

IHE-RO Technical Committee
Face-to-Face
January 19-23, 2015
Jan 19-22 at 8:30 AM – 5:30 PM PST
Jan 23 at 8:30 – 11:00 AM PST
Costa Mesa, California

Technical Committee Chairs:
Scott Hadley, PhD
Chris Pauer, Accuray

IHERO Task Force Co-Chairs
Dick Fraass, Ph.D., FAAPM, FASTRO, FACR
John Buatti, MD

Mission Statement: *The American Society for Radiology 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.*

Attendees:

Name	Affiliation	Email	1/19	1/20	1/21	1/22	1/23
Chris Pauer	Accuray	cpauer@accuray.com	X	X	X	X	X
Scott Hadley	U. Michigan	swhadley@umich.edu	X	X	X	X	X
Jim Percy	Elekta	Jim.percy@elekta.com	X	X	X	X	X
Walter Bosch	Wash. Univ.	bosch@wustl.edu	X	X	X	X	X
Christof Schadt	Brainlab	Christof.schadt@brainlab.com	X	X	X	X	X
Uli Busch	Varian	Ulrich.busch@varian.com	X	X	X	X	X
Koua Yang	Philips	koua.yang@philips.com	X	X	X	X	X
Sven Siekmann	Brainlab	Sven.siekmann@brainlab.com	X	X	X	X	X
Rickard Holmberg	RaySearch	Rickard.holmberg@raysearchlabs.com	X	X	X	X	X
Mikael Bertze	RaySearch	Mikael.bertze@raysearchlabs.com	X	X	X	X	X
Bruce Curran	VCU	bhcurran@gmail.com		X	X	X	
Sanjay Bari	Elekta	Sanjay.Bari@elekta.com			X	X	X
Harold Beunk	ICT	Harold.Beunk@ict.nl		W			
Wouter Vreeman	ICT	wouter.vreeman@ict.nl		W			
Rishabh Kapoor	VCU/VA	Rishabh.kapoor@va.gov				W	

X = In person W = via Phone/Webex

Minutes:

- 40 I. Call to Order (1/19/15 at 8:50 am PST)
- a. Review Agenda – **Approved**
 - b. Approval of minutes from December 2014 teleconference – **Approved without objection**
 - i. **ACTION 150102** Chris to contact Bridget re PC contact for CIS for Consistent Dose profile by Jan 30.
 - c. Other broad topics to add.
 - 45 d. Breakouts for advancing certain profiles
 - i. RXRO – TC to sketch out Use Case. Discussion of profile scenarios to follow technical discussion of DICOM Sup 147 prescription and segmentation. Further input is needed from the Clinical Advisory Committee.
- 50 II. Business
- a. Review Action Items – to be reviewed later in the meeting
 - b. Topic 1: Level Set
 - i. Updates on IHE-RO activities
 - 55 1. Planning, Oversight, Steering Committees – an IHE-RO PC meeting is scheduled for Fri Jan 30th 2:00 pm EST to set priorities.
 2. Priorities: No change in priorities has been communicated to TC: RXRO, CPRO remain high priorities.
 3. Publication of IHE-RO progress
 - 60 a. **ACTION 150103** Scott to follow up after Jan 30 IHE-RO SC meeting re manuscript on IHE-RO Progress for Mar 2015 deadline – due Feb 2.
 4. Request from ASTRO Board regarding products that implement IHE-RO Profiles – to be discussed Tuesday afternoon
 5. Other Updates
 - 65 a. **ACTION 150104** Chris to distribute HL7/IHE workgroup information to TC for Jan 30.
 - ii. ASTRO, MITA, ROSSI
 - 70 1. Concern was expressed regarding need for better awareness of HIMSS/HL7.
 2. The RO-HIS Working Group should be activated to work with the AAPM IT Work Group to develop a profile.
 3. The NEMA RT-2 Standard is moving forward. It is expected to be released for public comment in the next several months.
 - iii. DICOM
 - 75 1. Supplement 147 is expected to be released for public comment during the week of Jan 26th.
 2. Supplements 175 (C-arm Radiations), 176 (New RT Radiations) to be prepared for next release.
 3. CPs related to IHE-RO Profiles have been submitted:
 - 80 a. cp1437_lb Clarification of Beam Dose Scope
 - b. cp1438_lb Omitted Beams Sequence In BDI
 - c. cp1439_lb Clarification of RT Image Position
 - d. cp1434_vp Additional SSD Information
 - e. cp1399_ft Add Effective Wedge Angle
 - c. Topic 1.3: Prescription first topic

- 85
- i. Look at DICOM Gen 2 Rx attributes – Uli presented an overview of the RT Physician Intent IOD in Sup 147
 1. Physician Intent – intent label, narrative, protocol code, diagnosis code, diagnostic image set references.
 2. Prescription Module – definition of targets and anatomic volumes, volume clinical code, dosimetric objectives, treatment phases/fractionation, treatment delivery technique, prior dose
 - 90
 - ii. Decide on Use Case to focus on for Topic 3 from the RXRO Profile draft
 1. Discussion of Use Cases enumerated in RXRO Supplement Draft – Is the content Treatment Intent alone, or with Prescription (Simple, Intermediate, Detailed), ... ?
 2. What are the Actors for this Profile? Should we define a “Producer” and a “Consumer” or more context-specific Actors? Minimum scope is TPS-to-TPS or TMS-to-TPS communication of Physician Intent/Prescription information.
 3. Sven will flesh-out Transfer Simple Prescription Use case for further discussion on Wednesday.
 - 95
 - 100

[Lunch break 12:30-1:30 pm PST]

d. Topic 10: BRTO

- 105
- i. Sven reviewed a draft Change Proposal for the BRTO Profile to support high-resolution RT Structure Sets.
 - ii. **DECISION 150101**: Defer inclusion of the following DICOM CPs (enhancements to the RT Structure Set IOD) to future Segmentation or BRTO-II Profile(s):
 1. CP1395 (adds recommended display grayscale, CIELab parameters)
 - 110
 2. CP1314 (adds Segmented Property Category Code).
 3. CP1398 (adds FoR Module, User Defined).
 - iii. Discussion of high-resolution encoding of structure sets
 1. It is assumed that low-res contour consumers check for the existence of a Contour Image Sequence (3006,0016) in the Contour Sequence (3006,0040) of the ROI Contour Sequence (3006,0039).
 - 115
 2. It is possible for a low-res contour consumer to extract a low-res version of a high-res Structure Set by eliminating contours that do not contain an Contour Image Sequence (3006,0016).
 3. Sven will update the BRTO Change Proposal for review later in the week.

120 e. Topic 21: ROI Templates

- i. ITI Infrastructure (ITI TF-1) defines Sharing Value Sets Integration Profile (SVS), but supports only unstructured value sets (code lists).
- ii. DICOM Part 19 defines NativeDicomModel XML encoding of DICOM objects and fragments. This approach could be used to transport ROI Template contents.
- 125
- iii. Future of the DICOM CT Imaging Protocol is not certain (contact Kevin O'Donnell regarding its status after the upcoming Vienna meeting). **ACTION 150123**: Uli, Christof to contact Kevin re status of CT Image Protocol at Mar 2015 WG-06 mtg.
- iv. Defining an XML schema via a NEMA Standard may be easier than getting a DICOM Supplement approved. Next steps:
 1. Define Data Types
 2. Add Publisher, Version to Dictionary and Protocol objects.
- 130
- v. Walter will review Use Case later in the week.

[Adjourn for the day 1/19 at 5:30pm]

135 [Resume 1/20 at 8:30am]

f. Topic 4: ICT Test Tools

140 i. Bruce has distributed Test Tool results from Oct 2014 to vendors. Responses regarding the source of problems (Test Tool vs. Product) must be received to validate results of the 2014 Fall Connectathon. Some detailed Test Tool results are still missing for MMRO and BRTO profiles. Tests could be re-run with corrected Test Tools if DICOM objects are available. Requests for data have been sent to vendors.

145 ii. Outstanding issue with Fall 2014 Connectathon results – All Test Tool issues have now been resolved or entered on ihe-ro-test-tools Issue Tracking.

1. BRTO – Procedure C-STORE RQ reported missing by Test Tools. (GeomPlanner, ...) fixed but not yet released. To be updated on issue tracker.
2. BRTO – Block Seq present, but NULL (zero length) – not legal DICOM
3. BRTO – Final Cumulative Meterset Weight present in Geometric Plan
- 150 4. MMRO – Registrator Study Date and Time indicated as incorrect by Test Tools (issue #12)
5. MMRO – Reference Image not in CT Series (DICOM data not available to verify)
6. ARTI – Consumer Actor Test Tool results were not submitted
- 155 7. ARTI – Source to Wedge Tray distance provided for Motorized Wedge (not needed)

iii. Current state of tools is displayed on ihe-ro.org.

1. Status (New, Started, Review, Fixed, Verified, Rejected, ...) is indicated for each issue.
 - 160 a. Released versions that address issues should be noted in Comment.
 - b. Reporter to update status to Verified when released version has been checked. (For issues entered by ICT, this step will need to be done by ICT, since they are the owner of the issue.)
- 165 2. New Issue entry was shown. Issue entry includes Summary, SW Version, Issue description, Reporter, Status, Attached File, Email notification. Access requires gmail account. See the link to Google Code ihe-ro-test-tools thread on the ihe-ro.org Test Tools page.
3. Issue tracker was well received by TC vendors.

iv. Data Issues that still need Resolving

- 170 1. Bruce owes MLC plans for ARTI (replace Varian V80 with V120) for six plans (MLC Static, MLC Arc, Conformal Arc, Step-And-Shoot, Sliding Window, IMAT/VMAT). Also need to replace Elekta Beam Modulator with Versa HD (IHE_ELVHD) in one dataset (Motorized Wedge). All source data are available for this work. Issues have been entered on ihe-ro-test-tools tracker.
- 175 2. Test data are also needed for TPPC and TDPC Profiles. Testing on TPPC to begin in Spring 2016. Data for these profiles are expected to be created from ARTI data by hand editing.
3. IHE-RO TC to determine schedule for testing new profiles

v. Assignments

- 180 1. ACTION 141201 * Vendors to submit outstanding Test Tool data to Bruce no later than Feb 6.
2. ACTION 150105 Bruce to report on final Test Tool results the week of Feb 15 (to allow TC to formally vote release of results).
- 185 3. ACTION 150106 Bruce to update ARTI MLC and Motorized Wedge plans for Test Tool datasets.

4. ACTION 150107 Bruce to request that Harold Beunk and Walter Bosch be added to IHE Testing and Tools call list.

g. Topic 21:ROI Templates (continued)

190 i. Alternatives for ROI Template Data Standard

1. AAPM IT Work Group – review, publish white paper? AAPM could draft a joint IHE/AAPM document endorsing an (XML) format for ROI Template.
2. Possible next steps:
 - 195 a. Evaluate profile draft Use Case
 - b. Add DICOM attribute VR, VL specifications
 - c. Create XML Schema

ii. Possible Use Cases

- 200 1. Standardized Segmentation
2. Prescription Anatomy
3. Plan / Dose Evaluation

iii. ROIT Profile to focus on Segmentation

- iv. ACTION 150108 Scott to present to AAPM IT WG and ask for assistance in co-development. (Possible work item for submission to TPC). Scott report in May 2015.
- 205 v. ACTION 150109 Walter to add Publisher, Version and DICOM VR/VL info to ROIT Profile content. (cf . DICOM CT Protocols) for Mar 2015 TC Tcon.

h. Topic 5: TPPC

i. Christof reviewed open issues in the TPPC Profile draft

- 210 1. Single conceptual plan that is represented by multiple RT Plan instances – waiting for Mar 2015 meeting of DICOM WG-07
2. Treatment Time in RT Plan: Should DICOM CP1331 be incorporated? – This is a topic for TDPC, not for TPPC (Tabled).
- 215 3. Referenced Dose Reference Sequence – Is a TPS required to consume this value? This value may be used (e.g., for composite plans) or may be ignored (for plan revision). Remove requirement for TPS consumers.
4. DECISION 150102: When usage requirements for attributes differ for producer and consumer Actors, the requirements are to be denoted as <producer>/<consumer>, where <producer> is the requirement for producers, and <consumer> is the requirement for consumers.
- 220 5. Correct error in the direction of arrow for Beam Retrieval (TPPC-yy) in Treatment Replanning Process diagram.
6. Update Source to External Contour Distance and Average Beam Dose Point Source to External Contour Distance attributes per DICOM CP1434 (currently in LB), once the CP is approved.
- 225 7. Update all consumer/producer pair requirements to producer/consumer pairs.

i. Topic 7: Brachytherapy Profile – A140917

- 230 i. Uli has provided a proposal for development of a content Profile for Brachytherapy Planning and Delivery to the chairs of the Brachytherapy sub-group. Development of this profile is anticipated in collaboration with the Brachytherapy sub-group of DICOM WG-07.
- ii. Approval for a Brachytherapy Profile proposal is needed by IHE-RO Planning Committee is needed to allocate TC resource for development of this profile.
- 235 iii. MOTION: IHE-RO TC encourages the development of a Profile and Supplement for Brachytherapy Planning and Delivery. Approved unanimously by a quorum of the IHE-RO TC.

iv. A similar approach is anticipated for an Ion Therapy Profile/Supplement.

[Lunch break 12:30-1:30 pm PST]

240 j. IHE Admin

- i. **ACTION 150110** Bruce to contact Crystal Carter to add RaySearch as a voting member on the TC roster.

245 k. Topic 8: QAPV Review

- i. Chris reviewed QAPV Supplement (vers. 1.19, Oct 15, 2014)
1. Major changes involve removing material that has been placed in DICOM Supplement
 2. Consistent requirements for items in Dose Reference Sequence and Referenced Dose Reference Sequence
- 250 ii. DICOM Draft Supplement 185 (vers. 4) was reviewed and updated. This supplement defines Quality Assurance evaluation results for any RT information object. This completes Action item 140904.
1. Use generic language for “evaluator” and “evaluated RT object”.
 2. Add “Level Of Concern” attribute with three Enumerated Values: CRITICAL, MINOR, NONE. (replaces Critical Issue and Finding Assessment attributes).
 3. Change IOD name to RT Object Evaluation Results”
 4. Numerous changes incorporated in vers. 5 of draft Supplement 185.
- 255

260 l. Topic 6: DICOM Content Definitions (TF Vol 3, Ch 7) – Action 140513

- i. Uli presented a proposal for DICOM Content Template (rev. 10.3) consisting of four parts:
1. Conventions
 2. IOD Definitions
 3. Module Definitions
 4. Service Definitions
- 265 ii. The DICOM Content library could simplify the management of content requirements for IHE-RO Profiles. ARTI and other Plan Content Profiles could be greatly simplified by restructuring with this approach, i.e., by combining transactions with context-specific (beam-type) requirements for DICOM content.
- 270 iii. Next step is to discuss DICOM Content Template proposal with Mary Jungers and members of IHE International Board Operations Committee.
1. **ACTION 150111**: Uli to clean up DICOM Content Template based suggestions of TC and create an example of an instantiated document for Mar 11.
 2. **ACTION 150112**: Bruce to present updated DICOM Content Template proposal and instantiated example to IHE Operations Committee in March 2015.
- 275

280 iv. Review of Vol. 3, Chapter 7.1 Conventions

[Adjourn for the day 1/20 at 5:30pm]

[Resume 1/21 at 8:30am]

285 m. Topic 3: Prescription in RO (RXRO)

- i. Sven reviewed a draft RXRO supplement as a straw man to evaluate Use Cases (changes captured as *ihe-ro_rxro_v1.1.doc*). Requirements for modules and attributes of the RT Physician Intent IOD for the Simple Prescription Transfer were discussed.

- 290 ii. What are the implications of Use Case categories for Producers and Consumers? Do these categories define the *minimum* content, or do they also limit which attributes can be included in a prescription? For prescriptions, whatever content is included by a producer, must be displayed and acted on by the consumer.
- 295 iii. Additional points of discussion included the following:
1. Is the RT Treatment Phase Intent required for the Simple Prescription Transfer Use Case? Should it be allowed to be present?
 2. How is the meaning of Prior Dose handled? (e.g., previous course vs. previous phase).
 3. Prescription becomes binding at the point at which it is approved. Currently, this is at the TMS (or EHR). Approval status is *not* included in the RT Physician Intent IOD.
 - 300 4. Approval of Prescription, Segmentation, Registration, and Plan are separate and distinct. Plan Approval may imply approval of upstream Prescription, Segmentation, and Registration (if any).
 - 305 5. Dosimetric Objective codes for the Simple Prescription Transfer Use Case are to be limited to Prescription Dose, Maximum Dose, and Maximum Mean Dose.
- iv. **ACTION 150124**: Scott to present Use Case/Scope to IHE-RO Steering Committee at Jan 30 meeting.

310 n. Topic 11: TDW-II Update

- 310 i. The TC decided in Oct 2014 to retire the TDW Profile at the end of 2015, revise TDW-II with explicit handling of the Beams Delivery Instruction, and to reference Consistent Dose for External Beam (CDEB) and Treatment Delivery Plan Content (TDPC) Profiles.
- 315 ii. The TDW-II Profile includes the following content:
 1. Treatment Plan for Delivery, Consistent Dose content
 2. Beams Delivery Instruction
 3. Unified Worklist C-FIND Requirements for Treatment Delivery
- 320 iii. **ACTION 150113**: Bruce to (a) draft a CP to move DICOM General Module content definitions from TF Appendix to Volume 3, Chapter 7 using Uli's Draft of DICOM Content Templates and (b) merge additional definitions from TDPC into the TF for Mar 1.

325 o. Topic 16: Treatment Delivery – Plan Content (TDPC)

- 325 i. Uli reviewed v1.4 of the TDPC Draft Profile (*IHE-RO_TDPC_v1.4.doc*)
- 330 ii. Coupling between TDW-II and TDPC Profiles was discussed. As structured, the TDW-II Profile Draft references TDPC for RT Plan content for conventional External Beam Photon and Electron plans. All Plans for TDW-II must also conform to CDEB content requirements. Content specifications could be merged into the TDW-II Profile and this was discussed.
- iii. **DECISION 150103**: The consensus of the TC is to keep workflow (TDW-II) and content (TDPC, CDEB) Profiles separate.
- iv. The single Transaction in this Profile is a transfer of plans between producer and consumer Actors. This transfer was simplified to a simple C-STORE.

335 [Lunch break 12:30-1:30 pm PST]

- v. General Series and RT Series requirements for Date and Time is Type RC+ (Must be used if present; If the producer creates a new Series, must be present).

- 340
- vi. Equipment Module – Manufacturer and Model must be present. Add requirement that Software Version be present.
 - vii. RT Prescription, RT Fraction Scheme, and RT Beam Module content is covered by CDEB Profile, no additional requirements to be included in TDPC.
 - viii. Add requirement to display shielding device, setup device, setup technique, etc., if present.
 - 345
 - ix. Patient Support positions and angles: TPPC conditions apply.
 - x. Tolerance Tables Module – Tolerance Table Label to be displayed, if present. Tolerances to be used if present and applicable.
 - xi. ACTION 150143: Uli, Bruce to draft TDPC Profile cast in Content Template format – out for email review Feb 15, due Mar 1.
- 350

p. Safety Components of IHE-RO Profiles

- i. Suggestions for March 1 submission to PRO – How does IHE-RO promote patient safety?
 - 1. Planning Committee to provide introduction and conclusion
 - 355
 - 2. Accomplishments since 2010 Red Journal publication
 - 3. Prevents misinterpretation of data
 - 4. Promotes predictable workflows
 - 5. Reduces workarounds, manual processes.
 - 6. Avoid distractions – allows clinicians to focus on the quality of patient care.
 - 360
 - 7. "let the computer what it does best"
 - 8. Lessons learned during Connectathon (Bruce)
 - 9. Review TG-201 draft for ideas
 - 10. Patient ID process built into profiles, tested at Connectathons
 - 11. QAPV addresses treatment delivery safety
 - 365
 - 12. MMRO revised (MMRO-II) to address reliable identification of Frame of Reference
 - 13. Consistent interpretation, implementation of data standards
 - 14. safety considerations built into profiles
 - 15. Promotes trust and cooperation toward a common goal among RT
 - 370
 - manufacturers
 - 16. Common technology approaches speed/ease cross vendor issue resolution, allowing fewer interruptions to treatment
 - 17. patient ID tested at Connectathon
 - 18. Specifics: dates, test tools, connectathon
 - 375
 - 19. References: Santanam, et al. QAPV, IJROBP
- ii. ACTION 150125: Chris to draft QAPV content for PRO manuscript for Jan 30.

q. Topic 15.5: DCOM Update

- i. The DCOM Utilize Spatial Registration [RO-13] transaction was to be updated to Spatial Registration Retrieval [MMRO-III-2]. However, MMRO-III Profile is in Public Comment and cannot yet be referenced.
 - 380
 - ii. ACTION 150114: Walter to update DCOM Utilize Spatial Registration [RO-13] transaction to Spatial Registration-II Retrieval [MMRO-II-2]. Reference: RO-18. For Mar 2015 TC Tcon.
- 385

r. Topic 9.5: Discussion of request from ASTRO regarding products that implement IHE-RO Profiles

- i. Need to clarify “products that implement IHE-RO Profiles.” Released Products? Claimed adherence? Verified adherence at Connectathon? How may test partners?

- 390
- ii. How many products were brought to a Connectathon? How many passed, but could not present a full Integration Statement? How many Integration Statements?
 - iii. IHE-RO has been cited by MITA/Advamed, NEMA, and the FDA as a means for demonstrating interoperability in product filings.

395 [Adjourn for the day 1/21 at 5:40pm]
[Resume 1/22 at 8:30am]

Topic 9.5: Discussion of request from ASTRO regarding products that implement IHE-RO Profiles (continued)

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- iv. **ACTION 150115** : Bruce to extract vendor/product statistics from Connectathon results and forward to Chris by Tues 1/27. Done.
 - v. **ACTION 150116**: Chris, Bruce, Scott to draft response to ASTRO by Jan 30.
 - vi. **ACTION 150117**: Vendors to send Chris a list of tested and/or released products manufactured to IHE-RO Profile specifications by Jan 28.

405 s. Topic 9: Connectathon Spring 2015

- i. Profiles to be tested
 - 1. Formal testing
 - a. ARTI
 - 410 b. BRTO
 - c. MMRO-II
 - d. DCOM
 - 2. Informal testing
 - a. TDW
 - 415 b. TPPC
 - c. TPIC?
- ii. Preparation (ACTIONS):
 - 1. **ACTION 150130**: (Chris, Crystal) Registration form to be ready by Feb 13th
 - 2. **ACTION 150131**: Rickard to provide Info on travel/lodging ready by Mar 1st
 - 420 3. **ACTION 150132**: Bruce, Scott, Walter to update planning instructions by Mar 1st
 - 4. **ACTION 150133**: Crystal to announce registration, travel/lodging by Mar 9th
 - 5. **ACTION 150134**: Vendor to register by April 1st
 - 425 6. **ACTION 150135**: Walter to distribute Test data and planning instructions by April 15th
 - 7. **ACTION 150136**: Vendors to prepare Producer Actor data for start of Connectathon May 4th
 - 8. **ACTION 150137**: Walter to create test tracking documents for start of Connectathon May 4th
- iii. Meeting site: any issues?
 - 1. Networking, power infrastructure to be provided by host
 - 2. **ACTION 150118**: Mikael to investigate Internet access for (cloud-based) test systems for Mar 15.
- 430 iv. Ion Sub-group Informal Testing
 - 435 1. Informal testing for RT Ion Plan exchange in concert with IHE-RO Connectathon? May involve additional 4-5 vendors, 10-15 individuals.
 - 2. **ACTION 150119**: Uli to recommend to Ion Sub-group to conduct informal testing of RT Ion Plan exchange in parallel with the IHE-RO Spring 2015 Connectathon in Stockholm. (Ion sub-group members to register as observers

- 440 and sign Connectathon Participation Agreement.) Response expected after Feb
3rd 2015 Ion Sub-group T-con.
- v. Connectathon Test Archive
 - 1. Brainlab has graciously agreed to provide a test Archive instance for the Connectathon.
 - 445 vi. Judging prep
 - 1. **ACTION 150120** Walter to arrange Test Committee (Bruce, Scott, Walter, ...) T-con for mid-Feb to prepare the Connectathon test plan and documents (see ACTION items 140507, 140508, 140509) by Feb 7.
 - 450 t. DPDW Profile Status
 - i. Uli provided an update on the status of the DPDW Profile. Tomas Schwerer is now the chair of the DPDW sub-group
 - ii. A face-to-face meeting of the DPDW group is planned for the week of March 23-27. This is the week following a WG-07 meeting and concurrent with a DICOM WG-06
 - 455 meeting. It is not yet clear whether there will be sufficient attendance to make this meeting worthwhile.
 - iii. Alternative meeting opportunities include ESTRO (April 24-28, 2015 in Barcelona, Spain).
 - 460 u. Topic 18.5: HIS Workgroup / HIMSS / HL7 next steps – Tabled in favor of CPRO discussion
 - v. Topic 12: Consistent Patient Identification (CPRO)
 - i. Rishabh reviewed Clinical Impact Statement and Profile Draft documents for the CPRO Profile modeled on a Radiology scheduled workflow profile. It uses DICOM
 - 465 Modality Worklist to communicate patient identification between a TMS and an acquisition modality. This is not primarily a workflow profile, but requires patient information and schedule to be present in TMS prior to worklist query.
 - ii. An Order Placer Actor (component of TMS or OIS?)
 - 1. Manages patient identification for registered patients
 - 2. Schedules CT Simulation
 - 470 iii. A related RO-HIS Draft Profile manages the communication and updating of scheduling information between HIS and Rad Onc (TMS).
 - iv. Use Cases
 - 1. Patient registered in TMS in standalone clinic (no communication with HIS).
 - 475 2. Patient registered in HIS. TMS queries HIS for patient ID
 - 3. Patient registered in TMS and updates HIS
 - v. Next steps (Rishabh, Scott, Bruce): query TMS, HIS vendors (Elekta, Varian, Epic, Cerner) regarding what interfaces exist and what solutions are possible.
 - 480 vi. **ACTION 150140**: Review CPRO/RO-HIS status at Feb TC Tcon.
 - w. TDW-II (continued)
 - i. The TDW-II Supplement is to include Content Definitions including Character Sets. Support is to be expanded beyond ISO-IR-100.
 - ii. Content requirements for C-FIND have been moved to section 7.5.1.1.1.
 - 485 iii. Content requirements for RT Beams Delivery Instruction are now in 7.4.2.1.1.
 - 1. The Omitted Beams Sequence is used to specify partial deliveries for continuation of plan delivery.
 - 2. General discussion of references to DICOM Standard *editions* in IHE-RO Profiles. There is some value in identifying the edition of the standard
 - 490 associated with particular transactions, i.e., to identify features supported in the

referenced edition, but the exact relationship between versions of IHE-RO Profiles, editions of the DICOM Standard, and releases of DICOM toolkits is not well-defined.

495 [Lunch break 12:30-1:30 pm PST]

3. Beam Delivery Order / Auto-sequencing discussion – Specified beam delivery order should not be ignored, but may not be deliverable by TDD for technical reasons. (A given beam delivery order may not be feasible, efficient, or safe.) Add condition: “If present should be used if the delivery device allows.”
4. The Fraction Number shall not vary within the BDI Beams Sequence – i.e., only a single delivery fraction number may be specified by a BDI instance.
5. **ACTION 150121**: Chris to review Section 9.5 (Security) in TDW-II by Feb 19.
6. The question was raised whether to include RT Beams Treatment Record in the Consistent Dose in External Beam (CDEB) Profile.

x. Topic 18:Profile Status Review

i. TPPC Discussion

1. TPPC changes relative to ARTI
 - a. Stereo applicators
 - b. Arc beams
 - c. High dose technique
 - d. Average beam dose depth, etc.
 - e. Minor producer/consumer changes
 - f. Distinguish TMS and TPS Actor behavior
2. TPPC Options
 - a. Include dose tracking? (Consistent Dose)
 - b. Restructure using DICOM Content Templates?
3. Project Timeline
 - a. Common modules to be restructured (includes Template Introduction and Sample Profile TDPC)
 - i. Re-factor of Common Modules – (see Action 150113: Bruce, due end of Feb 2015)
 - ii. Draft proposal for Template Format for IHE – (see Action 150111: Uli, out for email review Feb 15, due Mar 1)
 - iii. Draft TDPC Profile cast in Content Template format – (see Action 150143: Uli, Bruce, out for email review Feb 15, due Mar 1)
 - b. Chris to perform CDEB edits by Feb 7 for email review by TC (see Action 150122).
 - c. TPPC – to be reviewed at May 2015 meeting

y. Consistent Dose in External Beam (CDEB) Profile review

- i. Review of draft CDEB Profile document (IHE_Consistent_Dose_DICOM_Content_Profile_1.3.doc)
- ii. Discussion of architecture – Actors?
 1. Consistent Dose Plan Producer (~TPS)
 2. Consistent Dose Tracker (~TMS)
 3. Consistent Dose Record Producer (~TDD)
- iii. Transactions

1. Consistent Dose Plan Storage
2. Consistent Dose Record Storage
- iv. Review of Attribute requirements for CDEB transactions
- 545 v. Profile Option
 1. Support for multiple targets – not supported by all Dose Trackers
- vi. ACTION 150122: Chris to incorporate edits and send out for review at next TC Tcon, due Feb 7.

550 [Adjourn for the day 1/22 at 5:30 pm]
[Resume 1/23 at 8:35am]

z. Topic 14: Treatment Planning – Image Content (TPIC)

i. Uli reviewed open issues with the TPIC Profile

- 555 1. Require Series Date and Time – covered in TDPC.
2. General Equipment – manufacturer, model, SW version are required (R+)
3. Reported Values Origin – no additional requirements
4. Referenced RT Plan – shall be present (was: required if associated with a plan)
- 560 5. Referenced Beam Number – Shall be present if beam reference is known (RC+*).
6. RT Beam Limiting Device Sequence – Shall not be present for DRR, May be present otherwise.
7. The Exposure Sequence needs to be cleaned up. The condition is that it is not present for DRRs is already in standard: remove all conditions referring to DRR.
- 565 8. Image position for non-normal image plane – clarified in DICOM CP 1439.
9. RT Image geometry (angles, etc.) note revised.
10. Requirements for RT Image Instance/Content/Acquisition date and time? Image Content Date, Time required for all images. Acquisition Date, Time required for all acquired images.
- 570 11. Allow Image Type of FLUENCE? Yes. No additional requirements needed.
12. Pixel Intensity Relationship – Request to DICOM WG-06 to remove the necessity to have Pixel Intensity Relationship (0028,1040) present.
- 575 13. Projection of structures on RT Images: use Curve Module (retired) or RT Structure Set (complex).
14. Require use of 16-bit image pixels for DRRs? (Other image types may continue to use 8-bit.) To be reviewed further.
- 580 15. Remove signed image pixels for 16-bit images. (DICOM requires unsigned for 8-bit images.)

580 aa. Topic 15: Treatment Delivery – Image Content (TDIC) –

- i. ACTION 150144: Uli to update RT Image definitions in TPIC and TDIC based on TPIC discussions for Mar 11.

585 bb. Action Item Review

cc. Other business

- i. ACTION 150145: Chris to put Segmentation Profile discussion on agenda for next TC Tcon.

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III. Future Meetings

a. IHE-RO Meetings

- i. IHE-RO EU Connectathon – May 4-8, 2015, TC Mtg May10-13, 2015 in Stockholm (RaySearch Labs)
- ii. IHE-RO NA Connectathon – Sep 21-25, 2015, TC Mtg Sep 27-30, 2015, preferred location is Washington, DC, alternate is Melbourne, FL.
- iii. IHE-RO Meeting at ASTRO – Oct 21-24, 2015 in San Antonio, TX

b. Other meetings through 2015

- i. AAPM July 12-17, 2015 in Anaheim, CA
- ii. DICOM WG-7 Mar 16-20, 2015 Washington, DC
- iii. DICOM WG-7 Jul 15-18 in Anaheim, CA
- iv. DICOM WG-7 Nov 2-6, 2015 location TBD
- v. IHE European Connectathon, Apr 20-24, 2015 in Luxemburg
- vi. World Congress on Medical Physics and Biomedical Engineering, Jun 7-12, 2015, Toronto
- vii. ESTRO Forum Apr 24-28, 2015 in Barcelona – GEC meeting?
- viii. PTCOG May 18-23, 2015 in San Diego, CA

IV. Adjournment – meeting was adjourned at 11:00 am PST.