

# Cube Data Model

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# Kick-off

- IVOA Interop – Sept. 2013
  - Show as extension of ObsCore
  - Bring product models ( Image/Cube, Spectral ) into consistent use of core models (ObsCore, Char, STC)
  - Facilitate representation in VO-DML.
- Nov. 2013: ImageDM draft uploaded to twiki (DT)
  - Updated to reflect initial reviewer comments.
  - Architecture section revised in response to discussion
  - Data model classes extensively revised to provide compatibility with ObsCore/Observation and Char2.



# DM list discussions (Nov - Jan '14)

- Twiki
  - <http://wiki.ivoa.net/twiki/bin/view/IVOA/ImageDM>
- Relation to ObsCore
  - Illustrated ObsCore as containing a subset of observation dataset metadata defined in the SpectralDM and ImageDM draft, plus extension for Access.
- Observation Relation to Dataset
  - Spectral/Cube will show "Observation" as a type of Experiment which is associated with 0:\* Datasets.
  - The Dataset will be generic with ObsDataset extension to include metadata from the Observation model.



# Discussions (Cont.)

- Mapping

- The Image/Cube model will be refactored to distribute the Mapping information to the corresponding STC based structure for coordinate systems and frames.
- The current STC model does not fully support requirements of Cube model, so adjustments will be recommended (STCMod).
- If access protocols (SIAP2) require the Mapping object to encapsulate the transform information in a query response, it should be defined there, with a 'mapping' to indicate how to populate that structure from the model components. (Cube model could provide info illustrating WCS keyword distribution to model elements.)



# Discussions (cont.)

- Provenance: Explicit node in the model?
  - The consensus seems to be that there is no logical head for Provenance at this time, nor can we presume a structure to it, so we will NOT include a Provenance class/node at this time.
- Derived: Is it needed in Cube model?
  - It should be included as element of top level Dataset, containing 'information derived from other model elements'.
  - NOTE: recent comments regarding object structure.



# Cube Model Development

- Component models
  - Observation/Dataset
  - NDCube: model for SparseCube and NDImage
  - STC-1.33 (my interp), and STCMod extensions
  - Char-1.13: Characterisation
  - IvoaTypes: base data types from VO-DML
- SVN Repository
  - Image, XMI, Modelio save sets published to Volute
  - <http://volute.googlecode.com/svn/trunk/projects/dm/CubeDM-1.0/>

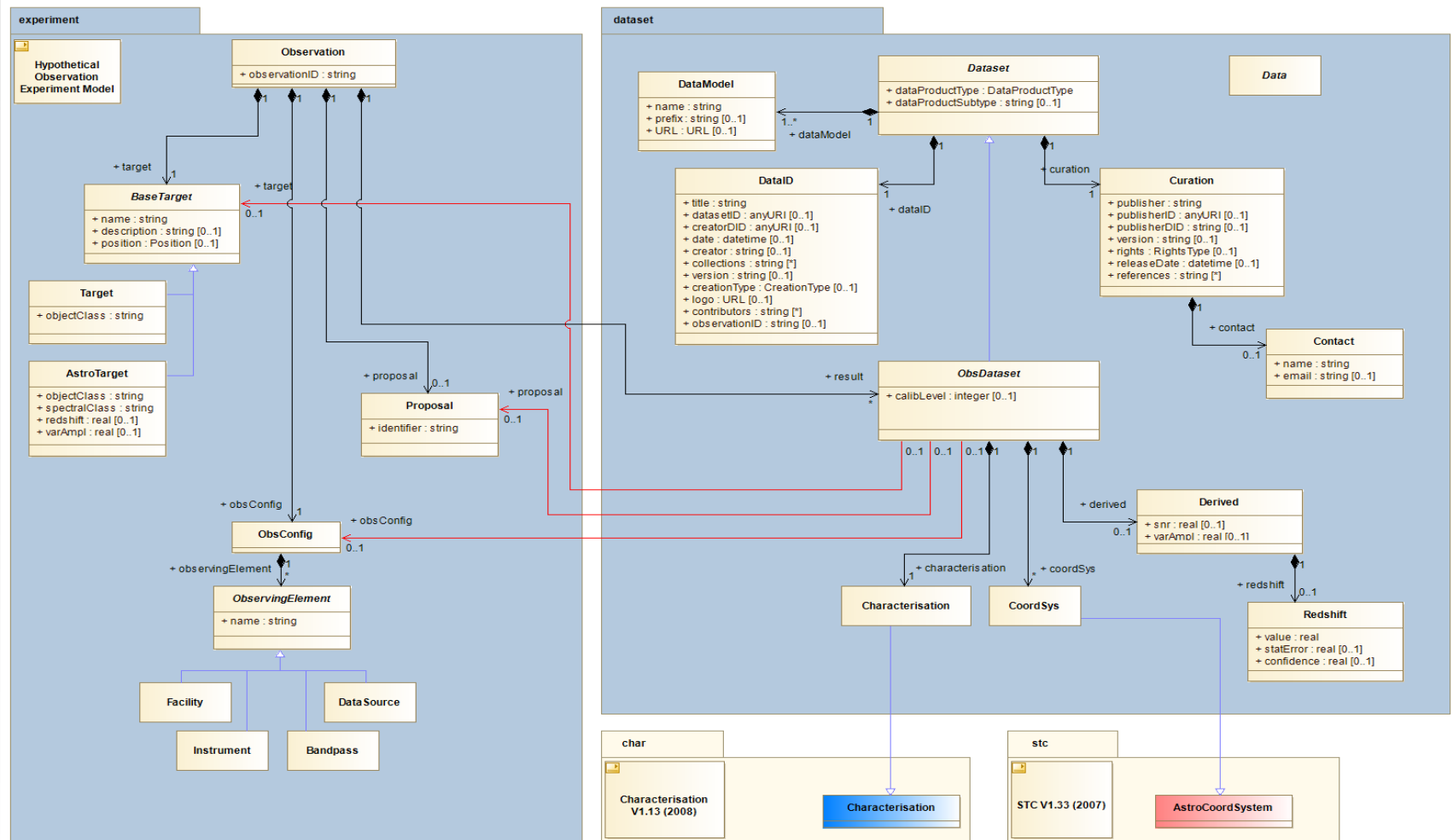


# Cube Model Development

- VO-DML
  - Incorporation of base datatypes
  - Follow vo-dml modeling guidelines
  - Define model dependencies in UML (stereotypes)
  - Initial 'port' to vo-dml/xml done by hand (Omar)
  - Working with Gerard to use XSLT script to translate Modelio XMI-2.4.1



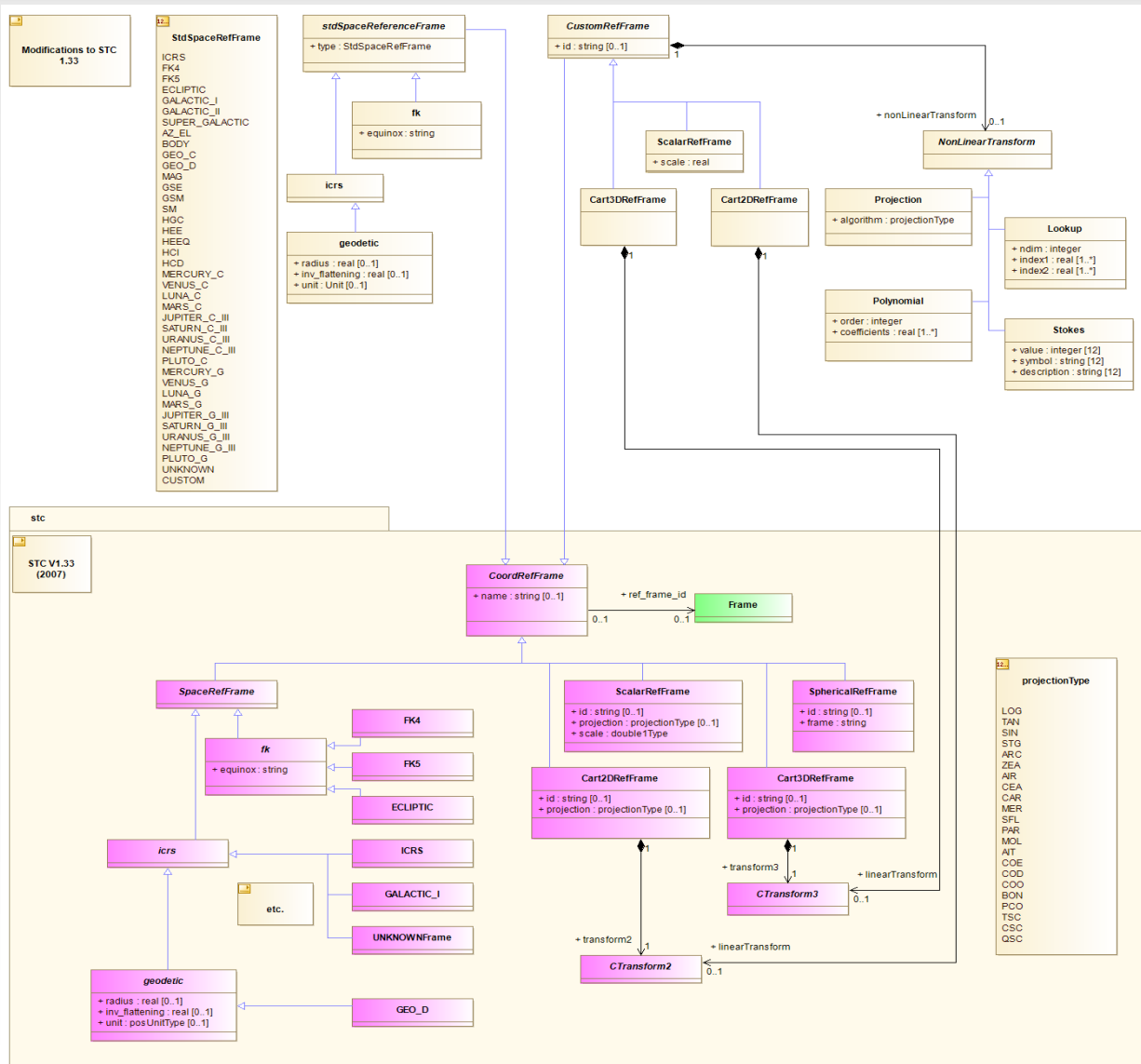
# Diagrams: Obs-Dataset





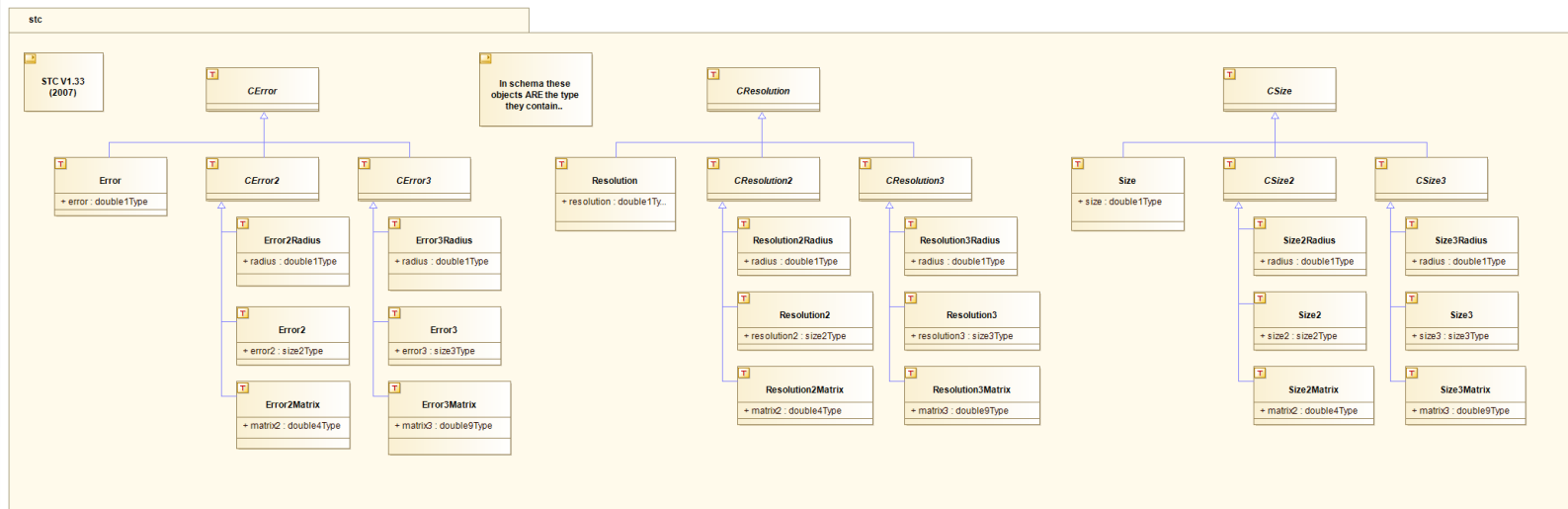
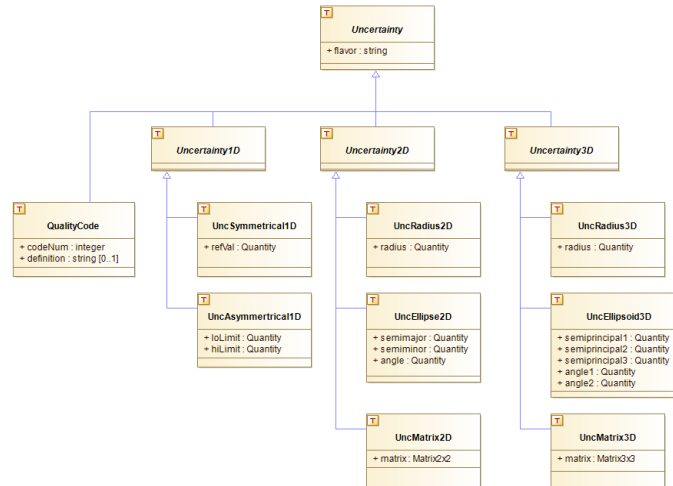


# Diagrams: RefFrame



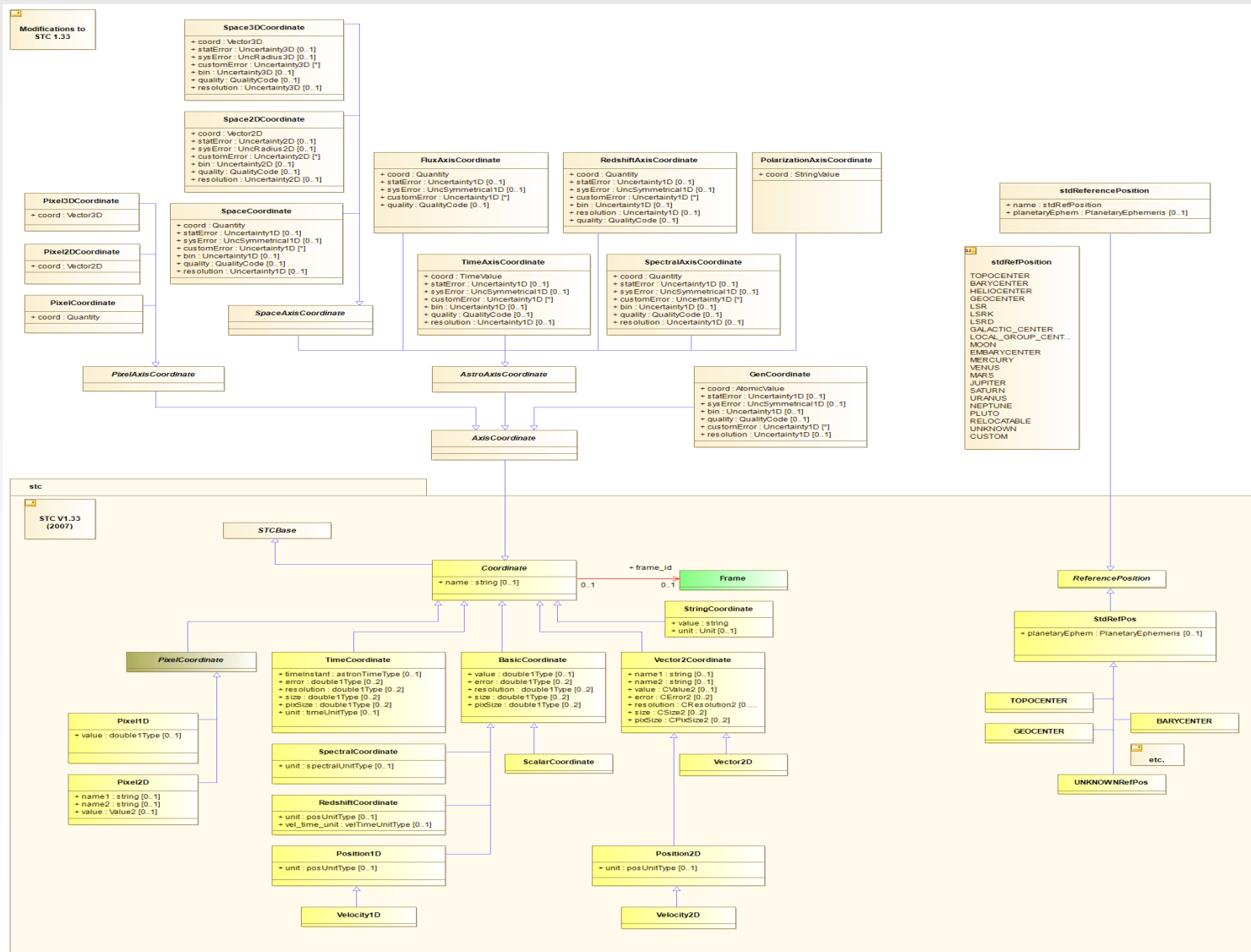


# Diagrams: Uncertainty



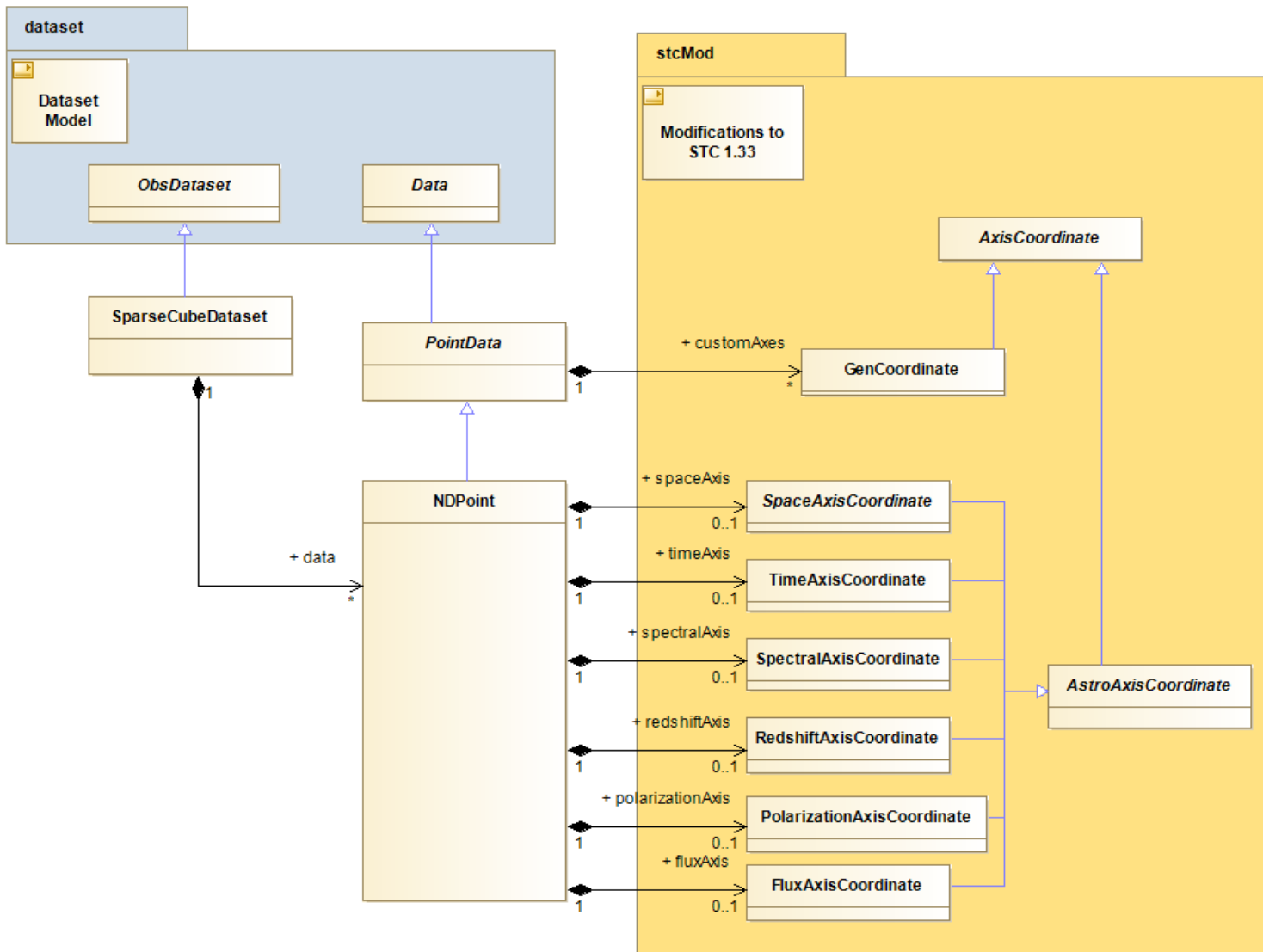


# Diagrams: Coordinate



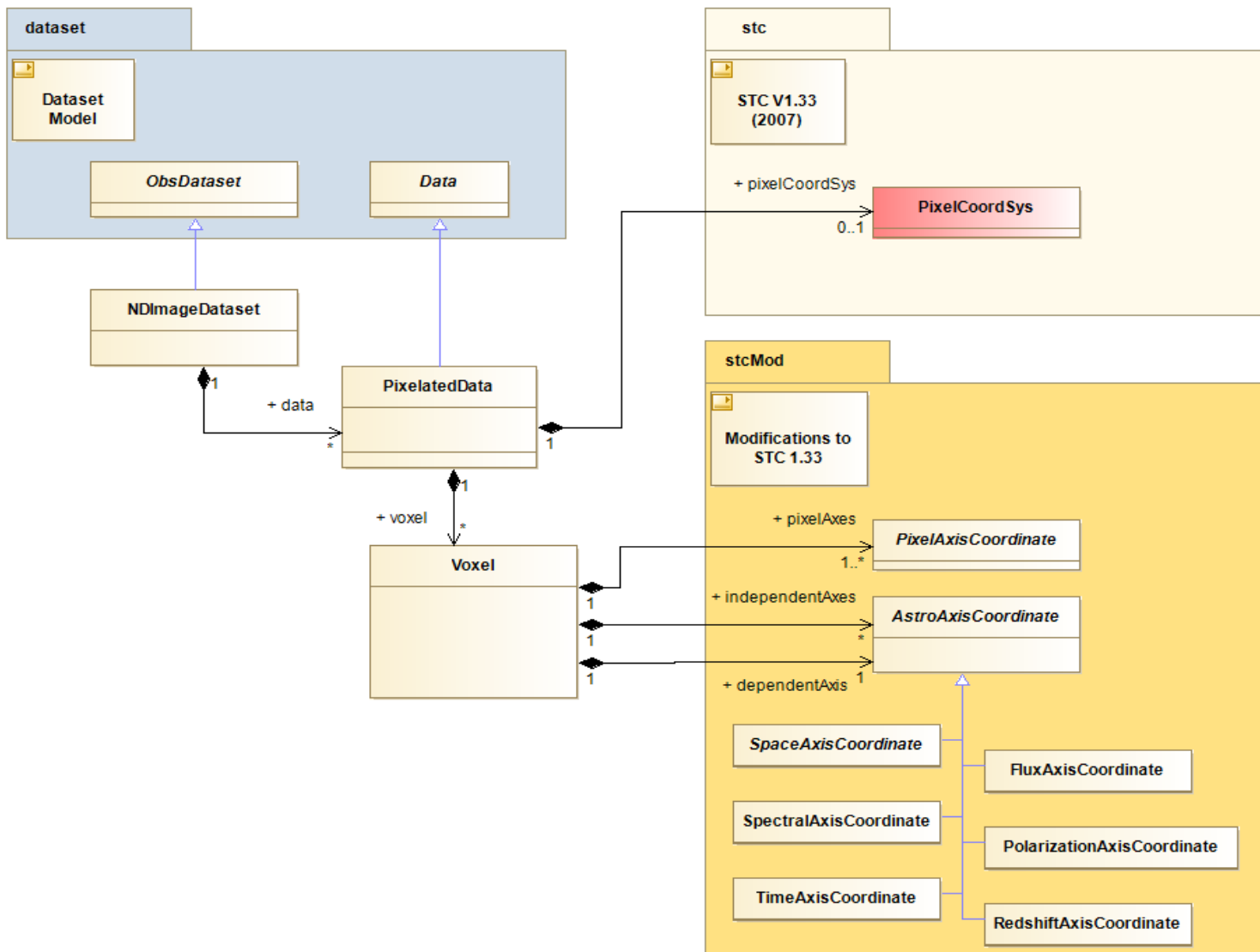


# Diagrams: SparseCube





# Diagrams: NDIImage





# Ongoing work..

- Open topics:
  - Dataset vs DataProduct
  - STCMod.. what to do with these? STC update and/or local extensions.
  - ObservationID: Observation and DataID
  - Data: use subsetting, base from STC?
  - VO-DML compliance: attributes with 0:\* multiplicity.
  - Others?