IHE-RO Technical Committee
Face-to-face Meeting
Fairfax, VA
September 17-18, 2011

Technical Committee Chairs:
Bruce Curran, MS, ME
Stuart Swerdloff, PhD

IHERO Task Force Co-Chairs
Jatinder Palta, Ph.D.
Prabhakar Tripuraneni, M.D., F.A.C.R., F.A.S.T.R.O.

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.*

Hours:

Saturday, 9/17/2011	8:30am – 6:00pm
Sunday, 9/18/2011	8:30am – 12:00pm

Attendance

Name	Company	Email	9/17	9/18
Bruce Curran	RI Hosp./ASTRO	bcurran1@lifespan.org	X	X
Stuart Swerdloff	Elekta	stuart.swerdloff@elekta.com	X	X
Walter Bosch	Wash. U./ATC	bosch@wustl.edu	X	X
Rishabh Kapoor	U. Florida	rkapoor@ufl.edu	X	X
Lakshmi Santanam	Washington Univ.	lsantanam@radonc.wustl.edu	X	
Chris Pauer	Tomotherapy	cpauer@tomotherapy.com	X	X
Sue Reilly	Elekta	sue.reilly@elekta.com	X	X
Koua Yang	Philips	koua.yang@philips.com	X	X
Ulrich Busch	Varian	ulrich.busch@varian.com	X	X
Ashutosh Shirsat	Siemens	Ashutosh.shirsat@siemens.com	X	
Harold Beunk	Nucletron	harold.beunk@nl.nucletron.com	X	X
Sanjay Bari	Elekta	sanjay.bari@elekta.com	X	X

Meeting Minutes

I. Call to Order @ 9:00 am
   A. Setting of Agenda – no objection

   B. Approval of minutes
      1. T-con July 17, 2011 – approved without objection
      2. T-con Patient Safety Aug 18, 2011 – approved by TC without objection

II. Agenda Items

   A. Review of Connectathon

   B. Profile Status Updates
      1. QAPV
      2. IPDW
      3. DPDW
      4. DCOMP
      5. MMRO
      6. ARTI
      7. HIS/CT-Sim
      8. Structure Set Naming
      9. RT Imaging / Cone Beam Imaging

   C. Other Business
      1. ASTRO / FDA Meeting
      2. TDW Profile
      3. Radiologist Dose Review Use Case
      4. Future Development of Workflow

   D. Future Meetings
      1. ASTRO
      2. Feb 6-12, 2012, N. Calif.
      3. Domain Pre-Testing, St. Louis

III. Business
   A. Review of Connectathon
      1. Summary of results
         a. BRTO – no new issues, test data received from new participants
         b. MMRO
            i. good existing test data; new test data (CT, PET, MRax, MRsag, CBCT);
            ii. Problem encountered with display of dose on FFS datasets on Actor that had previously passed.
         c. ARTI
            i. Inability to test all variations sufficiently, esp. *optional* transactions – There is concern that testing is not adequate to certify actors' adherence to profile. Options have be spot-tested, but all options have not be tested for each beam

technique. The combinatorics of testing all options from multiple sources is a barrier.

ii. Better test tools might help, but development has proven difficult and costly.

iii. Availability of test data gleaned from connectathon should be better publicized.

d. TDW – issues encountered

e. Archive Testing – DICOM transfer syntax configuration issue: reliable transfer required limiting Storage SCPs to default TS

2. Issues encountered

a. Availability of more/richer test data (e.g., test boundary conditions) *before* the connectathon would enable vendors to be better prepared.

b. Test data that exceed limits to test safe behavior? (To the extent the Profile specifies conditions that are to be "handled safely".)

c. Request: more frequent status updates during connectathon would be helpful.

d. Integrate into Kudu and Gazelle

e. Request additional administrative support from ASTRO for test scheduling and logistics

f. Request that all data produced be stored in *all* archives.

g. Request clarification of policy for judging

i. Behavior that adheres to the Profile but is not clinically acceptable?

ii. What does R+ really mean? Discussion: data must be displayed as received. What precision must be maintained? How much rounding is acceptable? → The user *must* be made aware of clinically relevant changes in parameters and mis-characterization/mis-configuration issues.

iii. What does "handle safely" mean? ACTION: Bruce to draft CP for ARTI Profile to clarify.

3. Review of detailed results

a. ARTI Profile – Insufficient breadth of test partners to fulfill all requirements for testing of TMS Actor as currently defined in the ARTI profile.

b. ACTION: Schedule discussion of required transactions for TMS Actor in the ARTI Profile at October TC meeting.

c. ACTION: Bruce to write letter to each TMS vendor regarding their product. Bruce will also write letter to all vendors whose products could not be tested due to insufficient test partners.

d. Review of final spreadsheet with results.

e. Validation of Test Committee Results approved unanimously by IHE-RO Technical Committee. ACTION: Bruce to report to IHE-RO PC

4. Re-testing – current policy

a. Re-testing previously tested Actors is ½ price (updated and/or released version)

i. Validation of re-testing could be done on-line using desktop sharing (e.g., Webex)

ii. IHE is considering awarding a "gold star" for testing of a released product for a Final Text Profile and a lesser, "blue star" for testing of a non-released product or Trial Implementation Profile.

B. Profile Status Updates [100% = ready for public comment]

1. QAPV (Chris) [60%]
   a. A group of QA check provider vendor representatives has been established (QA Advisory Group) to publish and approve position documents to be referenced/included in the Profile.
   b. Group is evaluating a model to accommodate QA checks that cannot be performed in real time and evaluating approaches to setting test criteria via (a) specified limits and (b) go/no-go test cases.
2. IPDW – (Uli) [95%] Profile is ready for public comment
3. DPDW – (Uli) [25%] principles have largely been resolved in development of IPDW, but given the greater complexity of this profile, much work (~2 years?) remains in preparing a profile document.
4. DCOMP – [100%] Profile is in TI, but waiting for vendors to implement and test. Per IHE-RO PC, clinical interest remains.
5. MMRO – [100%] Profile is in TI. Issues identified:
   a. To address conditions involving the same FoR with inconsistent patient coordinates, it has been suggested to make Referenced Image Sequence (0008,1140) mandatory (R+) for the Spatial Registration IOD. ACTION: Uli to post note on MMRO thread. Add to agenda for October meeting
   b. Do we need to be explicit about which image orientations must be supported for RAD-4.8 Modality Images Stored Transaction to axial? (E.g., must actors support sagittal MRs as secondary image series?) ACTION: Harold to draft language regarding restrictions for orientation of secondary image series for discussion at October meeting.
6. ARTI – (Bruce) [100%] Change to Vol. 2 content is nearly complete; some formatting remains. Vol. 1 still needs work (~5 pages + figures). New revision of TF format has header volume with boiler-plate "Volume 0".
7. HIS/CT-Sim – (Rishabh) [25%] Sub-group includes CT-Sim vendors (not yet HIS vendors).
   a. Review of "straw man" transaction diagram: TMS/Order Placer gets patient demographic information from HIS/ADT messages; TMS/Order Filler communicates with CT-Sim using Modality Worklist
   b. Does this Use Case go beyond the RAD Domain Profile? I.e., what is *specific* about the RO Use Case?
8. Structure Set Naming – (Walter) [20%]
   a. Structure Set produced by Template-Aware Contourer should record ID of template used and structure ID outlined in WP.
   b. ACTION: Walter to draft Supplement.
9. RT Imaging / Cone Beam Imaging Use Case – (Uli) [0%] nothing new to report

C. Other Business

1. ASTRO / FDA Meeting, Sept. 9, 2011 at FDA offices in Bethesda, MD
   a. ASTRO was invited to make presentations to 20 FDA staff
   b. Presentations by Howard Sandler, Ramesh Rengen, Bruce Curran, Jatinder Palta
   c. IHE-RO was focus of ASTRO presentation.
   d. Three discussion points were brought up following presentations: (i) "FDA *should* work with ASTRO to determine more effective ways to test new rad onc products." (ii) "As part of device approval process, FDA should require IHE-RO

compliance." (iii) "FDA should require manufacturers to demonstrate continued IHE-RO compliance as part of post-market surveillance."

e. No decisions were made, but follow-up meetings are to be planned.

2. TDW Profile – Final Text as of 5/6/2011
   a. Proposal: create new TDW-II Profile with same Actors and new Transactions to be consistent with revised DICOM Supp 96 (uses new SOP Classes).
   b. ACTION: Harold Beunk to prepare draft for next meeting (update Transaction IDs and references to SOP classes)
3. Radiologist Dose Review Use Case
   a. Use Case that a physician would notice. Physician reviews previously treated patient, wants to bring up summary of therapy (dose). Can existing radiology workstation be used in some way to view dose? SR encoding of isodose contours? Document exchange?
   b. Suggestion: IHE-RO should vet the business case and alternative solutions before investing substantial effort.

[Adjourn for the day @ 5:35pm]

4. Future Development of Workflow
   a. Review Radiotherapy Process Map on IHE Wiki http://wiki.ihe.net/images/2/2c/RTProcessMap_20090818.pdf
      i. Discussion of scheduling architecture: central scheduler vs. hierarchy? Radiology department workflow proposed as a model. Some workflow steps may also have locally scheduled interlocking steps, e.g., QAPV.
      ii. For each workflow step, need to identify input, output data.
      iii. Modality worklist/PPS appears to be inadequate to support planning. What work setp Instruction IODs will be needed for UPS?
      iv. What are the inputs to the scheduler?
      v. Example prescription and planning workflow
         1. Simulation directive: treat this site with this immobilization
         2. Planning directive: use this protocol, use this treatment technique (with justification for reimbursement)
         3. Segmentation: target definition (physician)
         4. Additional Segementation: high-contrast organs-at-risk
         5. Segmentation Review & Approval
         6. Treatment Plan Review & Approval
      vi. Scheduled workflow is not a forcing function, but an enabling mechanism.
      vii. Exceptions handled outside scheduled workflow vs. ad hoc scheduling – who can request a UPS?
      viii. Workflow Actors/Transactions address scheduling and data transfer, not data object *content*.
      ix. Possible tiers of scheduling actors?
         1. Basic scheduling
         2. Scheduling with charge capture
         3. Scheduling with charge capture and resource management
      x. TC could develop a "library" of transactions that can be used to create a workflow profile. → Evaluate what is needed for workflow-enabled functionality of existing actors.

xi. Separating Scheduler into multiple actors: “Contouring Scheduler”, “Registration Scheduler”, “Planner Scheduler”, etc. would make Profile extensible and facilitate testing.

5. PC Use Case prioritization as of 6/27/11 – has since been revised
   a. Patient QA
   b. Tx Delivery Device Data Integration
   c. Online Image Review

D. Future Meetings – ACTION: Walter to email Sidrah requesting announcement to TC of future meeting dates

E. Other Business

1. Machine characterization
   a. Gaps in the data model – need single, complete characterization to develop a template.
   b. Problem identified in connectathon: conflicting definitions or labeling of Wedge IDs (same wedge identified as “left” in one system and “right” in another).
   c. Need to include machine limits (per technique)

IV. Face-to-face Meetings:

- **ASTRO 2011** – Miami, FL, Thurs 10/6/11 – Noon Sat 10/8/11
- **IHE-RO TC Meeting –** Feb 6, 2012 8:30am – Feb. 10, 2012 5:00pm, N. California
- **Domain Pre-Testing & TC Meeting**
  a. April 12-20, 2012, Washington University, St. Louis, MO
  b. Emphasis on QAPV Profile
- **Connectathon 2012 tentatively Sept 2012, ASTRO HQ, TC Meeting following**
- **ASTRO 2012 – Boston, MA (TC meeting tentatively Oct 31 – Nov 3, 2012)**
- **Connectathon 2013 tentatively May 2013, ASTRO HQ, TC Meeting following**

V. IHE-RO Future Teleconferences:

VI. Adjourn at 11:45pm