Profile Development

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Vendor Participation

IHE-RO Meeting, consisting of staff from 8 vendors and multiple clinical sites

Benefits of Vendor Participation

- Profiles will work!
- Problem Solving
  - Vendors get familiar with peer device issues, and are often able to read logs of other device to troubleshoot issues
  - Network of Contacts for vendor troubleshooting grows in number and trust.
- This all leads to quicker understanding and resolution of site problems.

Realities of Profile Priorities

- Profiles ARE based on clinical use cases
- There is a priority and weighting process
  - What is most critical to the clinical flow
  - What can realistically be addressed by technical solutions
    - How does it affect treatment critical functioning of device?
    - Are there standards to support the data and transactions?
    - Is it an interoperability problem?
  - Weighting on difficulty of implementation / profile creation
  - How will it sell?
- Some profiles are not strictly driven by clinical use cases, but the behavior or data is technically needed to support basic correct operation.
- In the end, it is perceived demand for a given behavior that is key to it being developed into a profile, and then being included in product. The clinical user is key to driving profile development!

Content and Workflow – RO Planning and Treatment Delivery

- As noted earlier, there are…
  - Content profiles – dictate specific relationships of data in existing standards
  - Workflow profiles – describe what is the order and content, from the content profiles, that transactions and signaling should be in place to claim that an actor's behavior is "correct".

Content and Workflow – RO Planning and Treatment Delivery

- Content profiles – DICOM standard by itself is not enough to guarantee the consistency of a treatment description.

Content – RO Planning and Treatment Delivery

Arc Beam:

>> RT Beam Limiting Device Type	(300A,00B8)	R+*	Shall be 2 jaws, MLC shall not be present
>> Leaf Position Boundaries	(300A,00BE)	O+*	NA (no MLC) May or may not be present for jaws, may be ignored for jaws

MLC Beam:

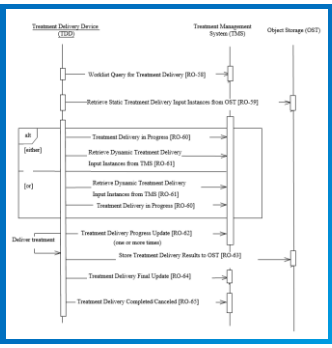
>> RT Beam Limiting Device Type	(300A,00B8)	R+*	Shall have at least 1 MLC
>> Leaf Position Boundaries	(300A,00BE)	R+*	Shall be present for MLCs May or may not be present for jaws, may be ignored for jaws

DICOM Standard:

RT Beam Limiting Device	**Type of beam limiting device (collimator).** Enumerated Values: **X - symmetric jaw pair in IEC X direction** **Y - symmetric jaw pair in IEC Y direction** **ASYMX - asymmetric jaw pair in IEC X direction** **ASYMY - asymmetric pair in IEC Y direction** **MLCX - multileaf (multi-element) jaw pair in IEC X direction** **MLCY - multileaf (multi-element) jaw pair in IEC Y direction**

Content and Workflow – RO Planning and Treatment Delivery

- As noted earlier, there are…
  - Workflow profiles – describe what is the order and content, from the content profiles, that transactions and signaling should be in place to claim that an actor's behavior is "correct".
- One ongoing challenge – The language and appearance of the solution does not always translate back clearly to the Use Case it is addressing
- Clinical Impact Statements



Working Safety Concerns into Profiles

- Every profile is weighed as far as how it addresses safety issues
  - Patient identification requirements
  - Identification of key treatment plan parameters
  - Example from Treatment Delivery Workflow-II:
    - *All comparisons of Meterset values in RT Plan and RT Beams Delivery Instruction instances retrieved from the TMS must agree with corresponding TDD local data within clinically meaningful precision (as defined by the TDD).*
    - *Meterset values in RT Plan and RT Beams Delivery Instruction instances retrieved from the TMS must satisfy*
      - *a. Continuation Start Meterset >= 0*
      - *b. Continuation Start Meterset <= Beam Meterset*
      - *c. Continuation End Meterset <= Beam Meterset*
      - *d. Continuation End Meterset >= Continuation Start Meterset*
    - *Inconsistency in Fraction Number is handled at the discretion of the TDD.*
    - *In case of inconsistency between RT Plan and RT Beams Delivery Instruction instances retrieved from the TMS and local data, the TDD must either (1) refuse treatment or (2) require user to override in a recorded and auditable manner.*

Working Safety Concerns into Profiles

- Specific profile work:
  - Quality Assurance with Plan Veto (QAPV) - Checks for harmful data configurations, which may result in severe adverse events to patients. Ready for Trial Implementation.
  - Prescriptions (RXRO) - Consistency in Radiotherapy Prescription display, description and transfer. Required a refinement of DICOM to represent Prescription differently. Currently in development.
  - Template Exchange - Bring consistency to description and workflow when referring to a treatment site in patient.
  - QA Workflow Profile - Quality Assurance workflow in Radiotherapy is under-represented in IHE. Attempt to bring consistency, transparency and more speed to device communications for QA.