Using Characterisation:

Usability - VO-side

- VO models and standards
  - Consistent with STC
    - Controlled coordsys vocabulary/vectors etc. where defined
  - Consistent with Registry
    - Add Curation section (c.f. Spectrum)?
    - Learn from difficulties (most Registry entries incomplete)
  - Consistent with SIAP etc. as well as more sophisticated tools
- VO tools
  - Must have enough detail to be usable
    - **Need test applications**
  - Software *could* default to coarser level
    - e.g. assume Support is single region same as Bounds
  - Most (all?) want fixed values from models, not functions/URI
    - Can't yet have multiple different Support regions on different axes

Using Characterisation:

Usability – Data Provider

- How do data providers store metadata?
  - Archive database (conventional or xml?) designed for retrieval
  - Observing log (DB, ascii, xml...)
  - FITS headers
- How do metadata map to Characterisation elements?
  - Unambiguously: e.g. Location = mydatadb.position or CRVAL1
  - Conversion formulae needed: e.g. Bounds = *f* (*ν*, aperture...)
  - Separate information: e.g. instrument log (on- or off-line)
- How can we retrieve metadata?
  - Trial XML templates or forms
  - Form to provide mappings common to large collection
  - Heuristics/manual tweaking (if safe from overwriting)
- **Very encouraging developments – DALIngestor, MEx**

Compliance with Characterisation

General considerations

- Use MUST as sparingly as possible
  - Data providers wouldn't bother at all if they didn't mean well
  - We don't know exactly how much is useful till we've tried
  - Superfluous/confusing obligations **will** go wrong
- ... but make sure enough is there to be useful to tools
  - Numerics (not references/*f*s) for top levels – Location, Bounds
  - Give units/coordsys if Axis Frame values not appropriate
    - e.g. can't give Resolution in sexagesimal
    - More conversion tools recently become possible (e.g. STILTS)
      - How to warn when uncertainties increased?
  - Give all elements in an array (e.g. Bounds $\alpha 1\ \delta 1$, $\alpha 2\ \delta 2$)
- Make it easy to validate, return helpful error messages
  - How far do we check content as well as form?

Axes

- MUST be at least one! with unit and coordsys
- SHOULD give Space, Time and Spectral Axes
- MAY provide other axes e.g. Velocity, Polarisation...
- SHOULD give Observable
- For each axis frame:
  - MUST give Location *or* Bounds
    - MUST give both if entire system is relative e.g. simulation
  - Otherwise SHOULD give Location *and* Bounds
    - Location etc. can be reference value etc. as appropriate.
- SHOULD give Support on **Coverage** axes
  - Lower levels/additional properties must apply to all Supports
- MAY give Sensitivity (e.g. weight map)
- MAY give FillFactor if coverage is sparse/irregular

Resolution, Sampling, Accuracy

- SHOULD give Accuracy for each Coverage axis
- MAY give Resolution and/or Sampling
- General axis rules as applicable, e.g. if an axis is present:
  - MUST give samplingPrecisionRefVal for sampling period
  - SHOULD give samplingPrecisionRefVal for sample extent

Axis Flags

- SHOULD indicate In/Dependent, where applicable
- SHOULD indicate calibration status (default Uncalibrated)
- MAY indicate sampling status (undersampled or etc.)

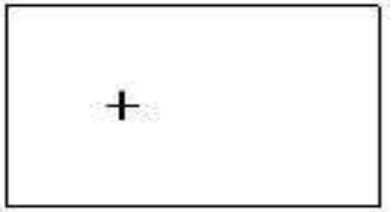
These sections result from discussions between Bonnarel, Chilingarian, Louys, McDowell, Richards.
Micol not present – will be consulted! Document now on Wiki.

Similar for any axis:

Location

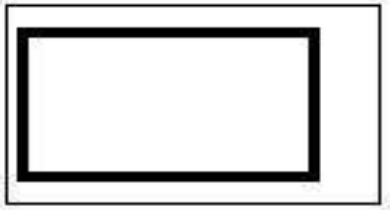
Location

MUST

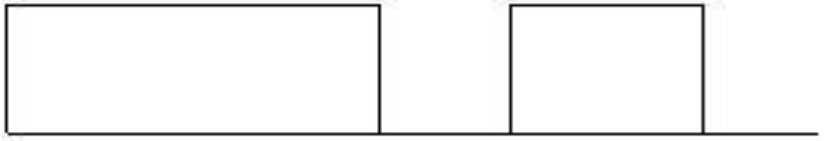


Bounds

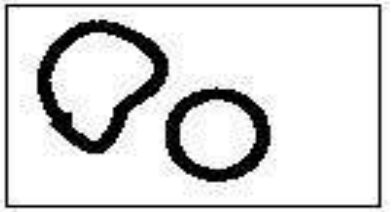
Bounds



SHOULD

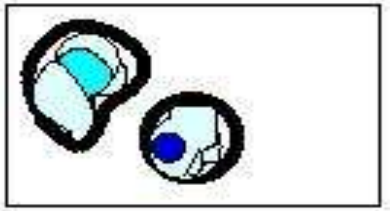


Support

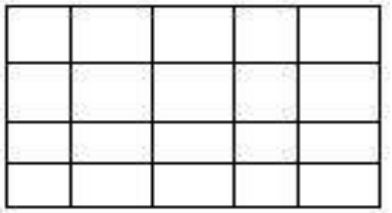


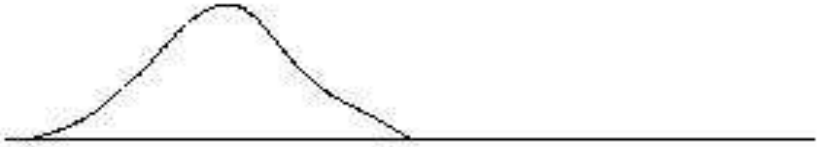
Sensitivity

MAY

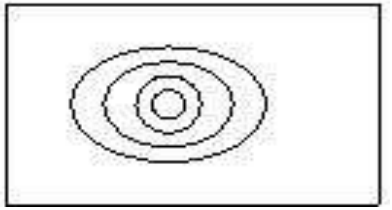


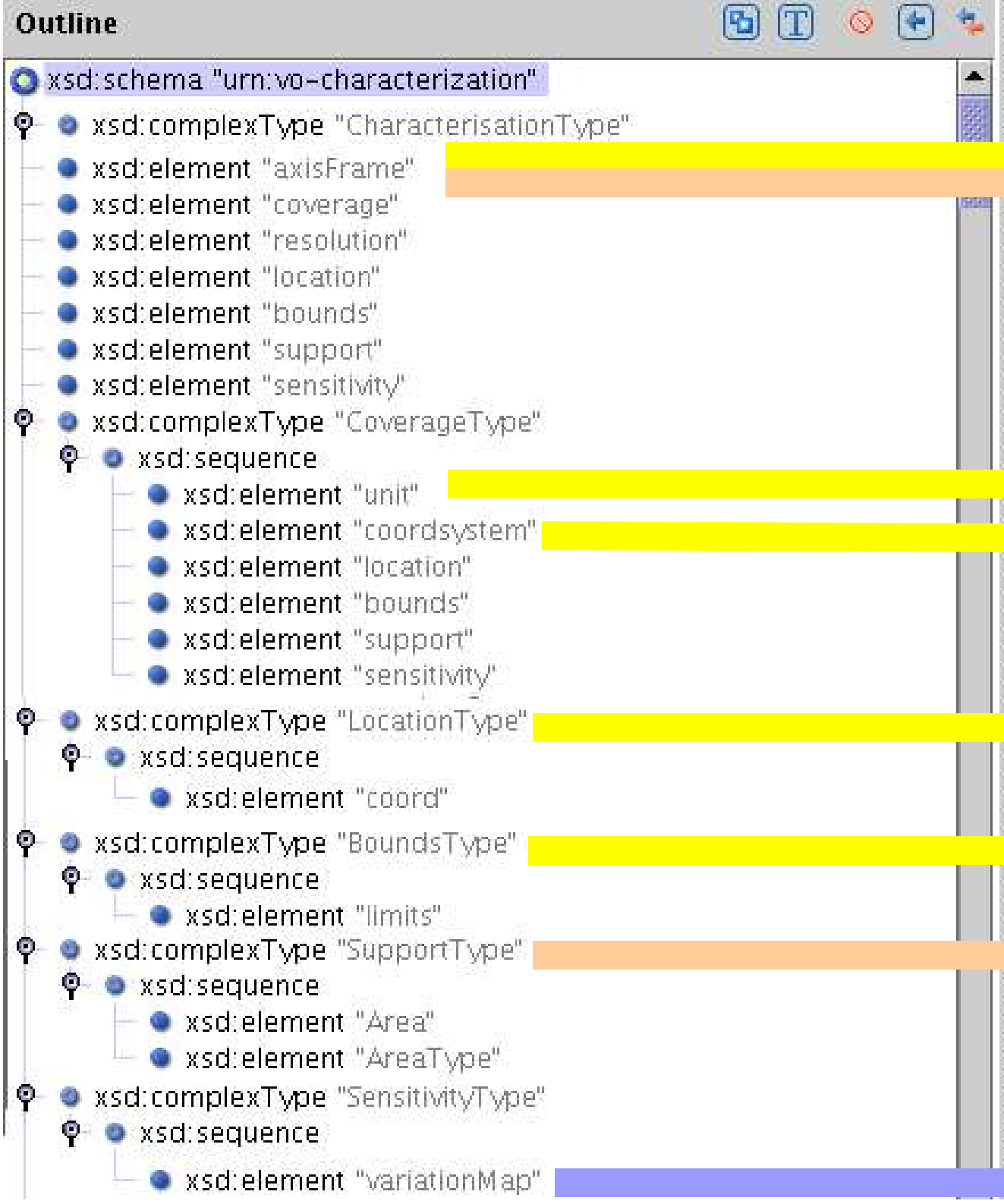
Sampling





Resolution





Must have at least one

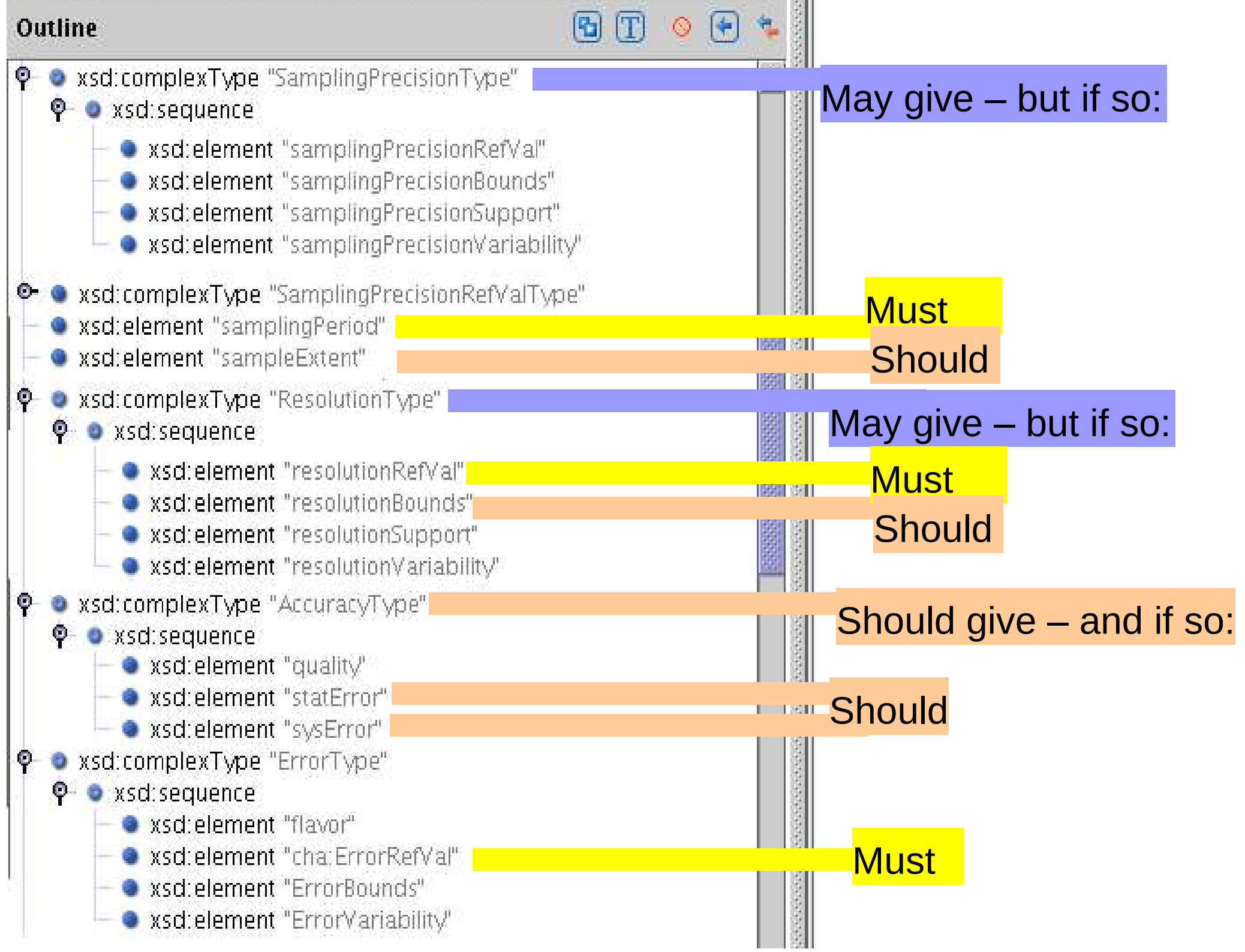
Most data should have at least 3 STC axes plus observable (flux)

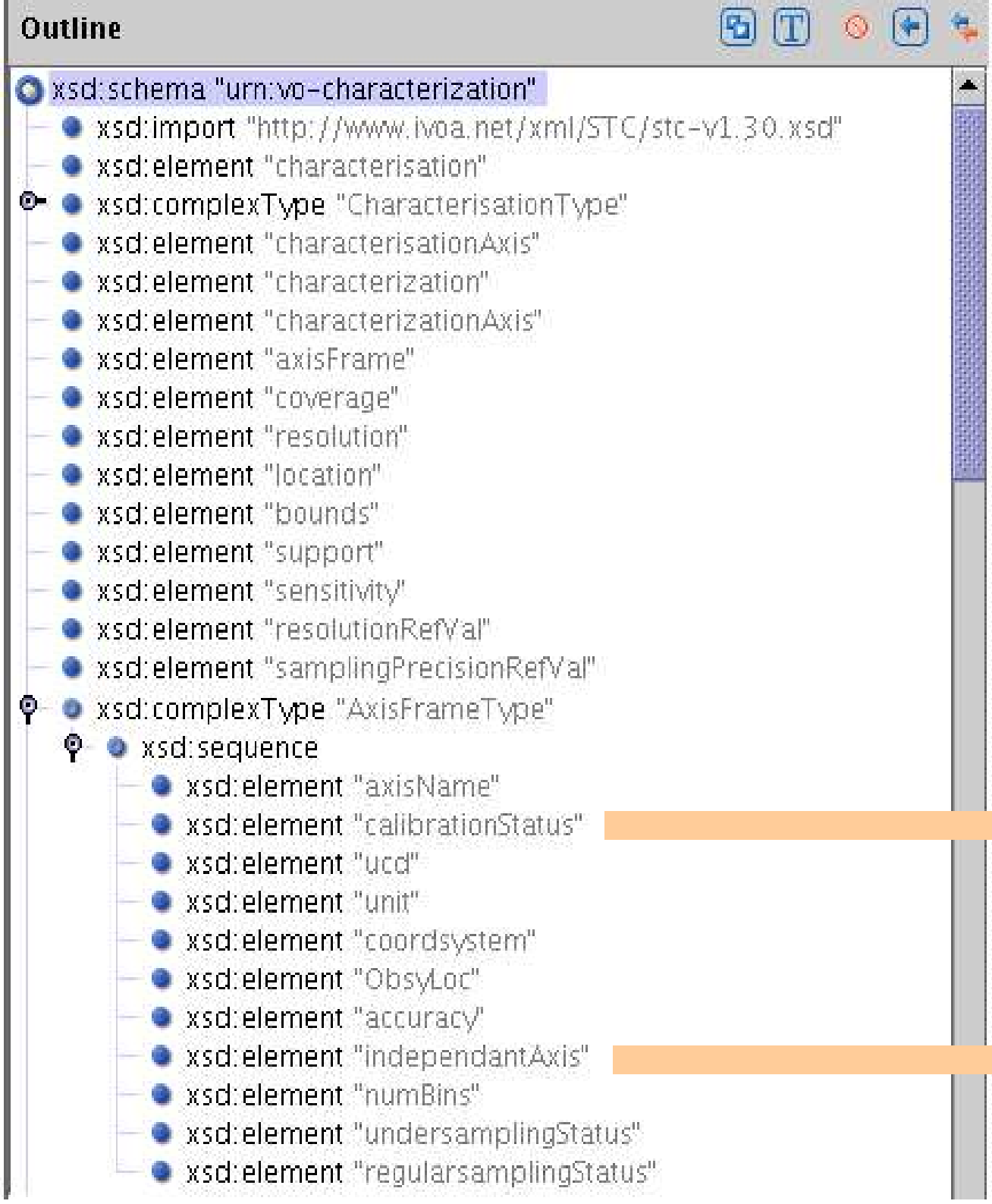
For each axis frame; apply to all elements unless redefined

Must give at least one (sometimes both)

Should give (unless = Bounds)

May give


Outline
xsd:complexType "SamplingPrecisionType"
xsd:sequence
xsd:element "samplingPrecisionRefVal"
xsd:element "samplingPrecisionBounds"
xsd:element "samplingPrecisionSupport"
xsd:element "samplingPrecisionVariability"
xsd:complexType "SamplingPrecisionRefValType"
xsd:element "samplingPeriod"
xsd:element "sampleExtent"
xsd:complexType "ResolutionType"
xsd:sequence
xsd:element "resolutionRefVal"
xsd:element "resolutionBounds"
xsd:element "resolutionSupport"
xsd:element "resolutionVariability"
xsd:complexType "AccuracyType"
xsd:sequence
xsd:element "quality"
xsd:element "statError"
xsd:element "sysError"
xsd:complexType "ErrorType"
xsd:sequence
xsd:element "flavor"
xsd:element "cha:ErrorRefVal"
xsd:element "ErrorBounds"
xsd:element "ErrorVariability"
May give – but if so:
Must
Should
May give – but if so:
Must
Should
Should give – and if so:
Should
Must



Some 'May' omitted for other elements/flags

Flags:

Should

Should

Char DM Markarian 273 @ 18 cm

General	Spatial	Temporal	Spectral	Observable
frame/units	ICRF, deg	MJD	MHz	Jy/beam
Location	13.123456 +55.987654	50613.5	1658	0.001
Bounds	12.92, +55.58 13.32, +56.38	50613.0 50614.0	1650 1665	0.0002 0.5 (or function)
Support	13.123456 +55.987654 0.4	(on-source scan listing URL)	1650 1665	undef
Sensitivity	*f* (support, 1ary beam)	undef	(bandpass LUT URL)	1
Filling Factor	1	0.7	0.93	undef
Resolution	0.″2 2.″ 0 0.″2 2.″ 0	5 m	1000 kHz	50 100 μJy/beam
Sampling	0.″04 0.″ 0625 0.″04 0.″ 0625	16 s	1000 kHz	undef

AstroGrid/RadioNet workshop

- Radio data management (1400 5 Dec – 1600 8 Dec)
- Workshop for data providers/large surveys etc.
  - Data flow using archives and pipelines
    - ParselTongue, Common Proposal Tool etc.
  - Data delivery
    - Publishing data to VOs
    - Use and development of relevant VO tools
- Science use (0900 4 Dec – 1300 5 Dec)

Oxford w/c 4 December 2006

radiovo@jb.man.ac.uk **http://wiki.astrogrid.org**