**IHE-RO Technical Committee**
**Face-to-Face**
**January 23-26, 2017 at 8:30-5:30, January 27 8:30-12:00 ET**
**Melbourne FL, US @ Sun Nuclear**
**MapCheck Room**
**3275 Suntree Blvd, Melbourne FL, 32940**

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

**IHERO Task Force Co-Chairs**
**Bruce Curran, MS, ME, AAPM / VCU Health**
**John Buatti, MD, University of Iowa**

**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** | **1/23/17** | **1/24/17** | **1/25/17** | **1/26/17** | **1/27/17** |
|---|---|---|---|---|---|---|---|
| Chris Pauer | Sun Nuclear | chrispauer@sunnuclear.com | X | X | X | X | X |
| Scott Hadley | U. Mich. | swhadley@umich.edu | X | X | X | X | X |
| Walter Bosch | Wash. Univ. | wbosch@wustl.edu | X | X | X | X | X |
| Thomas Schwere | Varian | Thomas.Schwere@varian.com | X | X | X | X | X |
| Carla Hull | AAPM | Carla@aapm.org | X | X | | | |
| Sven Siekmann | Brainlab | Sven.Siekmann@brainlab.com | X | X | X | X | X |
| Rickard Holmberg | Raysearch Labs | rickard.holmberg@raysearchlabs.com | X | X | X | X | X |
| Stefan Pall Boman | Raysearch Labs | stefan.p.bowman@raysearchlabs.com | X | X | X | X | X |
| Koua Yang | Philips | Koua.yang@philips.com | X | X | X | X | X |
| Sanjay Bari | Elekta | Sanjay.Bari@elekta.com | X | X | X | X | X |
| Bob Pekarek | Accuray | bpekarek@accuray.com | X | X | X | X | X |
| Bruce Rakes | Mevion | rbrakes@mevion.com | | T | T | | |
| Peter Balter | MD Anderson | pbalter@mdanderson.org | | T | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Harold Beunk | ICT | Harold.beunk@ict.nl | | T | T | | |
| Mohammad Salehpour | MD Anderson | msalehpour@mdanderson.org | | T | | | |
| Jim Percy | Elekta | Jim.percy@elekta.com | | T | | | |
| Mark Pepelea | Philips | Mark.pepelea@philips.com | | T | | | |
| Armin Langenegger | Mevion | | | | T | | |

X = In person  T = via Teleconference

**Minutes:**

I. Call to Order (Jan. 23, 2017 at 9:00 am EDT) – a quorum was declared
   a. Review Agenda
   b. Other broad topics to add – Agenda was revised and approved without objection
   c. Approval of Minutes from past Meetings
      i. Minutes of teleconference on Nov. 15, 2016 were approved without objection.
      ii. Minutes of teleconference on Dec. 20, 2016 were approved without objection.

II. Business
   a. Topic 1: Level Set [1/23/17 @ 9:42]
      i. Updates on IHE-RO activities (Chris)
         1. Planning
         2. Oversight, Steering Committees
         3. Domain Coordination Committee
      ii. AAPM
         1. Transition update (Carla)
            a. The IHE-RO wiki (ihe-ro.org) was discussed. This resource is not easy to manage, but it provides access to important documents, including current profile documents and Connectathon instructions.
            b. A clarification of the IHE-RO budget, including fees collected and expended for Test Tools is needed. Budget and test tools to be discussed further (Topic 3.5).
            c. TC Teleconference times – third Tues at 11:00am ET (except on months with Face-to-Face meetings).
         2. Review of Working Groups – more discussion later this meeting.
            a. RO Data Transport Working Group – this group is currently inactive. It could be combined with Query/Retrieve profile efforts.
            b. CT Sim Working Group (CPRO) – consistent Patient ID in RO – import of patient demographics from HIS – to be discussed in Profile priorities.
            c. RO-HIS WG
            d. DPDW WG
      iii. ROSSI (RO Safety Stakeholders Initiative) – IHE-RO is tracking safety related issues to generate profile use cases.
      iv. DICOM WG-7 Update
         1. Second generation DICOM Supplements 147 (Prescription, Segment Annotation), 175 (C-arm Radiations), 176 (non-C-arm Radiations), 177 (Dose) are

2. Trial implementation for Sup 147. A kick-off teleconference is scheduled 11:00am – 1:00pm ET on Feb 7, 2017.
3. The Ion subgroup is working on Ion Plan requirements for TPPC.
4. The Brachy subgroup has worked on clarification of HDR applicator parameters.

v. AdvaMed and Standards Efforts (Chris)
1. RT2- Radiation Therapy Readiness check (in review)
2. RT3-Beam Model Standard – description of beam model uses the treatment room as a container.
3. RT4-(potential) Standard for Machine, Patient QA

b. Topic 2: Profile Priorities for the Year

i. The TC reviewed the status of profile documents on the ihe-ro.org wiki.
1. ARTI has been moved into TPPC
2. BRTO is part of TF
3. BRTO-II was discussed in Sept 2016
4. CDEB – action from Sept to add Dose Reference UID from DICOM CP 1659. Chris is preparing an IHE-RO CP
5. CPRO – no draft has been prepared for this profile. (discussed in Jan 2015 TC meeting)
6. DRRO – an early draft (0.1) has been attempted.
7. DPDW – Thomas Schwere has taken over draft
8. DCOM – ready for FT?
9. IPDW – on hold awaiting DICOM Content Template, TDW-II, DICOM Sup 160
10. MMRO-II – status to be discussed
11. MMRO-III – promote to TF?
12. RXRO – draft v. 0.6
13. QAW – draft in preparation
14. QAPV – v. 2.1 in TI
15. QRRO – draft 1.2 to be reviewed
16. ROIT – draft 1.1 to be reviewed, awaiting progress on DICOM Sup 196
17. TDPC, TIPC – TI
18. TDIC, TPIC – PC
19. TDRC – draft
20. TDW-II - TI

ii. Development effort is currently focused on the following profiles:
1. DPDW
2. IPDW
3. TDRC
4. QAW
5. QRRO
6. ROIT
7. RXRO
8. DRRO

c. Topic 3: Profiles Status – Review Scott and Carla document for PC

i. Potential Use Cases
1. ARRO – Archive of RO Plan and Treatment Data – reliably store and extract DICOM objects for long-term storage, i.e., to facilitate future use of data for treated patients.

2. HXRO – Treatment history exchange for future re-treatment – need to define what data need to be stored.
3. 4DI – 4D Imaging – data elements needed to interpret 4D images in RT treatment planning

d. Topic 3.5: Budgeting Discussion
   i. Concern was expressed that the budgeting process does not currently receive input from the vendors that finance it through their fees.
   ii. The budget discussion is an opportunity to communicate the value of IHE-RO to vendors. Awareness of the value of IHE-RO to clears the path to vendor participation.
   iii. Proposal to have John Buatti and Bruce Curran discuss budgeting issues with vendor representatives.
   iv. ACTION 170101 Carla to add budgeting discussion item to Steering Committee agenda for Feb 2017.

[Break for lunch 12:25 – 14:00]

e. Topic 4: Prescription Profile (RXRO)
   i. The TC reviewed the status of the RXRO Profile (rev. 0.6).
   ii. Review Trial Implementation Scenarios Paper from Ulrich Busch
   iii. Plenary Review Of Profile / Edit Planning – Several Use Cases were discussed. These can be distinguished by the amount of detail is specified.
      1. Basic Intent = **Treatment Site + Physician Intent Narrative + Diagnostic code**
      2. Enhanced Intent = Basic Intent + **target dose(s), fractionation**
      3. Planning Directive = Enhanced Intent + **margins, motion management, OAR constraints, treatment technique**
      4. Treatment Phase Management = Planning Directive + Phase information
   iv. Sven will attempt to populate the DICOM Content Template for these Use Cases for discussion 1/24.

[Adjourn for the day 1/23 at 5:30pm]
[Resume meeting 1/24 at 8:30am]

f. Teleconference was held to discuss Connectathon Location and Test Tool issues (Bruce Rakes, Peter Balter, Harold Beunk, Jim Percy)
   i. A Use Case involving synchronous communication for workflow management was discussed briefly.
      1. An API-based approach was discussed, e.g., to allow a TPS to finalize a plan in an OIS. In a single-vendor environment, things flow very smoothly.
      2. Standards, e.g., DICOM do not allow all information to flow. However, existing standards (DICOM, HL7, FHIR) have capabilities that are not being used optimally. Vendors have not exploited the capabilities that the standard(s) provide: the standard is not the limitation, the implementation is.
      3. Opening access to applications via APIs raises safety and proprietary IP issues.

g. Topic 5: Connectathon Location – Oct 9-14, 2017
   i. Two options for the venue of the 2017 Connectathon were discussed
      1. Brainlab location in Riem is available. Any arrangements need to confirmed ASAP as the dates overlap a large event at the trade fair (convention center).

2. Elekta location Veenendaal is available. (Saturday access would be difficult.) Hotels in surrounding area. Would be easy to invite brachy group (and vendors).

ii. DECISION: A majority of the TC voted to hold the 2017 IHE-RO Connectathon at Elekta facilities in Veenendaal (1 abstention).

iii. ACTION 170102: Jim Percy to confirm availability of Elekta Veenendaal facilities for Oct 9-14, 2017 Connectathon. Email from Jim 1/26/17 indicating Veenendaal is available for Connectathon. COMPLETE

h. Topic 5.5: Test Tools

i. Harold Beunk updated the TC on ICT Test Tool activities

1. Source code for *legacy* tools is available via github.
2. Current tools can be downloaded from the (password protected) ihe-ro.org wiki site.
3. A new Test Tool framework has been developed for all content profiles. This single Test Tool uses rulesets specific to the Profile being tested.
4. Backlog items were reviewed briefly. Some errors in existing tools were noted in evaluation of Connectathon results.
5. ACTION 170103: Walter to communicate Test Tool errors, i.e., "false positives" to ICT.
6. New personnel at ICT will continue work, pending execution of the new contract.

i. Topic 6: Discrete Positioning and Delivery Workflow

i. Thomas updated the TC on the progress of the DPDW Profile.

ii. A DICOM CP 1664 to improve progress reporting is in preparation. Uli Busch will present to WG-06 next week, but there is some expectation that it will be rejected.

iii. Acquisition of Evidence Objects to determine Patient Position process diagram was reviewed.

iv. A means for retrieval of device position information is still needed. (N-GET?)

j. Topic 6.2: Integrated Positioning and Delivery Workflow

i. This Profile has been on hold pending completion of DICOM Content Template and TDW-II Profile.

ii. IPDW has already been in Public Comment and vendor(s) are working on implementation.

iii. Consensus to require that output instances be referenced in the Output Information Sequence of the UPS. Evidence of registration is needed for billing of IGRT. Since the *existence* of output (registration) objects, rather than downstream use is needed, there is no strong case for cross-profile dependency with MMRO-III for output objects.

iv. ACTION 170104: Thomas to re-factor the content requirements for this Profile as Chapter 7 subsection(s).

k. Topic 6.5: CP for MMRO-III for "Single Modality Registrator" Actor

i. The TC discussed addition of a Single Modality Registrator Actor to MMRO-III

1. Some products only perform, e.g., CT-CT registration. Can these products be included in MMRO-III testing?
    a. Create new Actors which limit image retrieval transactions?
    b. Place limits on modalities for creating registrations? … for consuming registrations?

c. Can it be accomplished by Options on existing Actors?
d. Can this be accomplished by "limited testing", i.e., using only single image modalities, rather than changing the Profile itself?

2. ACTION 170105: Chris to query TC regarding the motivation for including a Single Modality Registrator in MMRO-III. Query complete. No clarification provided. No change is needed at this time.

l. PC Meeting / Call – TC members participated in an IHE-RO PC teleconference
   i. Carla updated the PC on AAPM transition process.
   ii. Chris provided a TC update
   iii. New Use Case concepts
      1. Radiation Oncology Workflow Exchange (Eric Vinson) – RO-HIS exchange / Archiving .
         a. Overlap with survivorship care plan – proposals from ASTRO and ASCO
         b. Need to prioritize the information objects and attributes to be exchanged.
   iv. Connectathon Results have been distributed to vendors
   v. Next meeting 2/28, co-chairs to meet on 2/14.

[Break for lunch 12:45-13:45]

m. Topic 7: Query/Retrieve
   i. Koua reviewed a draft (rev. 1.2) of the QRRO Profile
   ii. A query/retrieve use case involving image, structure set, plan, dose was discussed.
   iii. The Profile will need to define IOD Specific Query Keys (in 7.5.2.2 subsections) for RT Plan, RT Ion Plan, RT Dose, RT Structure Set, RT Beams Treatment Record, RT Beams Treatment Summary
   iv. Consensus that **Q/R Information Model should be Study Root** (Patient Root is not needed).
   v. Q/R **Level**: C-FIND SCP will need to support PATIENT, STUDY, SERIES, IMAGE Queries.
   vi. Query Keys and Response Attributes were reviewed for a Plan/Structure Set/Dose/Image Query/Retrieve use case for the following:
      1. General DICOM objects
      2. RT Plan
      3. RT Structure Set
      4. RT Dose
   vii. Other SOP Classes? RT (Ion, Brachy) Beams Treatment Record/Summary, REG, Deformable Reg., …
   viii. Suggestion to include Max Dose attribute in Sup 177

n. Topic 8: ROI Template
   i. Walter reviewed the current (rev. 0.2) version of the ROI Template Profile draft.
   ii. Should coded attributes be *required* in the current version of the Profile? As Option? Distinct Actors? Consensus that Type 2 is appropriate for Codes. They may be required in future versions.
   iii. Consensus that attribute types in DICOM Sup 196 are mostly adequate for the Profile. Only two attributes (Site, Publisher) are R+.
   iv. This Profile is valuable for testing semantic interoperability of applications, but has minimal requirements. Essentially this means testing to DICOM requirements.

v. Consumer is expected to be a Contourer.
vi. Transport is via Media files.

[Adjourn for the day 1/24 @ 17:30]
[Resume meeting 1/25 @ 9:00am]

o. Topic 8.2: Deformable Registration
   i. The TC reviewed revision 0.1 of the DRRO Profile draft.
   ii. Vendor input is needed to identify what options should be supported/required in the Profile.
   iii. ACTION 170106: Thomas to complete first draft of this Profile. Other interested members are Walter, Stefan, Koua, and Sven.

p. Topic 9: HIS Interoperability and Profile Work
   i. Chris reviewed a presentation from an IHE Workflow Profiles Workshop (11 Oct 2016) with the TC.
      1. IHE XDS (Cross-Enterprise Document Sharing) and XDW (Cross-Enterprise Document Workflow). XDW and RPE (Retrieve Process for Execution) are Layered profiles.
      2. XDW provides document repository, document registry and workflow manager
   ii. ROWE (Radiation Oncology Workflow Exchange with HIS) use case addressed demographics, billing, and scheduling.
   iii. Further progress on this topic awaits work within the HIS working group.

q. Topic 9.5: BRTO-II
   i. Sven reviewed BRTO-II Profile draft rev. 1.3pc
   ii. Discussion of RT ROI Interpreted Type of MARKER, REGISTRATION, ISOCENTER for ROI Contours of Type POINT. No concerns were raised about the current text of the Profile.
   iii. This Profile (Supplement) is currently in Trial Implementation. It has not yet been tested in a Connectathon. It is expected to be included in the TF after it has been tested and no changes to the text are anticipated.

r. Topic 9.5.5: Physician Intent Trial Implementation paper from Uli
   i. The TC reviewed requirements for Physician Intent attributes in a paper by Uli Busch laying out four suggested use case scenarios for Physician Intent in Sup 147 Trial Implementation.
   ii. RT Plan Type (free text description of treatment technique) may be absent at early stages of prescription. DICOM Type 2 is ok.
   iii. Trial Implementation scenarios were mapped to RXRO Use Cases:
      1. RXRO S1 Use Case (“Basic Intent”)
         a. Disease Site, Diagnosis Code, Treatment Code
      2. RXRO S2 (“Enhanced Intent”) – adds
         a. Dose per Fraction
         b. Fractionation (#fractions, fractions/day, delivery time structure)
         c. Total Dose
         d. Treatment Technique
      3. RXRO S3 (“Prescription”)
         a. Prescription Notes (O+) (see TID147001)
         b. Margins

c. Volume/Dosimentric Objectives for Targets and OARs (see CID147060)
d. Fractionation pattern
e. Predecessor directives
f. Multi-phase delivery

iv. Sven will update the RXRO Profile draft with the three Use Cases shown above.

s. Topic 9.6: Virtual Pre-Testing
i. Discussion of potential virtual pre-testing in 2017
1. TDPC? Informal testing can be done with Test Tools.
2. RXRO as a shared effort with DICOM Trial Implementation of Sup 147?
3. How to test? Exchange TDPC plans as DICOM files via AAPM fileshare/SFTP? Screen share and/or exchange of screen captures.
ii. DECISION: Consensus that timing was too short to make Virtual Pre-Testing practical in 2017.
iii. IHE-RO and DICOM should discuss
1. Using AAPM storage for TI objects
2. Mailing list for TI participants
3. Validate RXRO Use Case break-down with PC
4. Respond to Uli regarding how profile is aligneing tiwht suggested Scenarios.
5. Present rough draft of RXRO for DICOM evaluation to a be a basis for TI (later)
iv. Keep on IHE-RO TC agenda to facilitate future virtual pre-testing:
1. Virtual testing methods
2. Support requirements: online moderator? test monitor(s)?
3. IT Infrastructure: fileshare, bulletin board? mailing list?
4. Data use agreement – use IHE-RO Connectathon agreement as a starting point.

t. Topic 11: Treatment Delivery – Record Content
i. This content profile addresses attributes needed in RT Beams Treatment Record for various beam types.
ii. For the purpose of Treatment Record, we cannot exclude attributes that are not specifically used for a beam type: all attributes must be in play for all beam types. The Producer is generic within a treatment modality: photon, electron, ion, brachy. Beam-type-specific requirements have been removed from the Profile draft.
iii. There are cross-profile mappings with QAW Actors.
iv. Chapter 7 DICOM Content sections are needed for (a) Photon External Beam, (b) Electron External Beam, (c) Ion Beam, (d) Brachytherapy. (a) and (b) use RT Beams Treatment Record IOD, (c) uses RT Ion Beams Treatment Record, (d) uses RT Brachy Treatment Record.
v. (Discussion of attribute requirements was recorded in profile draft.)

u. Topic 12: QA Workflow Supplement
i. Needs to be reviewed against DPDW
ii. What is the correct level of detail If we try to model details of analysis, the spec explodes
iii. Data transports involves RT Plan, RT Beams Record, etc.
iv. Reuse UPS transactions. Data requirements for reused transactions are specified by exception, i.e. difference with respect to general case.

v. Topic 12.3: Connectathon Testing Efficiency

i. Suggestions to improve the efficiency of time use at connectathons
    1. Submission of Test Tool results prior to Connectathon? by end of testing?
    2. Availability of test data two weeks prior to Connectathon
    3. Vendors ready to test ARTI on Tuesday
    4. Streamline profile testing (e.g., remove dose display check from ARTI tests)
    5. Test multiple consumers at once
    6. Schedule tests based on availability of Producer vs. all Consumers.
    7. Create tentative test schedule on Monday afternoon.
    8. Vendors must be proactive in identifying test partners.
    9. **Form listing test partners for each Profile/Actor a vendor is testing.**
    10. Reminder letter 6 weeks before Connectathon outlining expectations for participation (co-signed by IHE-RO and AAPM)
        a. "High priority will be assigned to vendors with prepared data"
        b. Community interest in participation. The value of testing depends on wide participation.
    11. Projector for display of Producer with multiple, concurrent Consumers?

w. Topic 8.5: Updates to TPPC, CDEB for CP 1658 and 1659
    i. CP 1658 (Dose Reference Beam Dose Verification) - CP was discussed at the IHE-RO TC following ASTRO and the lack of references to Dose References was detected.
        1. Put Beam Dose Verification Control Point Sequence in the Beams Module
        2. Averaging Flag (outside this sequence) indicates whether Depth parameters refer to the current Verification Control Point (current Cumulative Meterset value) or are the average for the interval to the next Verification Control Point.
    ii. CP 1659 (Add Dose Reference UID To Fraction Scheme) - CP was approved to get a number at the WG-07 August Meeting. Has been reviewed with the goal to approve it for submission to WG-06.
        1. Dose Reference UID (defined in the RT Prescription Module) explicitly links Beam Dose values to prescribed dose references.
        2. This CP is complementary to CP 435 (adds Dose Reference UID in RT Prescription Module).
    iii. This topic was tabled pending final resolution of CPs in DICOM.

[Adjourn for the day 1/25 @ 17:20]
[Resume meeting 1/26 @ 8:50]

x. Topic 4 (cont.): Plenary Work on RXRO
    i. Sven presented updated use case descriptions based on TC discussions 1/25 in revision 0.7 of the RXRO Profile Draft.
    ii. The TC reviewed requirements for attributes in the RT Physician Intent and RT Prescription Modules for baseline, "Basic Intent", and "Enhanced Intent" Use Cases.
        1. For Code Sequence Macro items, the Code Value, Code Meaning, and Code Scheme Designator are required. Only the Code Meaning (with National Language Support?) is required to be displayed.
        2. Can an Enhanced Physician Intent contain detailed Dosimetric objective information? I.e., should the Profile specify the *minimum* of what is included or *limit* what is included to what is explicitly stated?
        3. Data subsets within the Physician Intent IOD are not well defined. Is there a safe method for including additional (dosimetric, etc.) details in Basic or Enhanced physician intent instances? No. Ignoring Dosimetric Objectives is a safety hazard.

4. Dose Objectives – DECISION: **The Dose Objective Sequence may contain *unreferenced* items.** We only need to limit what items are *referenced* in the Dose Objective Sequence, not the items that are *contained* in that sequence. For Enhanced Intent, there must be at least one Prescription Dose item in the Dosimetric Objectives Sequence.
5. Prescribed Dose must be encoded as a Dosimetric Objective in the Dosimetric Objective Sequence within the Prescription Module.
    a. In RT Anatomic Prescription Sequence, RT Therapeutic Role Category Code shall be RT Target.
    b. No constraint is needed on the RT Therapeutic Role Type Code.
6. No additional constraints on Conceptual Volume Segmentation are needed for Physician Intent: target(s) may or may not be segmented when prescription is created.
7. No additional constraints on Fraction-Based Relationship Sequence are needed for Basic or Enhanced Intent Use Cases.
8. For Enhanced Intent
    a. Radiotherapy Treatment Type is R+, Teletherapy Radiation Type is RC+ (shall not be empty), Brachytherapy Source Type is RC+ (shall not be empty).
    b. Dosimetric Objective Sequence shall contain at least one prescription dose.
    c. Dosimetric Objective Requirement Type = ABSOLUTE for Prescription Dose.
9. Open issue: For Use Case #2 (Enhanced Intent), shall items in the Dosimetric Objectives Sequence be limited to "Prescription Dose" only?

iii. Use Case #3 "Planning Directive"

1. The TID defining Prescription Notes is extensible. Is there any need to limit what notes may be included? What will a Consumer Actor do with notes? Some types of notes may be display only. Requirement is O+.
2. Physician Intent, Prescription, and Treatment Phase Modules are Required.

[Break for lunch 12:30-13:30]

y. Topic 9 (cont'd): HIS Interoperability and Profile Work

i. Response from Rishabh Kapoor

1. HIS subgroup to discuss feasibility of using FHIR for an HIS integration profile (vs. a separate profile using XDW/XDS).
2. Survey to target physicians, physicists, nurses, RTTs:
    a. What info from HIS is needed in the OIS? Pregnancy? Pacemaker? Disability? Vitals? Lab results? Suicide risk? …
    b. What info from the OIS should be communicated to the HIS?
3. How should the Profile address site-customization / optional attributes?
4. Chris replied to Rishabh 1/26/17 with a response to these comments.

ii. ACTION 170107: Chris to send request to Mauro Zanardini to see if he is available to speak with the TC regarding HIS issues. No response as of 1/27/17.

z. Topic 10: TomoTherapeutic Additions / White Paper for TPPC

i. Bob Pekarek presented a TomoTherapeutic Additions white paper outlining a proposal to use of private tags for representing tomo-therapeutic plan information in the RT Plan IOD. This approach is based on the Tomotherapeutic Radiation IOD in DICOM 2nd Gen Supp 176.

ii. Primary issues addressed are
    1. Description of MLC leaves
        a. Leaf Bank Offset
        b. Number of Leaf Slots
        c. Binary MLC Leaf Slot Boundaries
    2. Continuous gantry angles beyond 360 degrees. Gantry Angle (300A,011E) is defined in terms of IEC 61217, which limits values to [0,360].
iii. The Source Roll Continuous Angle () is the continuous gantry roll angle – can exceed 360. The Gantry Angle is the Roll Angle modulo 360.
iv. Tomotherapeutic Leaf Initial Closed Fractions – the fraction of the time between current and next control point that each leaf is closed before opening.
v. Tomotherapeutic Leaf Open Fractions – the fraction of the time between current and next control point that each leaf is open after opening.
vi. Table Top Position and Isocenter Position values must be consistent.
vii. Bob will continue work on this white paper.

aa. Topic 4 (cont.): Plenary Work on RXRO / TI Discussion
i. The TC examined Uli's proposal for Trial Implementation prescription scenarios
ii. Consensus that the RXRO Profile can serve as a good basis for Trial Implementation of Physician Intent IOD in Sup 147.
    1. Uli's scenarios 1 and 2 are roughly equivalent to Usc Case #1 "Basic Intent" and Use Case #2 "Enhanced Intent".
    2. Scenarios 3 and 4 have been collapsed into Use Case #3 "Planning Directive".
iii. Results of the ASTRO prescription survey were reviewed. Items included in prescriptions were the following. This information appears to be largely covered in Sup 147 Physician Intent IOD.
    1. Total Dose
    2. # Fractions
    3. Dose/fraction
    4. Technique
    5. Fractions/week
    6. Mode
    7. Beam energy
    8. Normalization isodose surface
    9. Bolus
    10. Imaging Frequency
    11. Motion management
    12. Prescription Coverage Goals
    13. OAR limits
    14. Other
iv. Patient Setup and Simulation Directive information goes in Patient Positioning Note and/or Patient Setup Note.
v. Imaging Frequency goes in Delivery Verification Note.
vi. WG-07 should consider including a Prescription Note category for Bolus, Treatment Devices, or Shields in TID147001. E.g., "Dosimetric Accessory Note", "Radiation Protection Device Note". Should a General Prescription Note or Patient Setup Note be used for this purpose?
vii. ACTION 170108: Scott to forward an edited version of the Use Case review to the IHE-RO Planning Committee for review and comment.

[Adjourn for the day 1/26 at 17:15]

[Resume meeting 1/27 at 8:45am]

bb. Topic 22: Edit RXRO Treatment Phase

i. Review of Module requirements of RT Physician Intent IOD for Basic, Enhanced, and Planning Use Cases.

1. The RT Prescription Module shall not be present for Basic, but required for Enhanced and Planning Use Cases.
2. User Content Identification Macro Attributes (User Content Label, Content Creator's Name) and **Content Date** and **Content Time** are to be Displayed (D) by Consumers.
3. While the Instance Creation Date and Time are in SOP Common, the Content Date (0008,0023) and Content Time (0008,0033) *are not present* in the Physician Intent IOD as currently defined in Sup 147 (rev. PC_07 2016-11-07). This omission is to be communicated to DICOM WG-07.
4. RT Treatment Phase Module – Display Entity Label. No additional requirements for Phase Interval Sequence attributes.

ii. Further editing of the draft Profile Text (changes in rev. ihe-ro_rxro_0.7_cp.doc)

1. Glossary Terms – Do we need to define *Intent*, *Prescription*, and *Directive*?
2. Update text to be consistent with currently defined Use Cases.
3. ACTION 170109: Sven to continue work on RXRO draft as rev. 0.8.

cc. Topic 21.5: Practical List of Site Specific Restrictions

i. How can information about local connectivity issues and constraints be shared to improve the quality and reduce cost of support by vendors?
ii. Is this issue within the scope of IHE-RO? Other organizations?
iii. What concerns must be addressed in collecting and sharing site-specific information? Does opt-in by clinical sites address concerns?
iv. ACTION 170110: Chris to draft email to TC and PC members to solicit interest from their support groups for creation of site-specific support information.

dd. Topic 18: Review Minutes

ee. Topic 19: Review Action Items from this meeting

i. ACTION 170101 Carla to add budgeting discussion item to Steering Committee agenda for Feb 2017.
ii. ACTION 170102: Jim Percy to confirm availability of Elekta Veenendaal facilities for Oct 9-14, 2017 Connectathon. Email from Jim 1/26/17 indicating Veenendaal is available for Connectathon. COMPLETE.
iii. ACTION 170103: Walter to communicate Test Tool errors, i.e., "false positives" to ICT.
iv. ACTION 170104: Thomas to re-factor the content requirements for this Profile as Chapter 7 subsection(s).
v. ACTION 170105: Chris to query TC regarding the motivation for including a Single Modality Registrator in MMRO-III. Query COMPLETE. No clarification provided. No change is needed at this time.
vi. ACTION 170106: Thomas to complete first draft of the DRRO Profile. Other interested members are Walter, Stefan, Koua, and Sven.
vii. ACTION 170107: Chris to send request to Mauro Zanardini to see if he is available to speak with the TC regarding HIS issues. COMPLETE
viii. ACTION 170108: Scott to forward an edited version of the RXRO Use Case review to the IHE-RO Planning Committee for review and comment.

ix. ACTION 170109: Sven to continue work on RXRO draft as rev. 0.8
x. ACTION 170110: Chris to draft email to TC and PC members to solicit interest from their support groups for creation of site-specific support information.

ff. Topic 20: Future Meetings / Next Agenda
i. IHE-RO TC Meetings
1. Post-AAPM – Aug 2, 2017 at 2pm through Aug 5, 2017 at noon, Denver
2. Fall Connectathon - Oct 9-14, 2017 in Europe (Veenendaal, NL)
ii. IHE-RO TC Tcons
1. Third Tuesdays at 11am ET
iii. Other meetings of interest
1. DICOM WG-07
a. TI Kick-Off – Feb. 7, 2017, 11am-1pm ET
b. March 20 (8:30) - March 24, 2017 (12:00) (tentative) MITA, Washington
c. June 12 (8:30) – June 16, 2017 (12:00) (tentative) Location TBD
d. Post ASTRO: Sept 27-30, 2017 San Diego, CA
e. December 4-8, 2017 (tentative) MITA, Washington
2. PTCOG Mon 08.05.2017 – Sat 13.05.2017, Yokohama, Japan
3. AAPM Sun 30.07.2017 – Thu 03.08.2017, Denver, CO
4. ASTRO Sun 24.09.2017 – Wed 27.09.2017, San Diego, CA
5. RSNA Sun 26.11.2017 – Fri 01.12.2017, Chicago, IL

III. Meeting Adjourned at 12:00pm 1/27/17