IHE For Radiation Oncology IHE-RO

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IHE RO Organization  ASTRO-sponsored and AAPM supported

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- Mark Papesch, Philips Healthcare
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Steering Committee – Various and Sundry MDs and PhD

Technical Committee
- Scott Hadley Ph.D, University of Michigan
- Chris Pauer, Sun Nuclear

Department of Radiation Oncology • University of Michigan Health Systems
Why is IHE-RO Important?

- ASTRO’s 6-point patient protection plan
  - 5) Further developing our Integrating the Healthcare Enterprise – Radiation Oncology (IHE-RO) connectivity compliance program to ensure that medical technologies from different manufacturers can safely transfer information to reduce the chance of a medical error.

- Promotes discussion and correction of protocols / standards for data communication to improve the reliability and safety of data exchange in radiation oncology

- Provides a mechanism for inter-manufacturer testing of radiation oncology products prior to delivery
  - Domain Pre-testing
  - Connectathon

IHE RO alphabet soup

- BRTO – Basic RadioTherapy Object
  - Simulation, set iso/fields, calculated dose, delivery

- ARTI – Advanced RT Integration
  - 3DCRT, IMRT, Dynamic Wedge, Arc, VMAT, …

- MMRO – MultiModality image registration for RO
  - CT to CT, CT to MRI, Exchange of contours, Dose Display

- TDW – Treatment Delivery Workflow
  - Exchange of Plan to/from Device and Treatment Management System
What are the Standards?

- **DICOM** (Digital Imaging and Communications in Medicine)
  - DICOM is a standard for handling, storing, printing, and transmitting information in medical imaging.
  - DICOM enables the integration of scanners, servers, workstations, printers, and network hardware from multiple manufacturers.
  - [http://medical.nema.org](http://medical.nema.org)

- **HL7** (Health Level 7)
  - HL7 is an international community of healthcare subject matter experts and information scientists collaborating to create standards for the exchange, management and integration of electronic healthcare information.
  - HL7 promotes the use of such standards within and among healthcare organizations to increase the effectiveness and efficiency of healthcare delivery for the benefit of all.
  - [http://www.HL7.org](http://www.HL7.org)

Parts from [http://www.wikipedia.org](http://www.wikipedia.org)
**Real TC Example**

- The abbreviation "SSD" stands for?
  - Source to SKIN distance?
  - Source to SURFACE distance?
- HDR source position refers to which of the following?
  - Tip of the Wire?
  - Middle of Active Source?

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**Profile Life Cycle**

- Idea submission from
  - IHE RO members PC, SC, TC
  - Draft Clinical use cases & Impact Statements
  - Ranked in terms of importance and prioritized
- TC investigates and determines
  - Available standard for implementation
  - Possible technical issues with profile

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**Profile Life Cycle**

- TC Drafting Phase
  - Profile has champion from vendor to do major drafting
  - Drafting happens offline as well as at Face to Face meetings of TC
  - Possible to send “CP”s Change Proposals back to DICOM
- TC Final Draft
  - Sent to IHE for Public Comment phase
- Trial Implementation
- Final, Available for Connectathon Testing
- Deprecation when replaced
**ARTI Clinical Impact Statement**

“How will this get me home 20 minutes earlier” – Dick Fraass

**Clinical Impacts**

This profile describes the required way to report external beam plans delivered on a live. Where there has been ambiguity in defining plan data at each point in the delivery, this profile defines one way to report it. An example: watered wedge monitor units, electron field sizes and dose rates are beams. The goal of this profile is to be able to communicate a plan that is dosimetrically accessible. This profile also demands that the user can display the original plan content on the receiving system and thus allow the user to compare the original data to the receiving system’s internal, working version of the plan. This can serve as an auditing tool if information doesn’t match up after a data transfer. This profile facilitates this by specifying the mandatory, minimally available data for comparison of plans. This allows the user to see the original plan content so that it is readable and sent in SGDM format.

**RXRO “Prescription” Use Cases**

- HIS/EMR Draft of MD Intent
  - Transfer to OIS
  - OIS updates Rx after simulation
  - Planning system pick up Rx from OIS
  - Plan is produced and updated Rx sent to OIS/HIS/EMR
- Context Specific Displays of information
  - “Simple” display for Tx Delivery
  - “Full” information for planning and review

**What happens after the Connectathon?**

- Successful results (specific by IHE profile/actor) are published by the sponsors: www.ihe.net/connectahons
  - Found on ASTRO website
- Vendors self-certify, by publishing IHE Integration Statements: Precise and explicit public interoperability commitment for a specific commercial product.
  - Found on vendor website or ask for copy with RFP
IHE Integration Statement

RFP Language Example

1. Must provide RFPs with ISO/IEC conformance statements for the IHE components interfaces.
2. Vendor shall provide an IHE conformance statement for each system, which includes a description of the RFPs, as well as an indication of the IHE components interfaces in the RFPs.
3. Vendor shall provide implementation details for each system, including a description of the IHE components interfaces in the RFPs.
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IHE RO Website

http://www.ihe-ro.org/