

**IHE-RO Technical Committee
Face-to-Face
May 09-12, 2016 at 8:30-5:30, May 13 8:30-12:00 ET
St. Louis, MO @ Washington University
The Washington University Radiation Oncology Classroom (Room 202)
4511 Forest Park Ave.**

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

**IHERO Task Force Co-Chairs
Dick Fraass, Ph.D., FAAPM, FASTRO, FACR
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.*

Attendees:

Name	Affiliation	Email	5/9/16	5/10/16	5/11/16	5/12/16	5/13/16
Chris Pauer	Sun Nuclear	chrispauer@sunnuclear.com	X	X	X	X	X
Walter Bosch	Wash. Univ.	bosch@wustl.edu	X	X	X	X	X
Thomas Schwere	Varian	Thomas.Schwere@varian.com	X	X	X	X	X
Sven Siekmann	Brainlab	Sven.siekmann@brainlab.com	X	X	X	X	X
Jim Percy	Elekta	Jim.percy@elekta.com	X	X	X	X	X
Scott Hadley	UMich	swhadley@med.umich.edu	X	X	X	X	
Michael Owens	Reflexion Medical	mowens@reflexionmedical.com	X	X	X	X	X
Bob Pekarek	Accuray	bpekarek@accuray.com	X	X	X	X	X
Hakan MacLean	Raysearch Labs	Hakan.maclean@raysearchlabs.com		T			
Harold Beunk	ICT			T			T
Emily Wilson	ASTRO			T			
Bridgette Koontz	IHE-RO PC			T			
Mark Pepelea	IHE-RO PC/Philips			T			

X = In person T = via Teleconference

Minutes:

I. Call to Order (May 9, 2016 at 9:00 am CDT) – a quorum was declared.

- a. Review Agenda
- b. Other broad topics to add – Agenda was revised and approved without objections.
- c. Minutes from last meetings
 - i. Minutes from IHE-RO TC teleconference 2/16/15 approved without objections on 5/13/16.
 - ii. Minutes from IHE-RO TC teleconference 3/15/15 approved without objections on 5/13/16.
 - iii. Minutes from IHE-RO TC teleconference 4/19/15 approved without objections on 5/13/16.

II. Business

a. Topic 1: Level Set

- i. Updates on IHE-RO activities
 1. Planning Committee
 - a. Election for PC chair
 - b. Transition in ASTRO admin support
 2. Oversight, Steering Committees – Discussion of Connectathon, fees
 3. Domain Coordination Committee – Publication of supplements to Technical Framework
 4. IHE Workflow Based Profiles
 - a. Effort to coordinate development of workflow-based profiles across IHE domains. A joint, educational webinar (two ½ day sessions) is planned to assist profile authors in writing workflow profiles.
- ii. ASTRO
- iii. ROSSI (RO Safety Stakeholders Initiative)
- iv. DICOM WG-7 Update from Uli Busch was reviewed.
 1. Content Assessment Results IOD (Sup 185) – is now in DICOM standard 2016b edition. References Attribute Value Constraint Macro (Sup 121).
 2. Sup 147 is still in reading, down-prioritized. Expected to be approved by end of 2016.
 3. ROI Templates – work item approved, supplement # to be assigned.
 4. CPs –
 - a. Review BRTO-II Public Comments for consistency with CP 1586 (add Seg. Ppty Type Modifier Code Seq to RT ROI Obs Module)
 - b. Check CPs against content profiles issues
 5. Brachy fixing 1st gen functionality
 6. Ion group – work on 1st gen functionality, start work on 2nd gen
 7. Radiation Dose Recording – Sup 191 has been published for public comment includes new TIDs for imaging dose.
 8. Sup 192 Instance Approval Storage is in development in WG-06.
- v. AdvaMed and Standards Efforts
 1. RT2-Radiation Therapy Readiness Check – a draft was reviewed by the TC.
 - a. Chris has distributed a copy of the draft standard and comment form to TC meeting attendees.
 - b. Some concern expressed about specificity of requirements referencing particular IHE-RO profiles. Suggestion to reference IHE-RO profiles as “___ Profile or successor”.
 2. RT3-Beam Model Standard – comparison of machine models from machine to machine. Will add table of energies, filter type, ... other parameters to assure the model matches the machine. Use case: publication of device specifications (geometry and capabilities) of treatment delivery devices for TPS, indication of what is commissioned (“picture of the world”),... Work in progress.

- 90 3. RT4-(potential) Standard for Machine, Patient QA – scope of work is not clear at this point.

b. Topic 2: Profile Priorities for the Year

- 95 i. **Treatment Delivery Device Integration** is well covered by current content (TPPC, TPIC, TDPC, TDIC) and workflow (TDW-II, IPDW, DPDW) profiles.
1. Quality Assurance Data Collection is not well supported by standards. E.g., machine log (large files, proprietary formats) and EPID data. Also, services for access of patient and machine QA data are not always available.
- ii. **Radiation Oncology Workflow Exchange (ROWE)**
- iii. **User Case Anonymization**
- 100 iv. Brachytherapy
- v. Other enabling profiles: Query/Retrieve, ROI Templates

c. Topic 3: Profiles in Public Comment

- 105 i. The BRTO-II (first review) and QAPV (second PC review) profiles are in PC through May 22, 2016.

d. Topic 4: Discuss 2016, Connectathon / Fees update

- 110 i. A targeted message from ASTRO has been sent out to non-participating vendors regarding IHE-RO fees, benefit to the company, test participation, and fees.
- ii. It is expected that there will be a full Connectathon in October 2016.
- iii. Profiles/Actors to be tested will be discussed later this meeting.

e. Topic 5: Discussion of IHE-RO Session at AAPM

- 115 i. Scott Hadley, Chris Pauer, Walter Bosch, Tony Siebert
- ii. Clarification: this will not be a SAMs session.
- iii. The challenge of communicating the value of IHE-RO

f. Topic 5.5: IHE Webinar Assist – Chris has contacted Mark Pepelea, cc Scott.

120 [Lunch break 12:25-1:25pm 5/9/16]

g. Discussion with Steve Moore (IHE NA Connectathon Test Manager)

- 125 i. EHR systems and RO
1. EHR vendors interact via Clinical Document Architecture (CDA), an XML structured document – current, stable technology
2. HL7 FHIR (HTTP RESTful resources) is a newer, alternative approach
3. The Patient Care Coordination domain may be a good source of information for RO-EHR communication.
4. Cross-domain Document Sharing (XDS) supports sharing of documents with regional registries. This mechanism is also being used to support workflows by replacing a document with updated version(s).
- 130 ii. Cost for Participation in IHE Connectathon
1. Testing fee structure: \$8700 (1st system) + \$4700/system (add'l system) + \$500/person (15% discount for first Connectathon)
- 135 2. Venue is Cleveland Convention Center
3. IHE domain involvement requires IHE membership, but no additional fees
- iii. Fan In/Fan Out
1. Finding an adequate number of test partners is a problem for many domains
- iv. How to recognize/reward vendors coming back for re-test

- 140 1. Incentive to do “supportive testing”? Marketing credit in the form of test results.
- v. Marketing the IHE
- 145 vi. Discussion of Approaches to Testing EHR Integration
1. High cost of participating in both RO and North American Connectathons
 2. Possible off-line testing of (e.g., CDA) content?
 3. Registration for NA Connectathon starts in August.
- vii. IHE-USA contact is Selena Roth (HIMSS staff, Chicago).
- viii. IHE-Europe contact (technical project mgr.) is Eric Poisseau (Kereval)
- 150 h. Topic 5.7: BRTO-II comments
- i. BRTO-II updates the BRTO Profile:
1. the requirement to merge multi-series CT images is removed
 2. the role of the CT Simulation planner is removed
 3. mandatory import of a CT Sim plan is removed
 - 155 4. mandatory ability to handle a variably spaced dose plane is removed
 5. High resolution contours are added as an optional transaction to handle small structure definitions
 6. The number of contours per structure per slice is now 1000 (up from 100).
 7. Decubitus (shoulder resting) planning is added as an *optional* feature
 - 160 8. Ion (particle) beam dose distributions are added to allow for Ion dose display on a dose viewer.
- ii. Additional Actor: Automated Contourer (retrieval of Structure Sets or Off-slice Structure Sets is not required)
- 165 iii. Discussion of support for DECUBITUS and *FP patient positions. Should these be *options* for BRTO-II Actors? What about Image Orientation (Patient) values for prone patient positions? Head-first / feet-first flip?
1. Patient Position (0018,5100) R+ Attribute Note: Shall be one of {HFS, FFS, HFP, FFP, HF DL, HFDR, FFDL, FFDR} in accordance with Option:
 - a. Cranial (HFS, HFP)
 - 170 b. Prone/Supine (HFS, HFP, FFS, FFP)
 - c. All + Decubitus (HFS, HFP, FFS, FFP, HF DL, HFDR, FFDL, FFDR)
 2. Should Planners be required to support HF/FF flip of images? Consensus is to specify Option:
 - 175 a. Support HF/FF flip (of plan with respect to scan)
 - b. Does not support HF/FF flip

[Adjourn 5/9 at 5:20pm]

[Resume 5/10 at 8:30am]

- 180 i. Topic 7: Discrete Positioning and Delivery Workflow Supplement
- i. Thomas Schwere reviewed the current draft (2015-01-23, Version 1.14 – Draft 1) of the DPDW Profile (contains four Profiles). The last F2F meeting to work on this profile was in 2015 in Malaga, Spain. Some diagrams from that meetings have not yet been incorporated in the draft.
- 185 ii. The Supplement consists of four Workflow Profiles:
1. DPDW 1 = workflow frame: open/close session, notifies device actors
 2. DPDW 2 = positioning
 3. DPDW 3 = delivery
 4. DPDW 4 = delivery and monitoring
- 190 iii. The PPDS (Patient Position Definition System) – maps registration (4x4 matrix) to correction instructions.

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- iv. An extension of UPS Progress Information Sequence has been proposed to add a Procedure Step Progress Parameters Sequence to provide a direct indication of Patient Position Monitoring Readiness: {READY, UNAVAILABLE}. If this extension is not accepted by DICOM WG-06, a private service could be used instead. A white paper has been drafted to help in development of a CP for this extension.
 - v. The Treatment Session Manager interprets a (single) Beams Delivery Instruction and decomposes the treatment session into UPS/instructions to perform imaging, registration, correction, delivery, monitoring tasks.
 - vi. An “Atomic Unit of Work” is a task that does not require cross-actor interaction (when preformed as intended). An AUW is represented with a set of UPS/instructions.
 - vii. To start a treatment session, DPDW Actors subscribe on Workitem Code = “Treatment Session Orchestration”. TSM issues new UPS to start session. To close session, the TSM set “Treatment Session Orchestration” UPS to COMPLETED. The TSM knows all the Actors (per configuration) and must wait until all (relevant) Actors have subscribed.
 - viii. Add handshake between TSM and TDD: TDD issues N-SET, TSM returns N-SET response when PPMS is ready (“permit treatment delivery”). Alternatively, delivery can be CANCELLED. With this approach, the TDD does not need to know that monitoring is enabled.
 - ix. The DPDW group teleconference is held on the last Tuesday of each month at 11:00am ET.
 - x. Thomas will incorporate results of the discussion for review on Thursday 5/12.
- j. Topic 6: CDEB review for Public Comment (Consistent Dose for External Beam radiation)
- i. Chris Pauer reviewed version 1.8.6 (Jan 24, 2016) draft of the CDEB profile. (Accepted changes from Jan TC F2F meeting.)
 - ii. The Supplement is a Content Profile. The TC reviewed Volume 3 DICOM Content Module requirements.
 - iii. **DECISION**: CDEB Profile version 1.8.6 (with corrections 5/10/16) was approved for Public Comment without objection.
 - iv. **ACTION 160501**: Chris to prepare CDEB document for publication and forward to Mary Jungers for posting on IHE wiki.

[Break for lunch 12:25-1:25pm 5/10/16]

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- k. Topic 7.5: Anonymization
 - i. Jim Percy reviewed DICOM Sup 142 (D. Clunie 2010 Rio de Janiero presentation)
 - 1. Use cases include teaching files, remote equipment servicing, clinical trials
 - 2. Sup 142 Basic Profile
 - 3. D. Clunie’s DicomCleaner application demo
 - 4. The IHE-RAD TCE was discussed.
 - 5. **ACTION 160506**: Jim and Walter will explore adaptation of this Profile for RT Use Case(s).
 - l. Reflexion Medical Introduction: Michael Owens, Sam Mazin
 - i. PET/CT biologically-guided (real-time) RT system
 - ii. IMRT, IGRT, BgRT
 - iii. PET Inherent spatial resolution (positron drift) ~2mm
 - iv. High temporal resolution
 - v. Compact 6MV linac, gantry rotation ~60rpm
 - vi. “Shoot back” at locus of PET disintegration
 - m. Topic 8: Query/Retrieve – no update at this time
 - n. Topic 9: ROI Template

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- i. Walter reviewed status of the ROI Template Profile (rev 2016-0509a)
 - ii. “Template” is overloaded: need new name! ROI Dictionary?
 - iii. Parallel effort: MIWS (Medical Image Webapp Software) group – David Clunie, Daniel Rubin, Dan Marcus (Hackathon 5/23-27 at BWH, Boston)
 - iv. Comments
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1. Consider adding *Language* attribute.
 2. Add new entries in Volume 3 Content Definitions
 - a. 7.3.8 ROI Dictionary IOD
 - b. 7.3.8.1 ROI Dictionary IOD for General Use
 - c. 7.3.8.1.1 ROI Dictionary IOD
 - d. 7.4.14 ROI Dictionary Module
 - e. 7.4.14.1 ROI Dictionary Module xxxxxx
 - f. 7.4.14.1.1 ROI Dictionary Module xxxxxx Base Content
 3. Insert attribute requirements at 6th level (see e.g., TPPC, BRTO-II)
 4. **ACTION 160507**: Walter to re-format the ROI Dictionary Profile draft document using BRTO-II, CDEB as a guide.
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- o. IHE-RO Planning Committee Chairs - TC Call
 - i. Priorities for Profile development
 1. Treatment Delivery Device Integration
 2. Radiation Oncology Workflow Exchange
 3. Anonymization
 4. Brachytherapy – Content – DICOM sub-group is working on this
 5. Survivorship Care Plan – export data for import data into EMR
 - ii. Webinar Assist – last presentation was in 2011. Audience? Mark Pepelea to confirm.
 - iii. Connectathon scheduled for Oct 17-22, 2016.
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- p. Topic 10: Deformable Registration
 - i. Discussion of deformable registration Profile Actors:
 1. DSRO Producer/Consumer
 2. Deformable Registrator, Contourer, etc.
 - ii. **ACTION 160502**: Scott to contact Kristy Brock at U. Michigan regarding the DSRO questions:
 1. How do DSRO applications exchange information?
 2. How does one validate DSRO producers? consumers?
 3. Phantoms and/or datasets for validation, testing?
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[Adjourn 5/10/16 5:20pm]

[Resume 5/11/16 8:30am]

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- q. Topic 11: Next Steps on Treatment Delivery- and Treatment Planning Image and Plan Content Profiles – The TC reviewed content Profiles including TPPC, TDPC, TPIC, and TDIC.
 - i. TDIC (version 1.1_ti 2/22/16)
 1. The scope of this profile includes patient position verification images acquired during treatment positioning and delivery
 - a. RT Image in Delivery State – 2D projection images (kV, MV)
 - b. CT Image in Delivery State – CT image
 2. Discussion of extending scope to MR, PET, etc. images. These would include modality-specific requirements. Consensus of the TC is to include these later, possibly as CPs.
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3. Discussion of requirements for RT Image Attributes

- a. Image Type (0008,0008) – Third value is PORTAL, RADIOGRAPH, or FLUENCE.
- b. Referenced Beam Number (300C,0006) *<required unconditionally>* i.e., **R+***, since it is expected that all RT Images acquired during positioning and delivery can be associated with a Beam.
- c. Fraction Number (3002,0029) – *<remove IHE-RO requirements>* It may be difficult to obtain this information and/or ambiguous, i.e. images related to more than one fraction.
- d. Start Cumulative Meterset Weight (300C,0008) and End Cumulative Meterset Weight (300C,0009) – Shall have a value *for images acquired while beam was being delivered.*
- e. Primary Fluence Mode Sequence (3002,0050) – *Shall contain the Primary Fluence Mode used for the acquisition of the image.*
- f. Diaphragm Position (3002,0034) - *<remove IHE-RO requirements>*
- g. Beam Limiting Device Sequence (300A,00B6) - *<remove IHE-RO requirements>*
- h. Table Top Pitch Angle (300A,0140), Table Top Roll Angle (300A,0144) – **R+** *Shall contain the value used for the acquisition of the image.*
- i. Table Top * Position – **R+** *Shall contain the value used for the acquisition of the image.*
- j. Attributes listed below occur both at the Top level of RT Image and within the Exposure Sequence (3002,0030). Values within the Exposure Sequence override those at the top level. *They are now Required (R+) at the top level. “Shall contain the attribute value in the coordinate system as specified by DICOM.” IHE-RO (TDIC) requirements for RT Image are removed for these attributes within the Exposure Sequence.*
 - i. Gantry Angle (300A,011E)
 - ii. Gantry Pitch Angle (300A,014A)
 - iii. Beam Limiting Device Angle (300A,0120)
 - iv. Patient Support Angle (300A,0122)
 - v. Table Top Pitch Angle (300A,0140)
 - vi. Table Top Roll Angle (300A,0144)
 - vii. Table Top Vertical Position (300A,0128)
 - viii. Table Top Longitudinal Position (300A,0129)
 - ix. Table Top Lateral Position (300A,012A)
- k. Isocenter Position (300A,012C) and Patient Position (0018,5100) are **R+** “Shall have a value”

4. Document saved as rev 1.1_CP. Thomas has reviewed “Note 1” references to draft replacements.

ii. TPIC (version 1.1_ti 2/22/16)

- 1. The scope of this profile includes 2D images (RT Image), including DRRs or Portal images used as reference for treatment positioning, typically produced by a TPS.
- 2. Revision 1.1 of this profile was reviewed and revised by the TC.

[break for lunch 12:30-1:30pm]

3. For DRRs, RT Image geometry (Isocenter, magnification, Patient Position) are derived from Beam parameters (if beam is referenced) or from user input. For Portal Images, the image geometry parameters come from acquisition.
4. Pixel Intensity Relationship (0028,1040) *Shall be present to enable the Pixel Intensity Relationship Sign (0028,1041) attribute to be present.* <Remove IHE-RO requirements for Pixel Intensity Relationship Sign (0028,1041)>
5. Change RT Image Label to type **D**; RT Image Description to type **O**.
6. Change Image Type note to specify *third value* as DRR, SIMULATOR, PORTAL, or RADIOGRAPH. <Removed FLUENCE.>
7. X-Ray Image Receptor Translation (3002,000D) and X-Ray Image Receptor Angle (3002,000E) set to type **O+**.
8. <Remove requirements for Source to Reference Object Distance (DICOM Type 3)>
9. Table Top Eccentric Axis Distance (300A,0124) and Table Top Eccentric Angle (300A,0125) are **O+** *If present, shall be 0.*
10. Document saved as rev 1.1_CP.

iii. TPPC (version 1.1_pc 1/26/16)

1. The scope of this profile includes RT Plan transfers TPS→TPS and TPS→TMS.
2. The possibility of adding a tomotherapeutic plan (DICOM 1st Gen) as a VMAT-like TPPC Actor was discussed. A small number of changes would be needed to accommodate tomotherapeutic plans:
 - a. Represent plan with 2 CP for each MLC leaf change (sequentially ordered).
 - b. Primary Dosimeter Unit would need to allow Minute
 - c. Gantry Rotation Direction would need to allow NONE for “Tomo-Direct” mode
 - d. Isocenter Position would need to be non-constant (also Table Top Longitudinal Position would need to change).
 - e. A new “Control Point Fixed Attribute List with Moving Table” section will be needed.
3. Consensus that this would require a new Producer/Consumer pair, new TMS option and new Store/Retrieve Transaction pair.
4. **ACTION 160503**: Bob to draft CP for Tomotherapeutic Beam (Sven and Michael to review)
5. Document saved as rev 1.1_CP 1/26/16. Sven will review all existing Beam Type sections to add constant Isocenter Position constraints.

[Adjourn 5/11 at 5:30pm]
[Resume 5/12 at 8:35am]

- r. Topic 12.5: Review Isocenter Changes in TPPC – The TC confirmed that the “constant isocenter” requirement is to be added to all existing beam types in TPPC. (This constraint is to be relaxed for the proposed Tomotherapeutic Beam Actors.)
- s. Topic 12.6: Review edits in TDIC – Thomas reviewed changes in the TDIC document (revision 1.2_CP).
 - i. Document saved as rev1.3 and uploaded to the wiki.
- t. Topic 13: QA Workflow Initial Review – Chris

- 400 i. QA Workflows discussed
 - 1. Pre-treatment QA: Independent dose calculation, comparison to approved plan dose
 - 2. Post-treatment delivery QA: was delivered dose what was to be delivered?
 - 3. Machine QA: Winston-Lutz isocenter test, picket fence, ...
- ii. Lack of interoperable exchange of data is an impediment to efficient QA.
- 405 iii. QAW Supplement contains two Profiles:
 - 1. QAPA – QA Planning Analysis based on inputs (RT Plan, Planning images, RT Structure Set, RT Dose) from QAPA Planning Data Provider.
 - a. Discussion of possible scope for QA of plan artifacts (image, structure, plan, dose):
 - 410 i. Plan analysis
 - ii. Machine
 - iii. Phantom-based (machine or patient-specific)
 - iv. Patient-specific
 - v. Clinical trial protocol compliance analysis/review
 - vi. Knowledge-based plan analysis
 - 415 b. Actors:
 - i. Analysis Performer
 - ii. Data Supplier
 - iii. Session Manager
 - iv. Data Store
 - 420 c. Use Cases:
 - i. User invokes Planning Analysis manually, either during planning or when plan is finalized
 - ii. Driven by a Planning Session Manager
 - 425 iii. “Dropbox” model – Triggered by storage of data from a Planning Data Supplier – need to consider how to trigger analysis (Storage Commitment?, Key Object Selection?, ...)
 - iv. UPS driven approach from Data Supplier
 - 2. QADA – QA Delivery Analysis based on both Planning artifacts and Delivery artifacts, e.g., Beams Treatment Record, RT Image, etc.
 - 430 a. Adds Treatment Data Supplier to Actors from QAPA
 - b. May want to add “QA” in *Treatment QA Session Manager* Actor name to distinguish from DPDW Actor
 - 435 c. Use Cases:
 - i. User invoked
 - ii. Session Manager invoked (Managed Workflow Delivery Analysis) – like QAPV workflow model
 - iii. “Dropbox” model – triggered by storage of data from Delivery Data Supplier
 - 3. Open questions
 - 440 a. Do we need a QA instruction information object?
 - b. Will the DICOM Sup 185 Content Assessment Results IOD work for reporting QA results?
 - 4. Chris will continue to work on the profile draft.
- 445 u. Topic 14: Prescription Profile (RXRO)
 - i. Sven reviewed the status of the RXRO profile draft (rev 1.4)
 - ii. This profile is based on DICOM Sup 147

- iii. Discussion of Use Cases and Content requirements. It is expected that content will be preserved (by a Producer) as a prescription is refined, but that what is displayed (by a Consumer) may vary.
- iv. Related issues
 - 1. Instance management – FIND-MOST-RECENT?
 - 2. Approval – via DICOM Approval IOD? (Post-PC draft)
- v. It was suggested to format attribute requirements using a spreadsheet with columns for Use Cases (like ARTI Beam Types).
- vi. How are content requirements related to Use Cases?
 - 1. Minimal prescription content?
 - 2. What is needed to approve a prescription?
 - 3. For a prescription that remains a part of the patient’s record, all attributes must be retained or updated, i.e., may not be removed. (Attributes may be “redacted” (replaced by NULLs?) if the prescription is abstracted from the patient record. Such a redacted instance is no longer part of the official patient record.)
- vii. Volume 7 Content sections are allocated for this profile.
- viii. Sven will continue work on the RXRO draft.

[break for lunch 12:15-1:15pm 5/12]

- v. Topic 14.5: TDW-II Review
 - i. The TC reviewed document ihe_ro_supp_tdw-ii_v2-rev12.doc (prepared by Uli Busch) for Public Comment. This document has been restructured to place content in Volume 3 (Chapter 7).
 - ii. Checked and corrected several Attribute Types; removed unneeded Attributes.
 - iii. Saved document as rev12_CP.
- w. Topic 19.5: Connectathon Participants and Profiles Under Test 2016
 - i. Profiles (Trial Implementation or Final Text) to be tested with estimates of # vendors to participate:
 - 1. BRTO - 4
 - 2. ARTI - 5
 - 3. TPPC - 5
 - 4. MMRO-III / MMRO-II - 3
 - 5. DCOM - 1
 - 6. TDW-II - 0
 - ii. Profiles currently expected to be tested at the Oct 2016 Connectathon: BRTO, ARTI, TPPC, MMRO-II/MMRO-III
- x. Topic 19.6: Profile Status Discussions
 - i. **DECISION:** The MMRO-III Profile was approved for Trial Implementation without objection (no abstentions).
 - ii. MMRO-III test is a superset of MMRO-II test. It should be possible to test MMRO-III by demonstrating adherence to MMRO-II and adding non-CT primary images.
 - iii. TDIC, TPIC issues
 - 1. How to test TPIC? What does it mean to consume DRRs? Show registration with TDIC image and compute correction.
 - 2. How to test TDIC? Show registration with TPIC image and compute correction.

3. Informal testing of TDIC, TPIC is expected in Oct 2016. This is an opportunity to collect test data.

- iv. **DECISION:** The TPPC Profile was approved for Trial Implementation without objection (no abstentions).
- v. **DECISION:** The TDW-II Profile was approved for Public Comment without objection (no abstentions).

- y. Topic 16: TDPC - Check DICOM CP effects
 - i. The TC reviewed TDPC draft rev 1.1 (2/16/2016)
 - ii. Minor textual changes to document.
 - iii. References to DICOM standard edition were updated to *2016b*.
 - iv. Volume 3 Chapter 7 Attribute requirements were reviewed. Correction to Notes. Removed unneeded TPPC placeholder sections.
 - v. Fixed references to TPPC section (7.4.3 → 7.4.4)
 - vi. Document saved as rev 1.2_ti.

[adjourn for 5/12/16 4:50pm]

[resume 5/13/16 8:30am]

- z. Topic 17.5: ICT Test Tool Directive
 - i. Check readiness of TPPC and MMRO-II test tools
 - ii. Update TDW Test Tool for *informal* testing?
 - iii. Sprint start meeting to be scheduled in the next few weeks. (Based on re-establishment of the Test Tools contract.)
 - iv. A meeting to introduce Test Tools and provide a demo for Connectathon participants is to be scheduled in advance of the Connectathon.
- aa. Topic 17.8: BRTO-II Short Discussion
 - i. Discussion of image presentation requirements. Should we constrain image display to be in treatment position (by default)?
 - ii. **ACTION 160504:** Sven to add display orientation requirements to Open Issues in the BRTO-II profile draft for review at the June 2016 Tcon.
- bb. Topic 17.7: IHE-RO Annual Report –
 - i. **ACTION 160508:** Chris to draft TC response
- cc. Topic 18.8: Approve Minutes – Teleconference minutes approved (see Section I (c) above).
- dd. Topic 18.9: Clinical Input / Involvement in TC
 - i. Consider ways to invite clinicians to TC meetings via Teleconference
 - ii. **ACITON 160505:** Chris to write targeted email to clinicians on IHE-RO roster to invite participation in (first day) of IHE-RO meeting after ASTRO 2016.
- ee. Topic 16: TDPC revisited
 - i. **DECISION:** TDPC Profile version 1.2 (with corrections 5/12/16) was approved for Trial Implementation without objection.
- ff. Topic 17: Treatment Delivery – Record Content
 - i. Chris reviewed revision 0.2 (5/9/16) of the TDRC draft profile

- ii. The scope of this profile includes Beams Treatment Record used to record delivery. This is a content profile with Producer and Consumer. Treatment may involve patient, phantom, or machine test configuration.
- 550 iii. Treatment Record Content is recorded in Volume 3 Section 7.4.11. Sub-sections have beam-technique-specific Beams Treatment Record content.
- iv. Content specification may need to be split into Treatment and QA components.
- v. It was suggested to require timezone specification (use Timezone Offset from UTC (0008,0201) in SOP Common) for treatment records. This may also be added to
- 555 image instances in TDIC.
- vi. The consensus of the TC is that the organization of the content requirements is appropriate. Chris will continue work on TDRC, with attention to possible differences between (a) clinical delivery and (b) QA use cases.

- 560 gg. Topic 18.5: Connectathon scheduling
 - i. ACTION 160509: Walter to draft schedule for Connectathon Timeline and distribute to chairs

565 hh. Topic 18: Review Minutes

- ii. Topic 19: Review Action Items

570 III. Future Meetings

- a. IHE-RO Meetings

- i. IHE-RO TC Meeting at ASTRO Annual Meeting – Sep 28 (8:30am-5:30pm) – Oct 1, 2016 (end at 12pm), Boston, MA
- 575 ii. IHE-RO Connectathon 2016 – Week of Oct 17th (Madison, WI); 1/2-day TC meeting on Saturday to finalize results

- b. Other meetings through 2016

- i. ICCR June 27-30, 2016, London
- 580 ii. AAPM Jul 31-Aug 4, 2016, Washington
- iii. ASTRO Sep 25-28, 2016
- iv. DICOM WG-7 Mar 7-11, 2016, at NEMA, Washington, DC
- v. DICOM WG-7 May 23-27, 2016, Munich
- 585 vi. DICOM WG-7 Aug 4-6, 2016 (after AAPM) in Washington, DC (consider starting Aug 3)
- vii. DICOM WG-7 Oct 31-Nov 4, 2016
- viii. DICOM WG-6 May 30-June 3, 2016, Munich
- ix. DICOM WG-6 Sep 12-16, 2016, Washington, DC
- x. DICOM WG-6 Nov 7-11, 2016, Washington, DC

590 IV. Adjournment – meeting adjourned at 12:00 5/13/16