

IHE-RO Technical Committee
Face-to-Face
Oct 14, 2017 at 8:30-12:00 CET
Hotel Veenendaal
Veenendaal, NL

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
John Buatti, MD

Mission Statement: *The American Society for Radiation Oncology (ASTRO) has formed a multi-society Task Force to undertake an initiative to promote the Integration of the Healthcare Enterprise (IHE) – Radiation Oncology (RO), fostering seamless connectivity and integration of radiotherapy equipment and the patient health information systems. The Task Force will include 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.*

In Attendance:

Chris Pauer, Sun Nuclear
Scott Hadley, U. Mich
Walter Bosch, WU/ATC
Bruce Curran, VCU
Stefan Boman, RaySearch
Jim Percy, Elekta
Harold Beunk, ICT
Thomas Schwere, Varian
Bruce Rakes, Mevion
Daniel Augsburg, Varian
Koua Yang, Philips
Bob Pekarek, Accuray

Agenda:

- A. Call to Order at 8:40am CEST
 1. A quorum was present
 2. Review topics

- B. Business
 1. Review of Test Tool results
 2. Profile issues raised during testing

- a. BRTO-II Dosimetric Planner: Structure Set Storage [RO-2] should be *CONDITIONAL* (real world condition: if structure set is created/modified). Storage of Structure Set should not be mandatory for test tools.
- b. BRTO-II allows MR-based, but language uniformly refers to CT images. Inconsistency to be repaired.
- c. TPPC: Beam Dose Verification Control Point Average Beam Dose Point Source to External Contour Distance – CP 1434 (in the 2015a edition of the standard) - BR data conforms to 2017a standard (with CP1658), but not 2015a.
 - **ACTION 171001**: Chris to draft CP for MMRO-III, BRTO-II, and TPPC to reflect changes in the DICOM Beam Dose Verification Control Point Sequence (300A,008C) per DICOM 2017d (includes CP 1658)
- d. An issue was identified in which a Profile has specifications based on DICOM CPs that are more recent than the referenced edition of the standard. →
 - Example: Effective Wedge Angle (300A,00DE) was added in CP (attribute required by TPPC Profile, but not present in referenced Standard).
 - Care is needed to keep DICOM references up to date when Profiles are updated.
 - This has implications for re-use of datasets from previously passed Actors in connectathons.
 - **ACTION 171002**: Walter to discuss with Steve Moore how updates to TF are to be identified and controlled? (This includes revving DICOM references.)
 - How often do toolkit manufacturers update their libraries?
- e. Attributes are required to be produced but are optional to consume – this is a testing issue. Such attributes must be checked in the Test Tools.
- f. Differences in volumes in BRTO-II Contourer actors
 - ROI volumes are used as a metric to judge correct communication of structures.
 - BRTO-II testing may need to use other means to verify correct import.
 - Explore round-trip testing of import/export of RT Structure Sets between.
- g. MMRO-III and Axial images (see MMRO17A06xx data)
 - Does the primary image series need to be axial (in planes normal to an axis)?
 - Does the primary image series need to be transverse?
 - “Para-transversal” images (e.g., aligned to brachy applicator) are an important clinical use case.
 - Consider defining Options for handling image orientation, i.e. General/Oblique Option:
 - Orthogonal Primary (baseline): requires Image Orientation (Patient) be all +/-1s and 0s) What is the tolerance for rotations? How oblique can the Secondary image series be?
 - General / Oblique Primary Option
- h. Primary Fluence Mode and FFF
 - Consensus to use the following for testing of Photon Applicator Beam and Photon Applicator Arc Beam:
 - Machine = IHE_V120FFF
 - Fluence Mode (3002,0051) = NON_STANDARD
 - Fluence Mode ID (3002,0052) = FFF
- i. Large DVH display –
 - **ACTION 171003**: Walter to update Connectathon Testing instructions to request that DVHs exported in RT Dose instance have DVH Data values that

can be correctly represented using Explicit VR Transfer Syntax (e.g., binwidth = 1 Gy).

- j. Reference Dose Point
 - Some confusion about interpretation of nominal dose vs. max dose per fraction
 - This is not specifically addressed by BRTO-II Profile.
- k. Changes to profiles
 - BRTO-II (2 changes)
 - **ACTION 171004**: Chris to update BRTO-II as to change requirements for Dose Comment -- requirement should be RC+

Dose Comment	(3004,0006)	RC+	Shall be present and not empty if Referenced RT Plan Sequence (300C,0002) is missing, in which case it should have the same value as RT Plan Description.
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- TPPC: Static Electron Beam – is “Fixed SSD” technique
 - **ACTION 171005**: Walter to update Test instructions for Static Electron Beam to use Patient Setup Technique (300A, 01B0) = FIXED_SSD.
3. 11:00 – 11:30 Improvements in Test Process
- a. TPPC – difficulty noted in testing Beam Options (Bolus, Compensator, Hard Wedge)
 - b. Update test checklist to facilitate tracking of options.
 - c. Efficient *sampling* of option handling.
 - d. Focus on *plan* issues in TPPC.
 - e. Machine configurations
 - f. MMRO phantom data are difficult to contour / compare
 - Rando phantom may be easier to contour
 - Geometric phantom
 - Pseudo-phantom
 - g. Revise MMRO, TPPC Checklists
 - **ACTION 171006**: Bruce to revise MMRO-III, TPPC
 - **ACTION 171007**: Scott to revise BRTO-II checklist
 - h. Improve Test Instructions to better delineate what is expected for display for data elements.
4. 11:30 – 12:00 Test Tools – Improvements / Backlog items
- a. Issue encountered during testing have been entered in JIRA.
 - b. Improved validation of tools is needed
 - c. Broader use of tools – involves licensing – to be discussed with TC, steering committee.
 - d. API for regression testing? Command-line execution?
 - e. Test results recorded in XML

C. Adjourned at 12:15 CEST 10/14/17