# Interop May 2007

Spectrum Data Model

Jonathan McDowell

Spectrum Overview

- Spectrum model represents a set of fluxes versus a set of spectral coordinates

- Use UCD to specify type of flux and type of spectral coordinate (wavelength, freq. etc)

- Support for describing errors, bin size, data quality for each point

- Metadata definitions grouped in mini-data models (we will reuse in other data models)

- Same model usable for time series, photometry

- Aggregatable into SED, echelle, etc. model
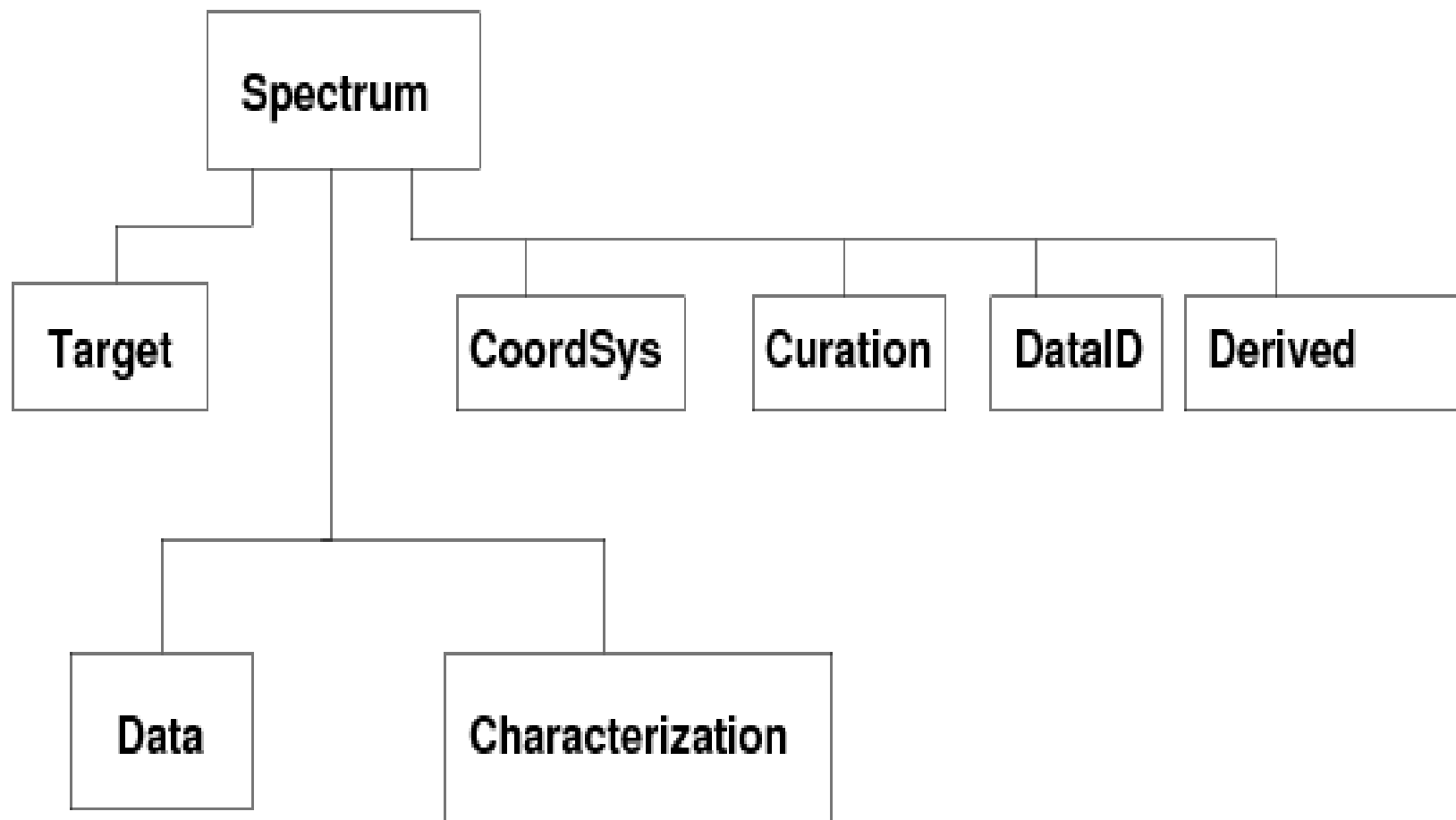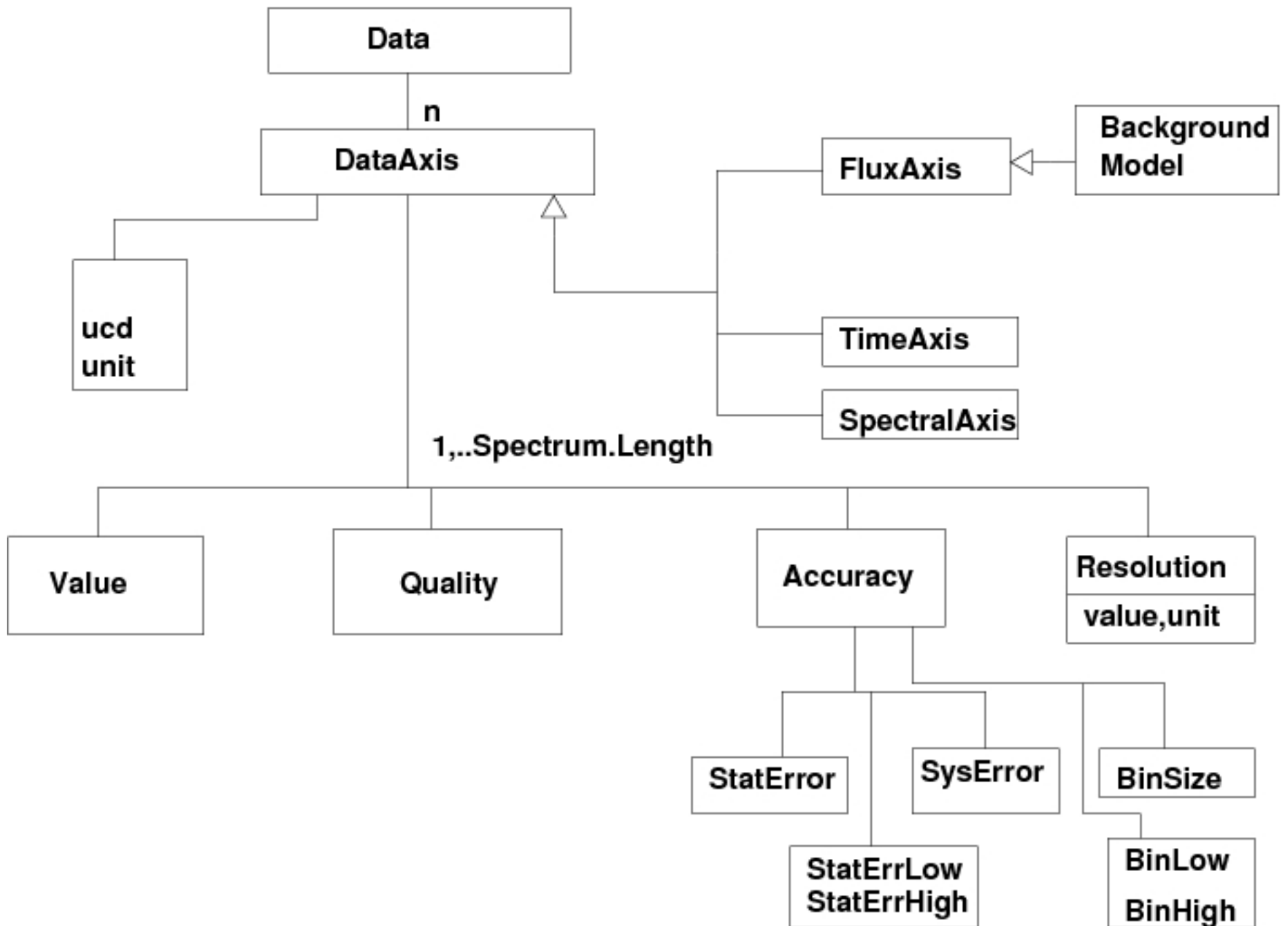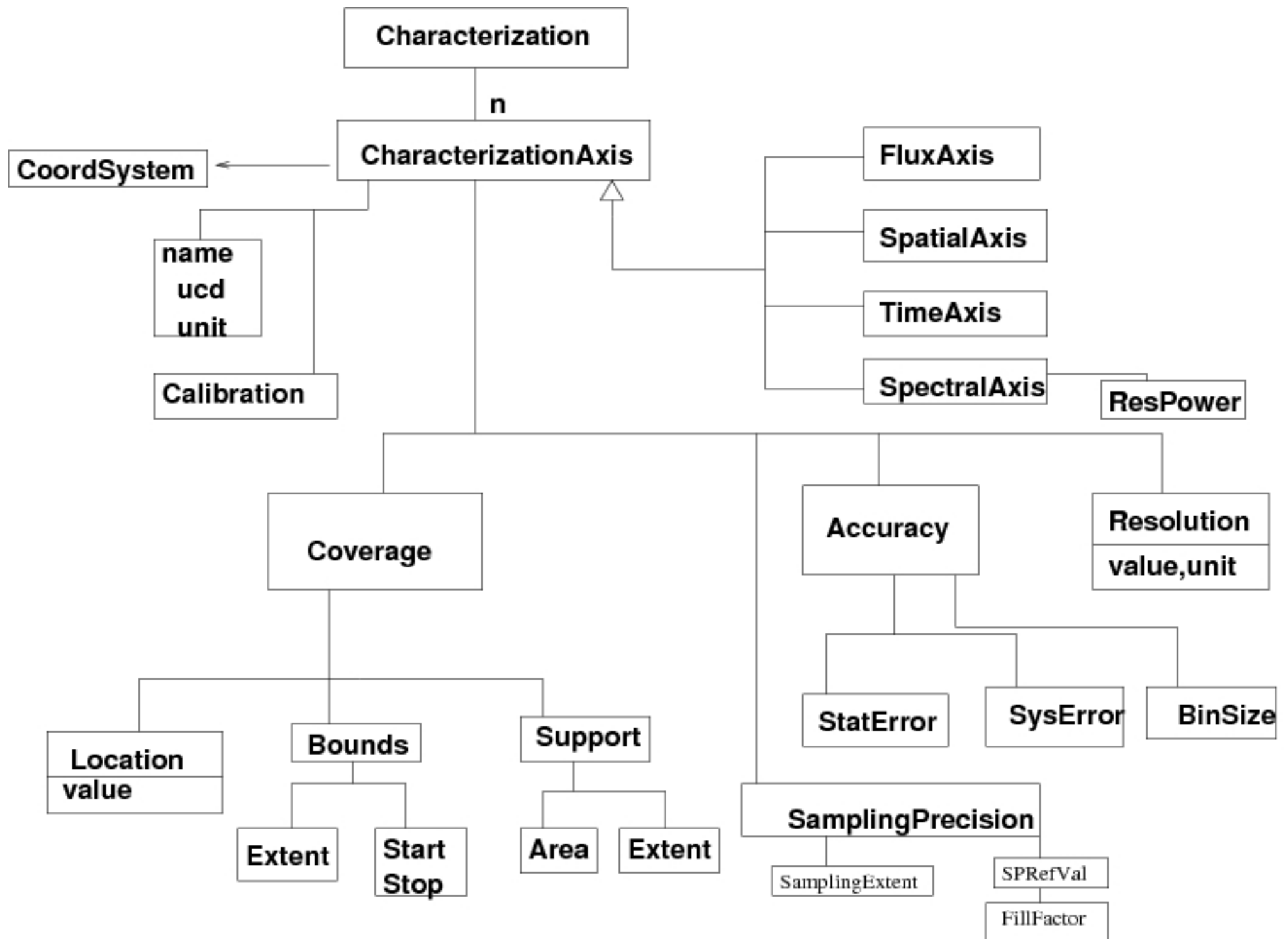
Spectrum

- New document version 1.01

- http://ivoa.net/Documents/latest/SpectrumDM.html

- Changes since last Interop:

    - Characterization modified to more closely conform to overall Char doc

    - FITS keywords changed as a result of collaboration with MAST group who are implementing FITS service

Spectrum Char

- Characterization object describes effective parameters of dataset – effective resolution, as-filtered start and stop time, software extraction aperture, etc. (Orginal observation parameters not of immediate interest – will be in Provenance).

- Spectrum V1.0 does not use full STC and Char. It is proving impossible to solve the whole VO at once... get something out and develop experience.

- In Madrid in March, we met to get as close as we could within that limitation

Spectrum Char -2

- Changes made:
- Added a SamplingPrecision tree to Spectrum.Char
  - Includes the FillFactor
  - Includes SampleExtent (same as bin size)
  - Does not include more complicated things from full Char
- Char.CharAxis.Accuracy.Calibration moved to Char.CharAxis.CalibrationStatus

Other changes

- Added ResPower – dimensionless resolving power (we also have Resolution)
  - So can have ResPower=200, Resolution=3A
  - Utype is Spectrum.Char.SpectralAxis.ResPower
  - Only present for SpectralAxis
  - Not in main Char; special extension for Spectrum data
- Some UCDs changed to match latest list
  - time.expo -> time.duration;obs.exposure

FITS changes

- Various keyword changes – review list in doc
- Added TUTYPn keyword
  - TTYPE4 = "WAVE_ERR"
  - TUTYP4 = 'Spectrum.Data.SpectralAxis.Accuracy.StatErr'
  - Lets you use a user-meaningful column name, but let parser software identify where column fits in the data model.
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IMPLEMENTATIONS

- CfA Implementation library
    - http://vo.cfa.harvard.edu/soft
    - JAVA/JAXB based
    - Supports XML, VOTABLE, FITS serializations
    - Compliant with latest version of docs
- JHU implementation, with proxy at Doug's SSAP test site (VOTABLE, XML)
- MAST implementation, in FITS
- NOAO (Valdes) – at earlier rev?; others

RECOMMENDATION

- Freeze 1.0
- Begin PR RFC period NOW