

What's happening: DICOM WG-7



Supplement 147



- Existing radiotherapy IODs, originally developed in Supplements 11, 29, and 102, were designed to provide a set of containers for use in communicating radiation therapy data of all types, in a generic and flexible way.
- Since the development of those IODs, both radiation therapy practice and the DICOM Standard itself have evolved considerably. In particular, workflow management is now a key aspect of DICOM's domain of application, and Supplement 74 in conjunction with Supplement 96 have begun the growth of radiation therapy into workflow management.
- This supplement addresses the need for a new generation of IODs and processes required for use in radiation therapy. The general principles under which these IODs and processes have been developed are documented below.

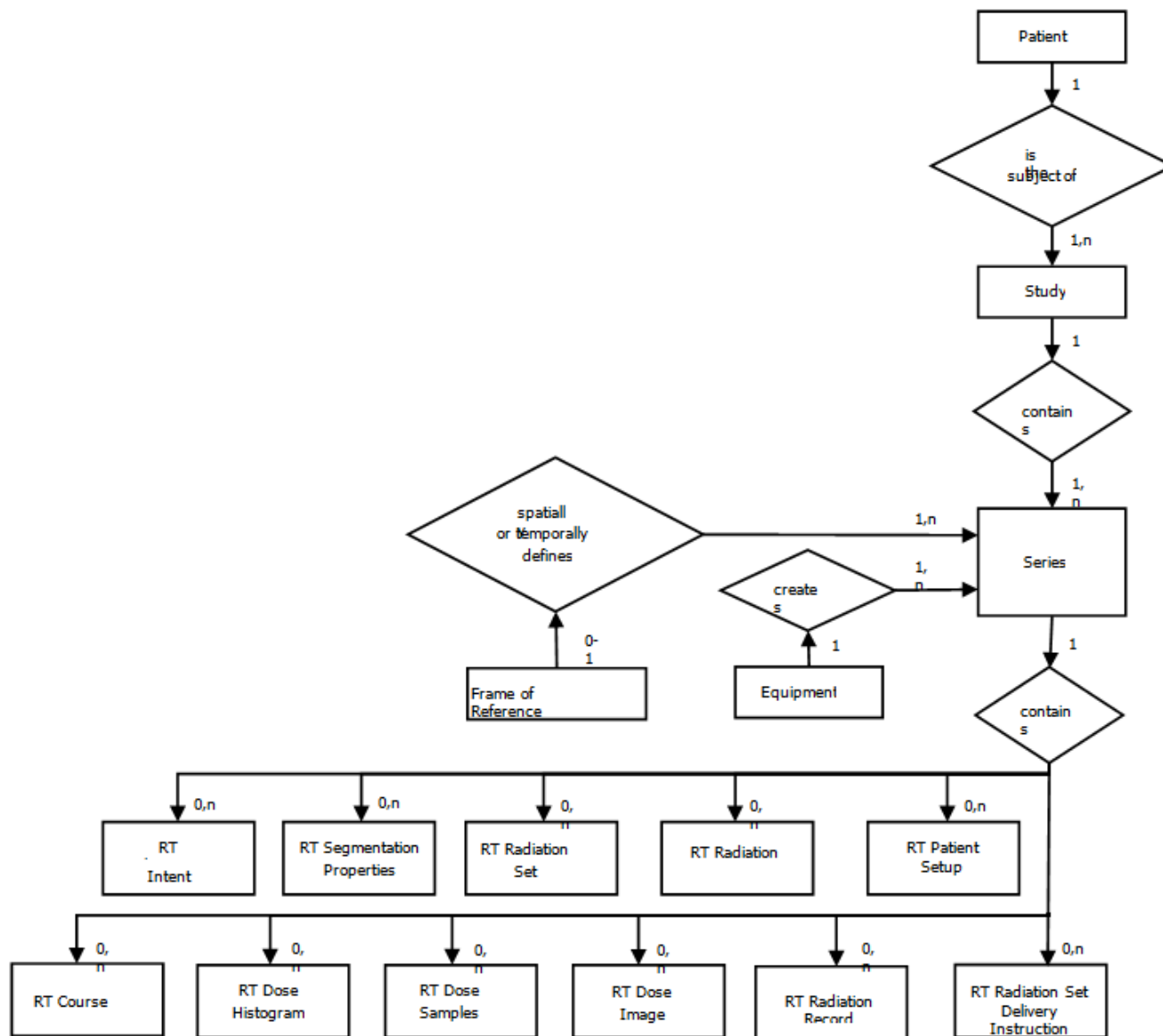
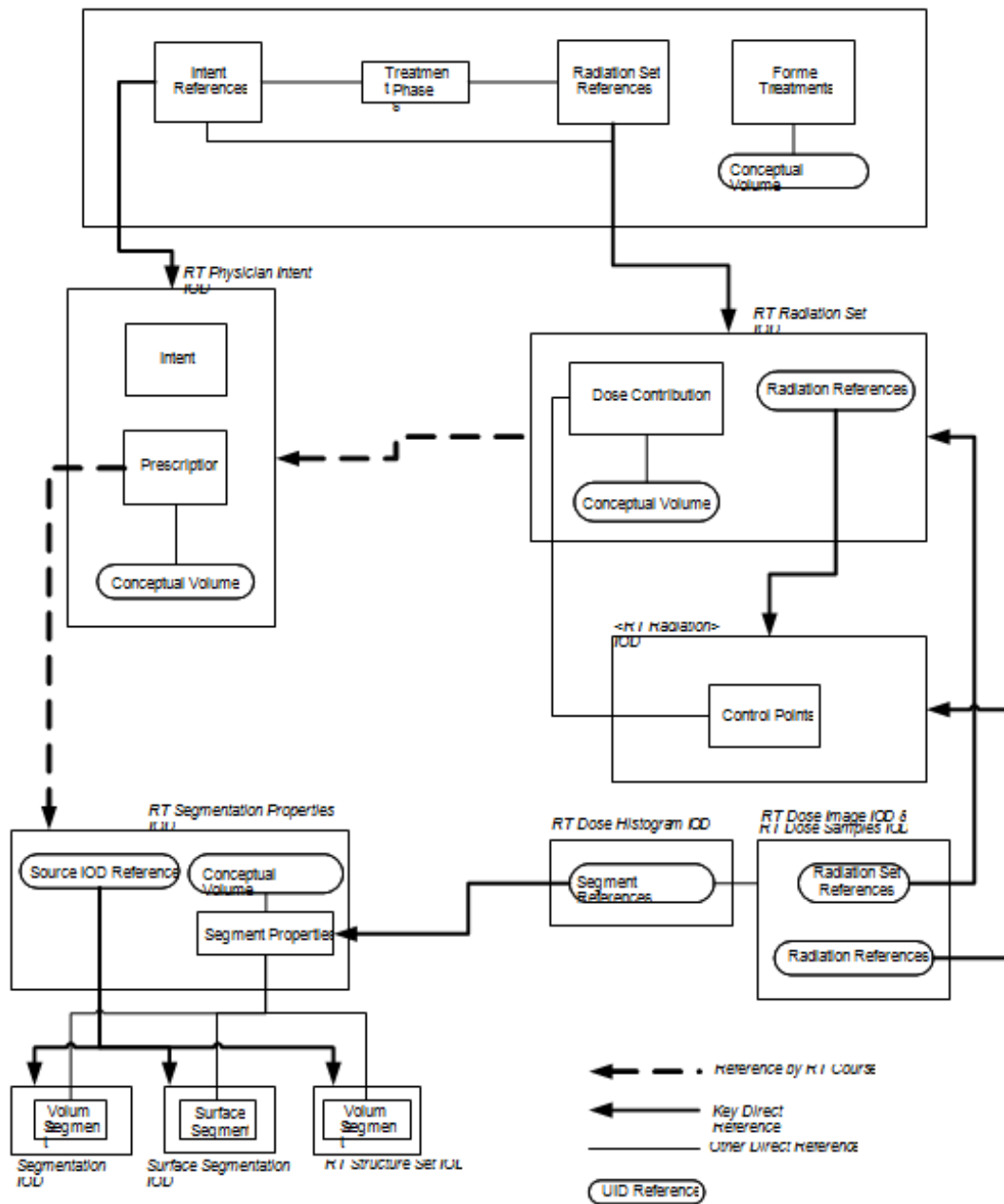


Figure A.VV-1 — RT Second Generation IOD information model

RT Course IOB



Radiations



- Each type of Radiation is specific to a delivery modality:
 - Tomotherapy
 - C-Arm Photon
 - C-Arm Electron
 - Multiple Fixed Source
 - Multi-Axial
 - Robotic
- Allows clearer definition of each delivery type with fewer “optional” attributes

Conceptual Volumes

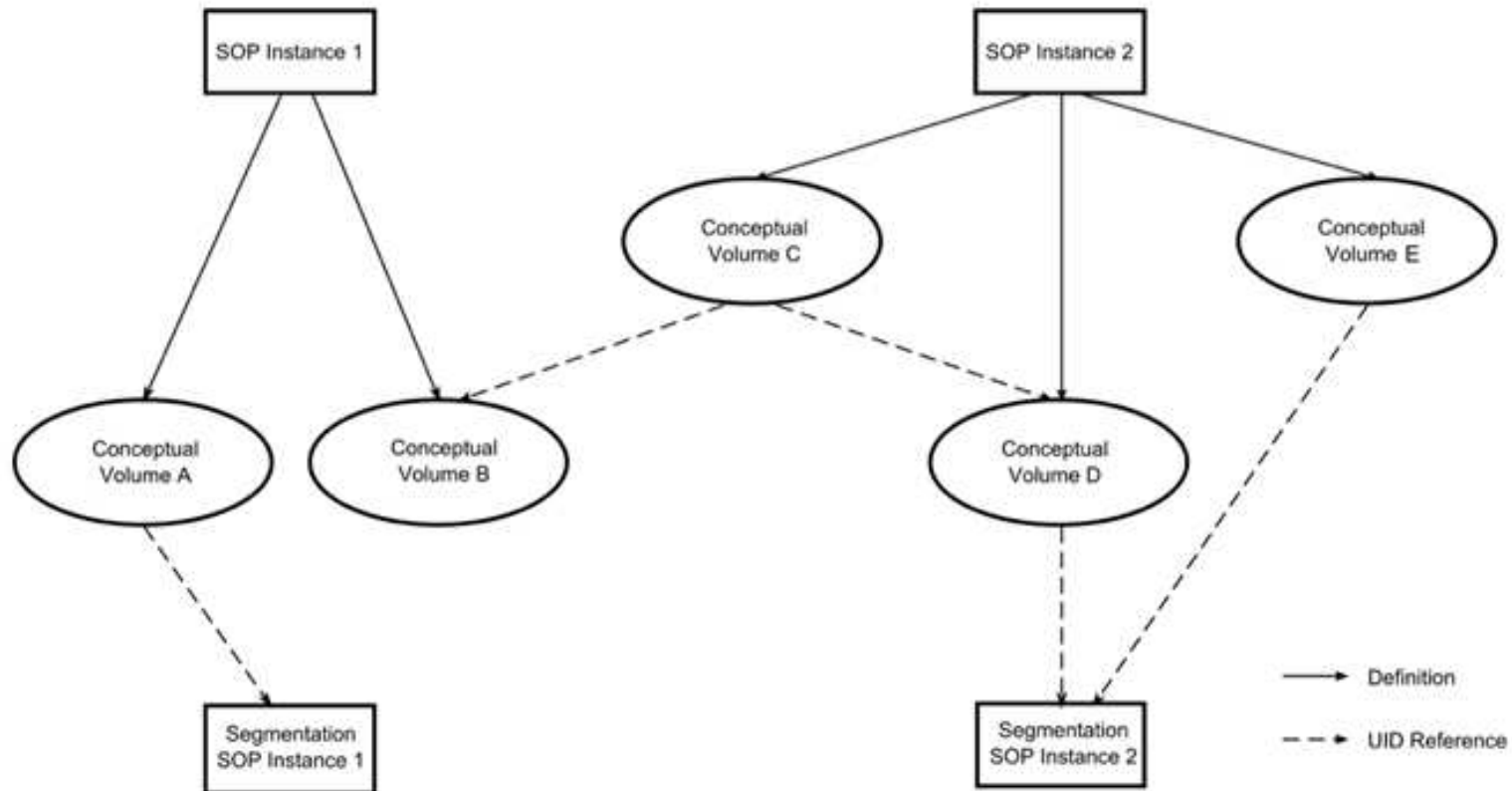


Figure C.8.A.1.5-1
Conceptual Volume References

Conceptual Volumes

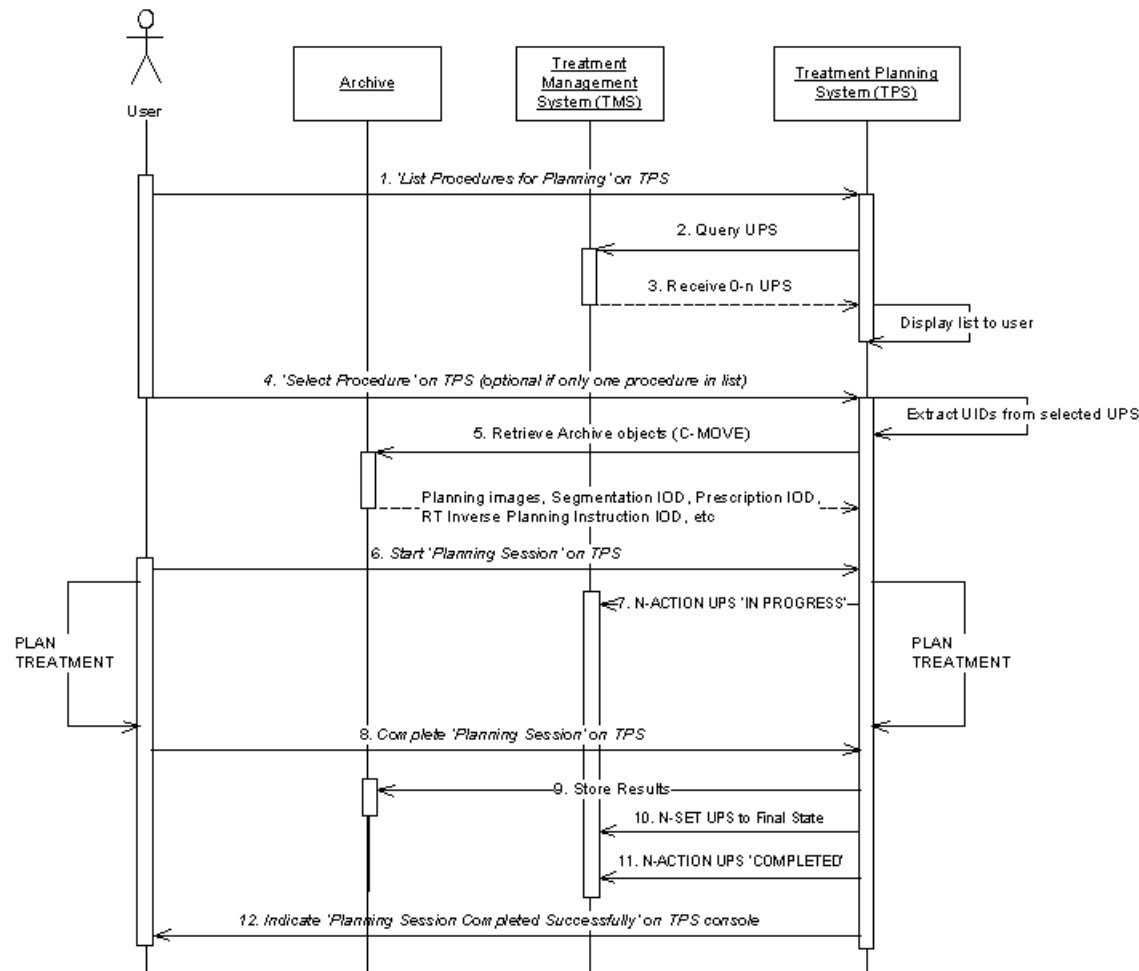


- Allows several representations of anatomy to be grouped together
 - MRI
 - CT
 - PET
 - CBCT
- Includes support for more advanced DICOM representations of anatomy
 - Segmentations
 - Surface Segmentations
 - ...

Designed for use with Workflow



Figure ZZ.4.2.1-1
Treatment Planning Normal Flow - Message Sequence



2nd Generation RT



- Supplement 147 is the first of 2-3 supplements to be produced
 - Physician's Intent / Prescription
 - Conceptual Anatomies
 - Basic Radiations
 - Dose Reporting
- Additional supplements will address areas not covered in 147
 - Ions
 - Brachytherapy
 - Additional external beam modalities
 - Additional Patient Positioning and Verification
 - RT Image

Other WG-7 Efforts



- Use of Presentation States, particularly nDimensional, in RO
- Trial Implementation Working Group for 2nd Generation Objects
- Limitations of Spatial Registrations and Frames of Reference in DICOM (RO implications)

Other Related Activities



- **RT Stakeholders**
 - Formed to address patient safety and quality assurance issues in Radiation Oncology
 - Many of the same ‘players’ from WG-7 and IHE-RO
- **Machine Characterization (NEMA RT Section)**
 - Standard language (probably XML-based) to exchange RO machine definitions
 - ✦ Motions
 - ✦ Directions
 - ✦ Limits
 - ✦ Not directed at a standardized dosimetric data exchange