IHE-RO Technical Committee
Face-to-Face Meeting
November 1-3, 2012

Technical Committee Chairs:
Bruce Curran, MS, ME
Chris Pauer, Accuray

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

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.*

In attendance

Name	Affiliation	Email	Thu 11/1	Fri 11/2	Sat 11/3
Bruce Curran	RI Hosp.	bcurran1@lifespan.org	X	X	X
Chris Pauer	Accuray	cpauer@accuray.com	X	X	X
Walter Bosch	ATC/Wash. U.	bosch@wustl.edu	X	X	X
Koua Yang	Philips	koua.yang@philips.com	X	X	X
Sue Reilly	Elekta	sue.reilly@elekta.com	X	X	X
Christof Schadt	Brainlab AG	christof.schadt@brainlab.com	X	X	X
Sanjay Bari	Elekta	sanjay.bari@elekta.com	X	X	
David Wikler	IBA	david.wikler@iba_group.com	X	X	X
Eli Stevens	Mobius Medical	elis@doselab.com	X	X	X
Uli Busch	Varian	ulrich.busch@varian.com	X	X	X
Dick Fraass	AAPM/ASTRO		W		
Rishabh Kapoor			W		
Harold Beunk			W		

X = in person, W = via Webex

Minutes

I. Call to Order 11/1 @ 9:00 ET
II. Attendance and Meeting Rules
III. Setting of Agenda - proposed agenda posted to BBS – Approved without objection
IV. Approval of minutes from October 18 teleconference – Minutes were reviewed and approved without objection

V. Updates on ASTRO, RT Stakeholders, IHE-RO PC, DICOM

A. Report of IHE-RO PC/TC Meeting on October 29 at ASTRO
   i. New tiered pricing structure was announced.
   ii. Proposed re-structuring of ASTRO IHE-RO committees
      1. ASTRO IHE Committee with dual oversight and resource role. Physician involvement to be primarily in this committee. Includes marketing of IHE-RO to clinicians.
      2. Planning Committee to emphasize physicist involvement, marketing of IHE-RO to vendors.
   iii. ASTRO Health Information Technology Committee – an HL7 lexicon extension for Radiation Oncology has been proposed. There is potential for IHE-RO involvement in HIS/EMR integration.
   iv. RFP for IHE-RO Support has been released – response is due 11/30. This role includes management of the wiki.

B. Report of AAPM/ASTRO/MITA RT Stakeholders Meeting, October 30.
   i. Website in preparation, google docs+ infrastructure for document sharing
   ii. Interested parties may contact Alf Siocchi or Dick Fraass for access. A Google account is required.
   iii. An error message document was reviewed. Treatment summary report and prescription were also discussed.

C. Report on DICOM/WG-7
   i. Work continues on DICOM Supplement 147 with the goal of going to Public Comment in 2013. Several open issues remain.
   ii. Supplement 160 is also in preparation. It is closely related to the DPDW Profile.
   iii. There are 3 IHE-RO related CPs: 1248 deformable dose indication, 1244 work item codes, 1249 deprecation of multiple Frame of Reference in Structure Sets.

VI. Business

A. Prioritize work items for meeting:
   a) Thursday Breakouts
      i) QAPV to Public Comment (V. 1.6 review) – long
      ii) DPDW – short DW, ES
      iii) RFP for Test Tools (1 hr) CP
      iv) RAD-4 transaction – short BC, WB
   b) Friday Breakouts
      i) RTSS Templates
      ii) Wiki short-term/long-term - short
      iii) Machine characterization
   c) Agenda

i) MMRO-III
ii) Clarify "Required" and "Expected"
iii) CP for MMRO-II
iv) ARTI-II changes
v) Discuss current profile status, plans, speeding development

d) Tabled
i) IHE-RO Helper next steps
ii) Promotion of IHE-RO
iii) Increasing IHE-RO participation

B. Test Tools RFP Breakout [11/1/12 @ 11:00 ET]

i. Discussion of the status of test tools
1. Primary value of test tools to vendors is for pre-testing/validation. However, it was noted that often vendors use test tools very late in the process; this results in test tools errors that can't be fixed in time. Need to get vendors using tools much earlier. Need to insure that tools are testing the correct parts of the profile. Test tools have been used to qualify Actors for participation in a connectathon. Proposal: Use Test Tool output submissions to prioritize testing of Actors (encourages early submission).
2. The role of test tools in the connectathon itself has been minimal. For the 2012 connectathon, adequate test tools were not available.
3.

ii. Four RFPs were proposed for Test Tools:
1. ARTI / MMRO-II / BRTO – Profiles that need have known issues needing updates/bug fixes – have adequate test data
a. ARTI – test script changes (long list of test spec. amendments)
b. MMRO-II – incorporate DICOM changes (change in reference sequence) and check referenced images
c. BRTO – test script repairs
2. TDW (developed as IPDW test tools) – needs update/corrections; more information is needed to fully specify
3. DCOMP – have test data from 2012 Pre-Testing and 2012 Connectathon
4. QAPV – need both QCP and QCR Test Actors
a. QCP test – provide baseline test data, accept alternate plans for testing
b. QCR test – respond in one of three ways: Cancel, Success, Failure
c. Discussion of QAPV tests
i. Test Tools can test communication, but probably cannot check test results (out of scope for the Profile?)
ii. Should plan to test the "can't test this"/"pass"/"fail" code paths.
iii. Do we need tools for connectathon for modifying/damaging plans for QAPV testing? Probably not. Can use DICOM editor or have QCP vendor provide "good" and "bad" variants of test plan.
iv. Use Test Tools to check DICOM-level communication. Evaluate correctness of results in live tests.

v. Need to also test both QCP and QCR.
vi. Judges should attend next QAPV call and work with subgroup to define exactly how testing will procede.
vii. May 2013 connectathon won't have QAPV test tools ready, given requirements still needing to be gathered.

iii. ACTION: Bruce to create a thread to collect Test Tool issues for existing profiles. [Done 11/1/12.]
    1. need to supply test data
    2. need to pull together comprehensive list of issues
    3. Best-case timeline: finish list dec 1, contract from ASTRO a few weeks later, signed by jan 30, easy updates probably by feb 28

iv. ACTION: Chris to refine draft DCOMP Test Tool RFP
v. ACTION: Chris to draft QAPV Test Tool RFP

C. DPDW Breakout [11/1/12 @ 11:00 ET]
    i. A teleconference is planned for 11/12 or 11/19 – ACTION: Uli to create a Doodle poll to select date. Writing assignments for Profile Transactions will be made.
    ii. Discussion of Use Case of Positioning with TDD-independent Imaging Devices to show that it works for the PPAS Actor using Modality Worklist.

D. QAPV Breakout [11/1/12 @ 13:50 ET]
    i. To what extent should the QAPV Profile specify requirements for plans to be checked? I.e., should it specify the *content* of the plan, or simply the *workflow* for performing quality checks and reporting results?
        1. A QCP can cancel if it is unable to check a particular plan, but this may not be satisfactory if it results in "false positives"
        2. Could use ARTI beam types and options to specify the type of plans that can be checked by a QCP.
    ii. PROPOSAL: add ARTI beam types and options to specify capability of QCP to evaluate plans. ACTION: Discuss further the use of ARTI Beam Types to specify what plan categories can be be checked.
    iii. Need to decide whether to include Ion Plans in the Profile for now.
    iv. How should more generic Quality Check Workflow applications be supported? Is there a role for a generic profile, analogous to TDW?
    v. PROPOSAL: Keep Ion Plan in QAPV for Public Comment with the warning that Ions may be removed unless there is substantial interest for this option.
    vi. ACTION: Chris to create a version of the QAPV Profile that takes out references to the Ion transactions.
    vii. ACTION: David to send email to QA vendors who might be interested in QCP for Protons.

E. Current profile status, plans, speeding development [11/2/12 @ 8:50 ET]
    i. Discussion of how to speed development of new profiles.
    ii. Review of current profiles (see table below).
    iii. ACTION: Add to next meeting agenda, ways to re-envigorate development of CT-Sim and TDW-II Profile Supplements.

Profile Name	Year Initiated	Current Status	Challenges / Barriers
ARTI-II	2012	Draft-New Supplement	Requires expertise that is time constrained. ARTI 1 is approved and has been tested against.
DPDW	2006	Draft-New Supplement	Interactions of the different actors are complex and have to be further reviewed and agreed upon
MMRO-III	2012	Draft-New Supplement	Newly formulated profile because of shortcomings of MMRO-2. Anticipate good progress.
Patient Reg w/CT Sim	2008		Profile authors are time constrained.
QAPV	2011	Draft-New Supplement	Time Constraints, inclusion of new vendors, education on IHE-RO expectations and deliverables, and also unknowns because this profile does not represent an existing clinical work flow.
Structure Set Templates	2008	Draft-New Supplement	Profile authors are time constrained.
TDW-II	2012	Draft-New Supplement	Little work to be done to complete profile

F. CP for MMRO-II [11/2/12 @ 9:30 ET]
   i. MMRO-II has been revised to correct typographical errors and to remove requirement regarding order of transformations.
   ii. ACTION: Sue to complete corrections and post to BBS.

G. Review changes in ARTI
   i. DECISION: ARTI-II obsoletes ARTI profile. ARTI-II to incorporate the following changes from ARTI:
      1. Include Primary Fluence Mode Sequence (3002,0050) in all transactions. (Reverses previous decision to include as optional beam modifier.)
      2. Remove Source to Wedge Tray Distance attribute for non-physical wedges
      3. Include the new photon applicator definitions for "stereotactic" actors. (Remove the "stereotactic" label: re-name Actor as "Photon Applicator".)
   ii. ACTION: Re-visit the requirement for High Dose Technique Type (300A,00C7)
      1. This attribute is already 1C on a real-world condition. Make it Type 1 (mandatory always).
      2. Review appropriate values for each beam type.

H. Review of MMRO-III

i. Christof has posted MMRO-III v1 document on BBS (Sept 7, 2012). Issues in MMRO (and MMRO-II) that are to be considered:
    1. Requirement to define a primary image set (and restriction to CT as the primary)
    2. Inclusion of Deformable Registration
    3. Allowing registration of a Frame of Reference to itself to address incorrect hybrid scanner registrations
    4. Defining behavior in case an image set is registered to a well-known FOR (e.g., for an atlas)
    5. Restricting the number of registrations within a spatial registration to just one.
ii. ACTION: Add to agenda (~1/2 day) for Jan 2013 TC meeting.

I. Wiki Plans http://www.ihe-ro.org/wiki/doku.php
i. Currently hosted at Morgridge Institute.
ii. Connectathon preparation
iii. Exchange of test data
    1. Via online PACS (standalone server from Brainlab)
    2. SFTP server
iv. Host a Kudu instance: registrations, integration statements, results
v. Instructions for new participants: specific instructions for testing on profiles
vi. User classes: admin, chair, evaluation, judges, tc, user, vendor, <vendorname>
vii. Discussions: eventually migrate BBS threads to wiki
viii. Scope for now is support for TC profile development and testing
ix. Missing: Kudu integration, file exchange, PACS for test data exchange
x. ACTION: check on site backup capabilities
xi. ACTION: Bruce to discuss with Farhana at RSNA the migration of current BBS threads to the new wiki. Goal to move to wiki in Jan 2013. BBS expected to be locked (read-only) after migration.
xii. ACTION: Christof (and wiki WG) to create user accounts for TC members. New accounts to be created by admin with TC chair approval.
xiii. ACTION: Add to agenda for Jan 2013 TC meeting
    1. Kudu integration
    2. Instructions for new participants
    3. Test data exchange

J. Clarification of "Required" and "Expected" for DCOMP Profile
i. In IHE DICOM Usage Conventions, there attribute requirements in two contexts:
    1. Storage transactions: O=Optional, R=Required, R+=Required with extension, RC+=Conditionally required with extension
    2. Query keys: R, R+ = extension (requires display), R+* = extension (display not required)
ii. The IHE-RO "Judging Tradition" has distinguished the need to "display" retrieved attributes in *content profiles* in some form in an Actor UI.
iii. A new IHE Supplement Template is in preparation. Parts I and II have been released.
    1. Part I – High level profile definitions and Actors
    2. Part II – Transactions
    3. Part III – Content modules (has yet to be defined)
    4. Part IV – National extensions

iv. ACTION: Bruce to add a section to front of Volumes I and II defining our use of R, R+, R+*, O, O+, O+*. Draft for review in Jan 2013 TC meeting.
v. ACTION: Bruce, Walter to draft CP to change all attributes but Dose Type (3004,0004) and Tissue Heterogeneity Correction (3004,0014) to R+* (see minutes from TC meeting Sept 17-18, 2012 in Fairfax, VA). Done. (Changes to DCOMP Attribute Requirements have been incorporated in revised profile document.)
vi. ACTION: Add DCOMP to Jan 2013 agenda (1-2 hr) with goal of approving for ballot to final text.

K. QAPV Profile (v. 1.6a with Ion Transactions removed) Review [11/2/12 @ 13:50]
i. Transactions to retrieve Ion Plan for Difference check and for Dosimetric check have been removed.
ii. Discussion of requirements for selection of QA Assessed Plan(s) against which the Candidate Plan is compared (for Difference Check).
1. Plan(s) for which the following attributes match
a. Patient Name (First Name, Last Name, case-insensitive match)
b. Patient ID (be present and match exactly)
c. Patient DOB (be present and match exactly)
d. Patient Sex (match if present)
2. If there is a plan with matching SOP Instance UID that one plan is compared with the Candidate plan, otherwise all matching plans are compared with the Candidate plan. (For a give SOP Instance UID, only a single plan may be considered valid.)

iii. Review of Quality Check Report
iv. Discuss if a prior QA assessment of the plan exposes that the plan has critical issues, how can that assessment be used to strengthen the Difference Check workflow?
v. ACTION: Eli to review (updated) Profile for inconsistencies raised in (iv). I.e., allowing Difference Check QCP to return Critical Issues Found. Include language changes.
vi. ACTION: Chris to modify profile according to discussion conclusions.
vii. ACTION: Add QAPV Test methods to next sub-group T-con agenda.

L. Machine Characterization
i. There are two Use Cases for treatment machine characterization:
1. Complete characterization of all configurable items (and potentially also, modeling data) of a treatment machine (MITA) – XML document
2. Subset of machine configuration (beam modifiers) needed to interpret ARTI plans – human readable document.
ii. ACTION: Koua to draft human readable document describing treatment machines for ARTI testing based on XML files for two Varian, one Elekta, and one Siemens machines.
iii. ACTION: Koua to email Rajinder Dada to discuss IHE-RO involvement in starting a sub-group to work on the MITA Use Case.

M. RAD-4.8 Transaction in DCOMP
i. Add the RAD 4.8 Modality Images Stored Transaction to the following Actors:
1. Registered Dose Compositor (optional)

2. Registered Compositing Planner (required)

ii. ACTION: Bruce to add optional text, fix diagrams, convert to new supplement form for final text form.

N. Future Meetings

i. TC Meeting Jan 14-18, 2013, Florida, (hotel TBD) Preliminary agenda:

1. Jan 14 AM – setup and reporting
2. Jan 14 PM – QAPV
3. Jan 15 AM – TDW-II
4. Jan 15 PM – QAPV
5. Jan 16 AM – MMRO-III
6. Jan 16 PM – CT Sim, ARTI-II
7. Jan 17 AM – Connectathon Prep, Test Tools, Wiki
8. Jan 17 PM – DCOMP
9. Jan 18 AM – Wrap-up, Action Item review

ii. Connectathon, May 6-11, 2013, Fairfax, VA; TC meeting May 13-14, 2013

iii. ASTRO Sept 22-25, 2013, Atlanta – TC meeting tentatively Sept 26-28, 2013

iv. Domain Pre-Testing, Oct 21-29, 2013 in Baden or Munich

1. ACTION: Uli to confirm availability of Varian facilities by Jan 2013

O. RTSS Templates

i. ACTION: Walter to revise RTSS Template document per discussions:

1. Factor out (exclude for now) Clinical Trial IDs
2. Separate information on structure definition and identification from the clinical / clinical trials context in which they are used.
3. Add alternative information for RT Structure Set and Segmentation Properties

VII. Adjourn – 11:50 am ET