QRRO spreadsheet lists attributes needed to satisfy queries as matching and return keys. The TC reviewed query keys for RT SOP Classes and Spatial Registration.
- f. Requirements for SCU and SCP matching and returned query keys were discussed. In general,
 - i. SCU matching and return keys are R for Patient’s Name and Patient ID (must be present in queries) and O for all other attributes
 - ii. SCP matching and return keys are R or R+ for all attributes.
- g. **ACTION 190107**: Koua will update draft Profile, QRRO spreadsheet, and Use Case documents and post to wiki.

XXI. Topic 5: Discuss and Catalog changes needed on IHE website

- a. **ACTION 190108**: Chris will review the IHE website and identify changes needed for discussion at the next TC teleconference.
- b. Changes to www.ihe.net
 - i. Radiation Oncology Domain page – change Profile descriptions and current Profile names to reflect reality
 - ii. Technical Framework page – update when new Profiles are added to TF
 - iii. Resources/Profiles page – update Profiles to reflect current reality

XXII. Topic 13: New profile priorities

- a. Patient setup shifts for CT reference to treatment isocenter.
 - i. The TC could create a small, content Profile to mandate the use of Table Top {Vertical, Longitudinal, Lateral} Displacement (300A,01D*) attributes in the RT Patient Setup Module. Alternatively, the requirements for these attributes could be included in the TPPC and TDPC Profiles as an option.
 - ii. **ACTION 190115**: Chris to review status with PC and work with PC to create a Clinical Impact Statement for this Profile.

XXIII. Topic 9.7: TPIC – review for Trial Implementation

- a. The TC reviewed rev 1.2 of the TPIC supplement in preparation for TI.
 - i. TPIC has a single, implicit Transaction for transfer of data from a Treatment Planning Reference Image Producer to a Treatment Planning Reference Image Consumer Actor.
 - ii. Remove “Content” in Actor names.
 - iii. Table Top Eccentric Axis Distance and Table Top Eccentric Angle values are constrained to be zero. This issue to be re-visited.
- b. **ACTION 190116**: Chris to forward the Profile document to Thomas to complete the edits.

XXIV. Topic 15: Treatment Delivery – Record Content (TDRC)

- a. TDRC has gone through Public Comment – Chris reviewed public comment responses (Rev 1.0 PC) with the group.

- i. Current version excludes Ion therapy.
 - ii. Remove “Content” from Actor names.
 - iii. Several entries in TDRC Module table require correction.
 - iv. Remove TDRC Security Considerations section.
 - v. IOD Definition Table is missing - needs to be replaced
 - vi. Add Referenced Treatment Record Sequence conditionally (to reference prior treatment record for resumed treatment).
 - vii. Discussion of Beam Number – any beam may only be treated once in a treatment session.
- b. **ACTION 190117**: Chris to apply minor edits and prepare for another review by the TC before promotion to Trial Implementation.

XXV. Topic 9: Requested review of RAD profiles

- a. Do we need to promote any?
- b. Are we missing some synergy with existing profiles?
- c. 4-D Image Import
- d. **ACTION 190109**: Chris to review IHE-RAD and IHE-ITI Profiles for overlap with RO Domain Use Cases.

XXVI. Topic 17.5: TPPC-Ion Supplement

- a. The Ion sub-group reported on their work on a TPPC-Ion supplement (ver. 0.11_SE_SB).
- b. The supplement defines six Beam Techniques, with Producer and Consumer Actors for each:
 - i. Basic Proton Modulated Scanning Beam
 - ii. Basic Carbon Modulated Scanning Beam
 - iii. Proton Modulated Scanning MLC Beam
 - iv. Carbon Modulated Scanning MLC Beam
 - v. Planned Pitch and Roll in Fixed Beam Proton Modulated Scanning Beam
 - vi. Planned Pitch and Roll in Fixed Beam Carbon Modulated Scanning Beam
- c. In general, the supplement should align to the architecture of the TPPC Profile. All Transactions are optional for the TMS Actor.
- d. Storage Transactions are required for Producers, Retrieval Transactions are required for Consumers. Transport details are not constrained by the Profile.
- e. There are no specific security considerations in the TPPC-Ion Supplement.
- f. No cross-profile dependencies were identified for TPPC.
- g. The role of the TMS in the TPPC Profile needs further clarification.
 - i. **ACTION 190110**: Chris to schedule discussion of TMS role/testing in TPPC for the April 2019 F2F meeting.
- h. Module requirements for RT Ion Plan appear to mirror those for RT Plan.
- i. The TC reviewed content requirements for RT Ion Beams Module for Basic Proton Modulated Scanning Beam
 - i. Number of Boli shall be 0 unless Bolus Beam Modifier Option is supported, in which case, it shall be 0 or 1.
 - ii. Number of Blocks shall be 0 unless Block Beam Modifier Options is supported, in which case it shall be 0 or 1. Block Type shall be APERTURE.
 - iii. Beam-technique-specific content requirements override the RT Ion Beam Base Content requirements.
 - iv. Allow 0 or 1 Lateral Spreading Devices of type SCATTERER (*none* of type MAGNET).
- j. **ACTION 190111**: Bruce Rakes to make changes for the other beam types and save as version 0.12.

XXVII. Survey of Profiles for Connectathon Testing

- a. Formal testing: BRTO-II, MMRO-III, TPPC, DCOM, TDW-II
- b. Informal Testing: CDEB, TDRC

- c. **ACTION 190118**: Walter to work with Jill to distribute Connectathon Participant Test Survey

XXVIII. Topic 18: Review Minutes

XXIX. Topic 19: Review Action Items

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XXX. Future Meetings / Next Agenda

a. IHE-RO TC Meetings

i. April 2-5, 2019, after AAPM SCM, Gaylord Palms, Orlando, FL

ii. Post-AAPM – July 17-20, 2019, San Antonio, TX

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1. Wed July 17 2:00pm-5:30pm drop-in session

2. Sat July 20 8:30am – 12:00pm

iii. Fall Connectathon – Oct 7-12, 2019, Stockholm (confirmed)

iv. Dec 9-13, 2019, Alexandria, VA

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b. IHE-RO TC Tcons

i. New time is third Thursdays 10:30am-12:00pm ET.

ii. No teleconferences scheduled in Jan, Apr, Jul, Oct, Dec 2019.

c. Other meetings of interest

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i. DICOM WG-07

1. March 4-8, 2019 (tentative) Munich (Brainlab)

2. July 29 – Aug 2, 2019 Brainlab, Chicago (or MITA, Washington)

3. Sept 23-29, 2019 *or* Sept 30 – Oct 4, 2019 – (tentatively in St. Louis)

4. November 18-22, 2019 (tentative) - Melbourne, FL (or MITA, Washington)

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ii. PTCOG June 10, 2019

iii. AAPM Jul 14-18, 2019, San Antonio, TX

iv. ASTRO Sept. 15-18, 2019, Chicago, IL

v. RSNA Dec 1-6, 2019, Chicago, IL

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XXXI. Adjournment – the meeting was adjourned 1/18/19 at 12:30 pm

For more information specific to the IHE-RO Technical Committee, visit www.ihe-ro.org.