Source DM discussion

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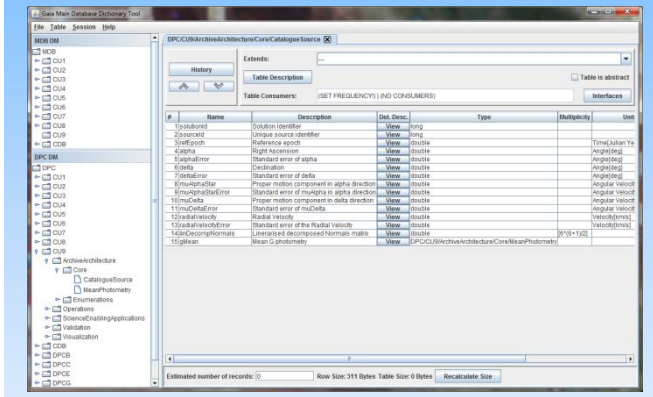
How a Source DM is done in a project: The Gaia example

- Gaia is one of the few projects where the DM definition is a coordinated effort
- Gaia DPAC is a quite big consortium distributed across Europe and other countries
- Work is divided into different Coordination Units (e.g. archive in under CU9)
- All the participants of the different coordination units can propose changes into the DM
- A Coordination Control Board (CCB) accept/reject changes per CU (in operations)

- Result: Collaborative process but not interoperability with other projects is not always maintainted

Gaia DM propagation



Gaia DM

DB Schema Creator

gbin

Gaia Archive TAP server

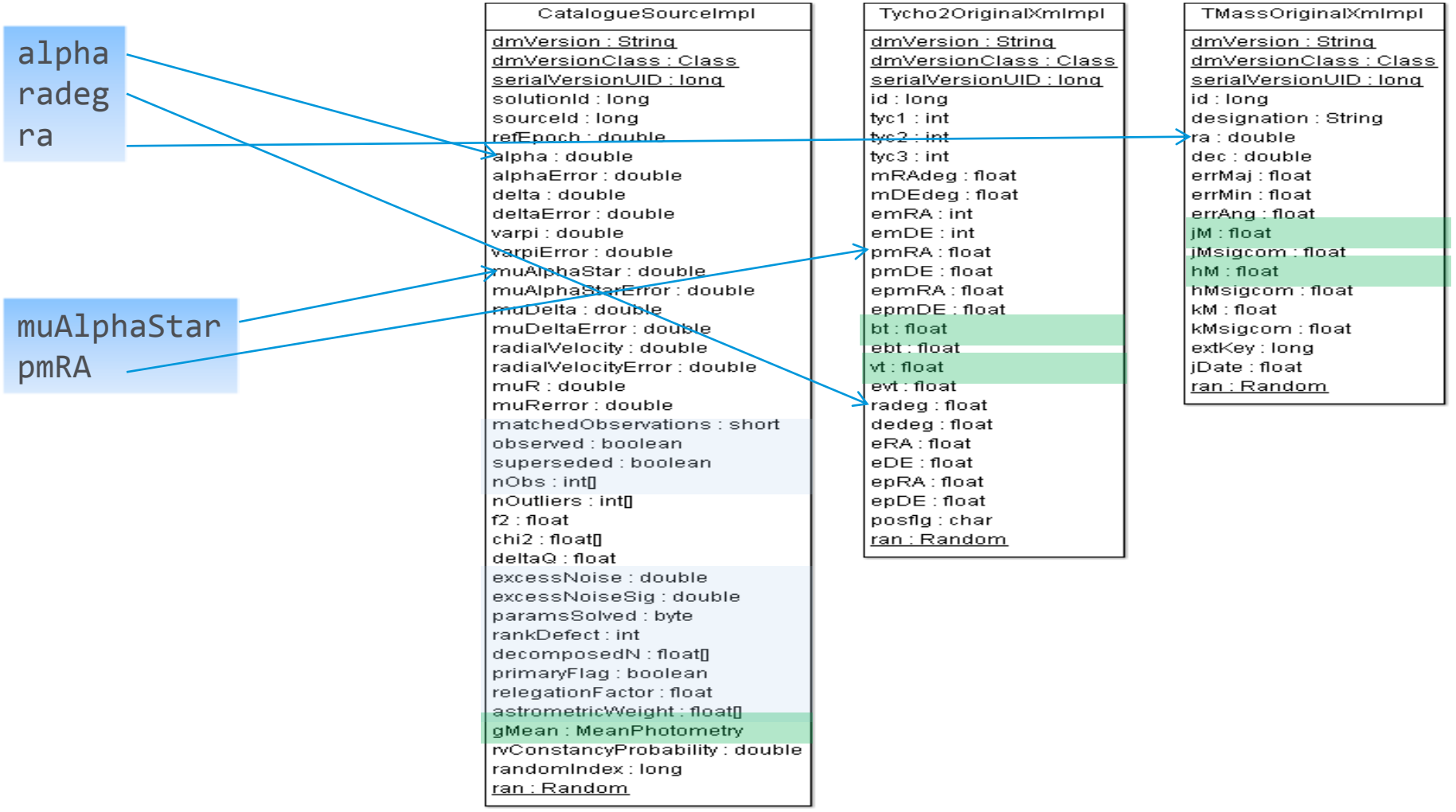
```
<TABLE>
<GROUP utype="vo-dml:Instance.root" >
  <PARAM      name="type"      utype="vo-dml:Instance.type"      value="src:source.Source"
datatype="char" arraysize="*"/>
  <FIELDref ref="_designation" utype=" vo-dml:ObjectType.ID"/>
  <FIELDref ref="_designation" utype="src:source.Source.name"/>
  <PARAM name="type" utype="src:source.Source.classification" value="galaxy">
  <VALUES><OPTION value="galaxy"/><OPTION value="star"/>...</VALUES></PARAM>
  <GROUP utype="src:source.Source.position">
    <PARAM    name="type"    utype="vo-dml:Instance.type"    value="src:source.SkyCoordinate"
datatype="char" arraysize="*"/>
    <FIELDref ref="_ra" utype="src:source.SkyCoordinate.longitude"/>
    <FIELDref ref="_dec" utype="src:source.SkyCoordinate.latitude"/>
    <GROUP ref="_icrs" utype="src:source.SkyCoordinate.frame"/>
  </GROUP>
</GROUP>
<FIELD name="designation" ID="_designation" .../>
<FIELD name="ra" ID="_ra" unit="deg" .../>
<FIELD name="dec" ID="_dec"  unit="deg" .../>
<TR><TD>08120809-0206132</TD><TD>123.033734</TD><TD>-2.103671</TD></TR>
...
</TABLE>
```

- VO-DML Annotations in TAP_SCHEMA?
- Different structure?

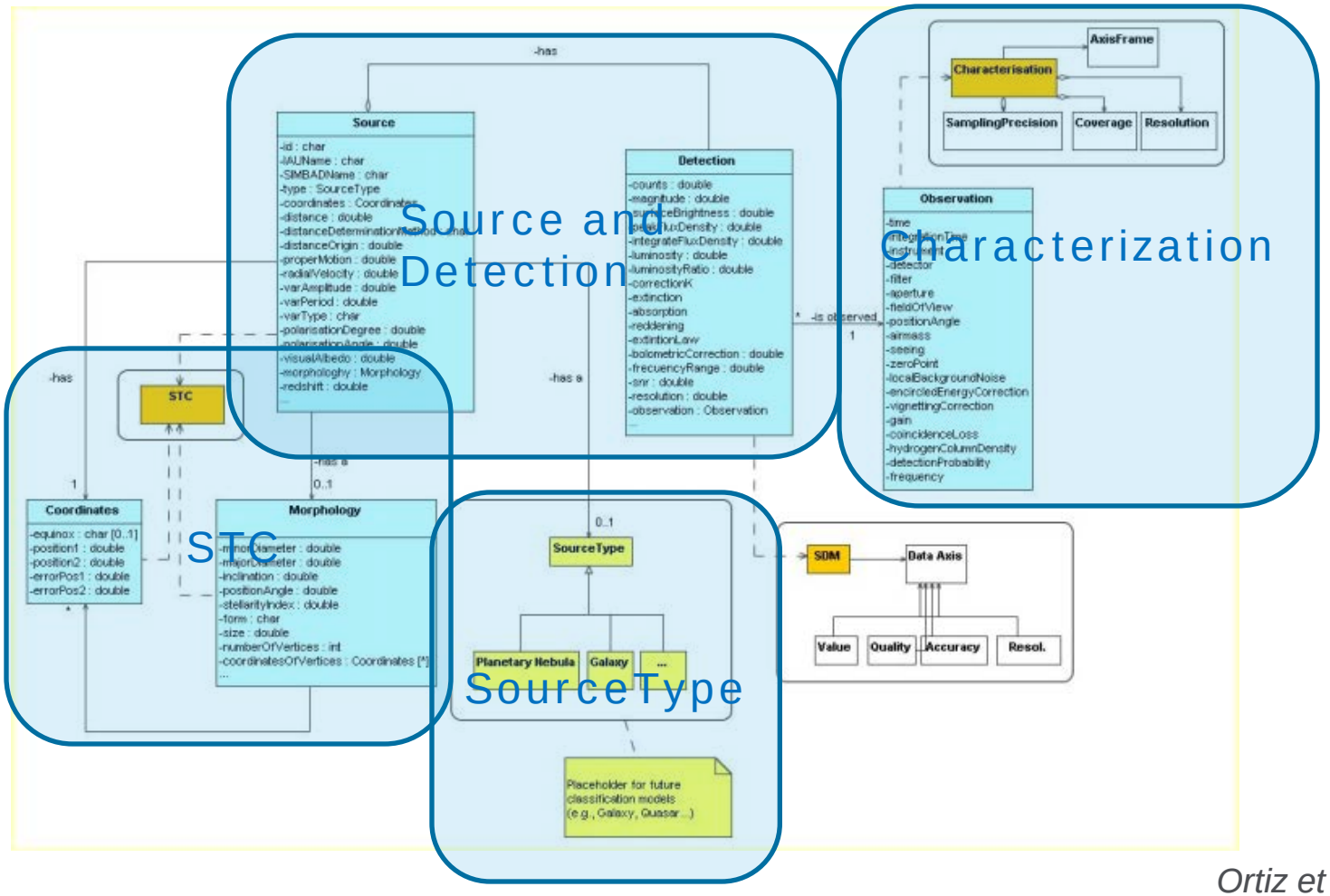
TAP_SCHEMA

VOTable response with VO-DML

Gaia CatalogueSource + External Catalogues

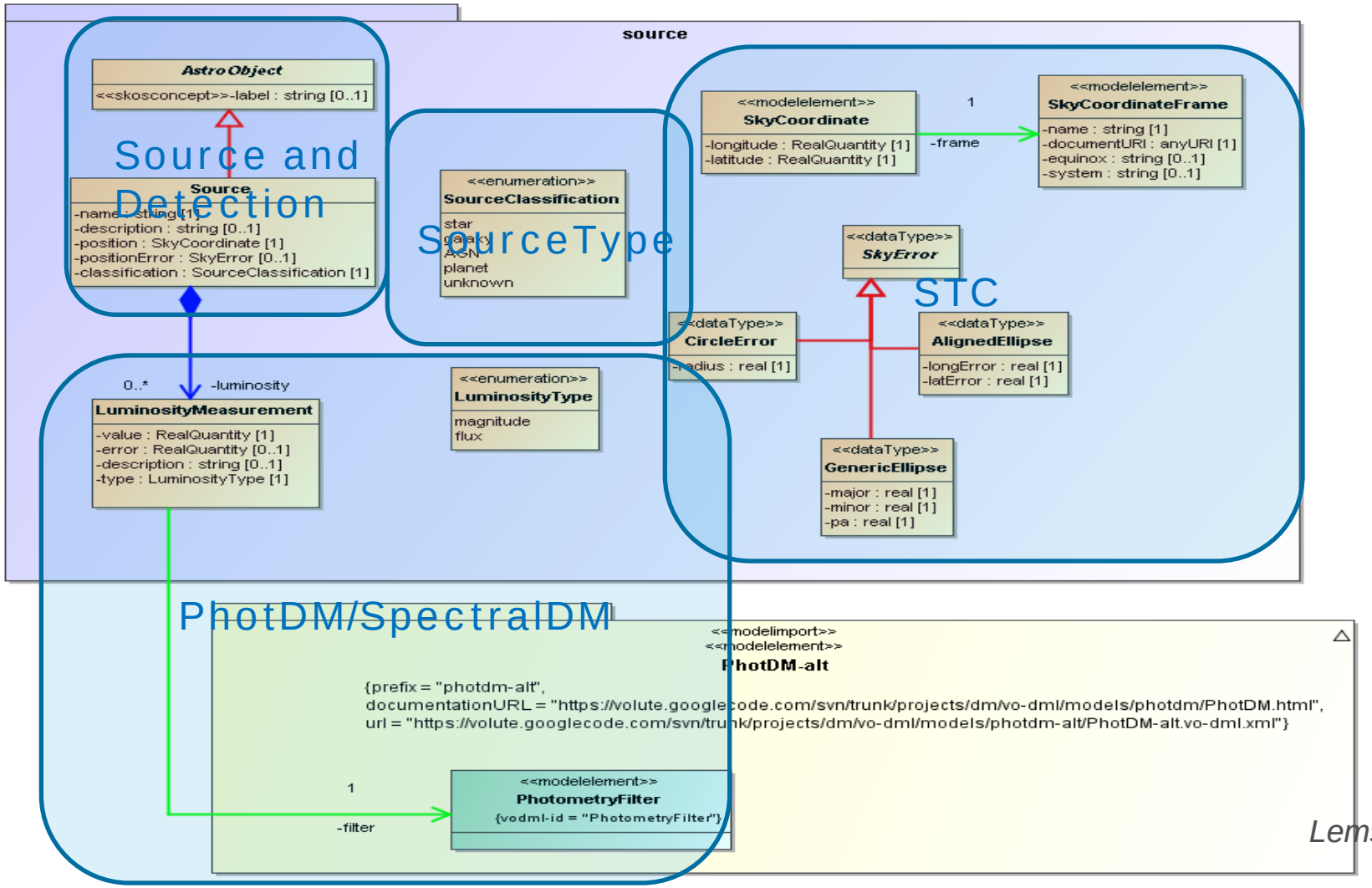


IVOA Source DM old draft



Ortiz et al (2006)

Source DM for VO-DML



Lemson et al (2013)

IVOA SourceDM effort

Objectives

- Create a simple (but useful) SourceDM definition that could help in the publishing of catalogues through VO protocols
- Support on the definition for catalogues metadata for near-future missions (e.g. Gaia, Euclid,...) and allow the mapping for old ones
- Support interoperability operations between protocols (SED creation, crossmatch operations, etc)

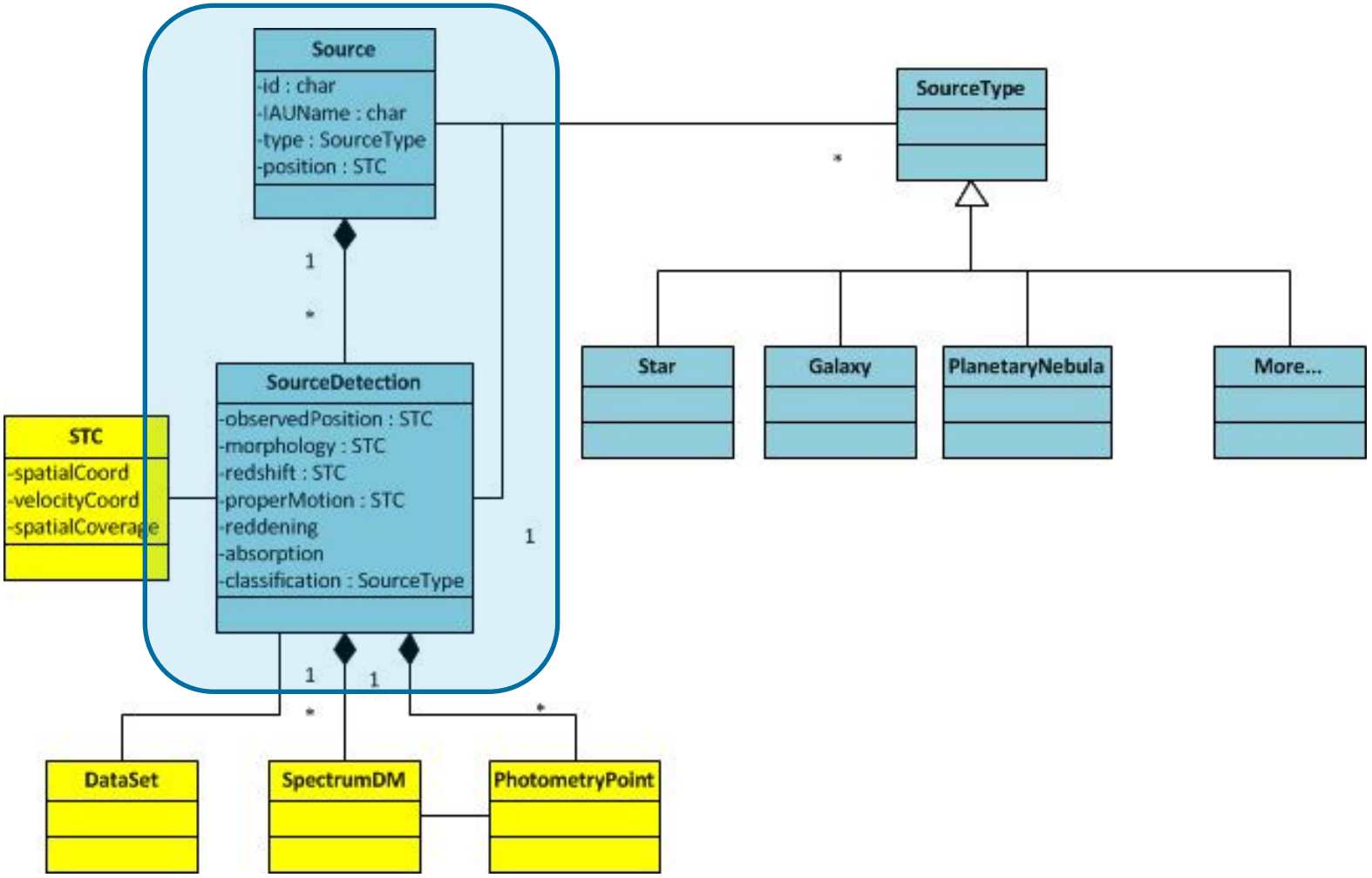
Initial team

- Gerard Lemson, Sebastien Derrier, Laurent Michel, Bruno Merin, Tom Donaldson, Arnold Rots and myself
- Open for contributors

Roadmap

- Draft for next interop

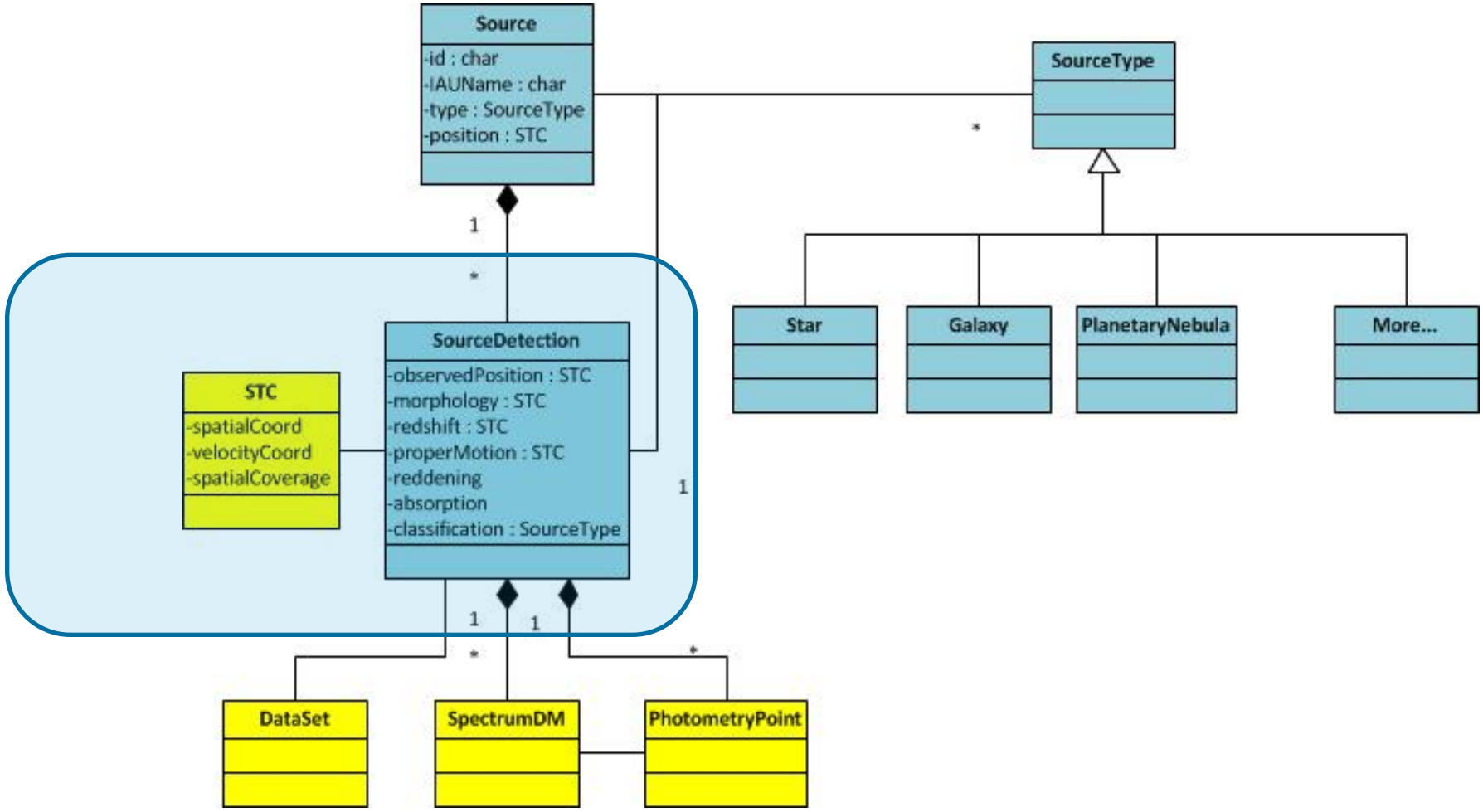
IVOA Source DM v0.1



Source and Detection

- Most of the catalogues contains detections
- Detections have different metadata than a source
- Is this difference needed?
- What are the correct names for these entities?

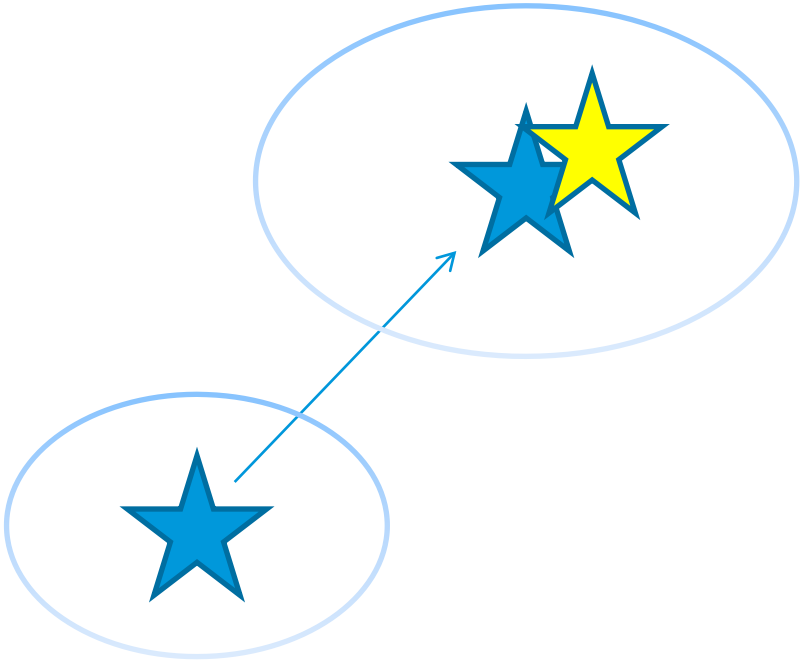
IVOA Source DM v0.1



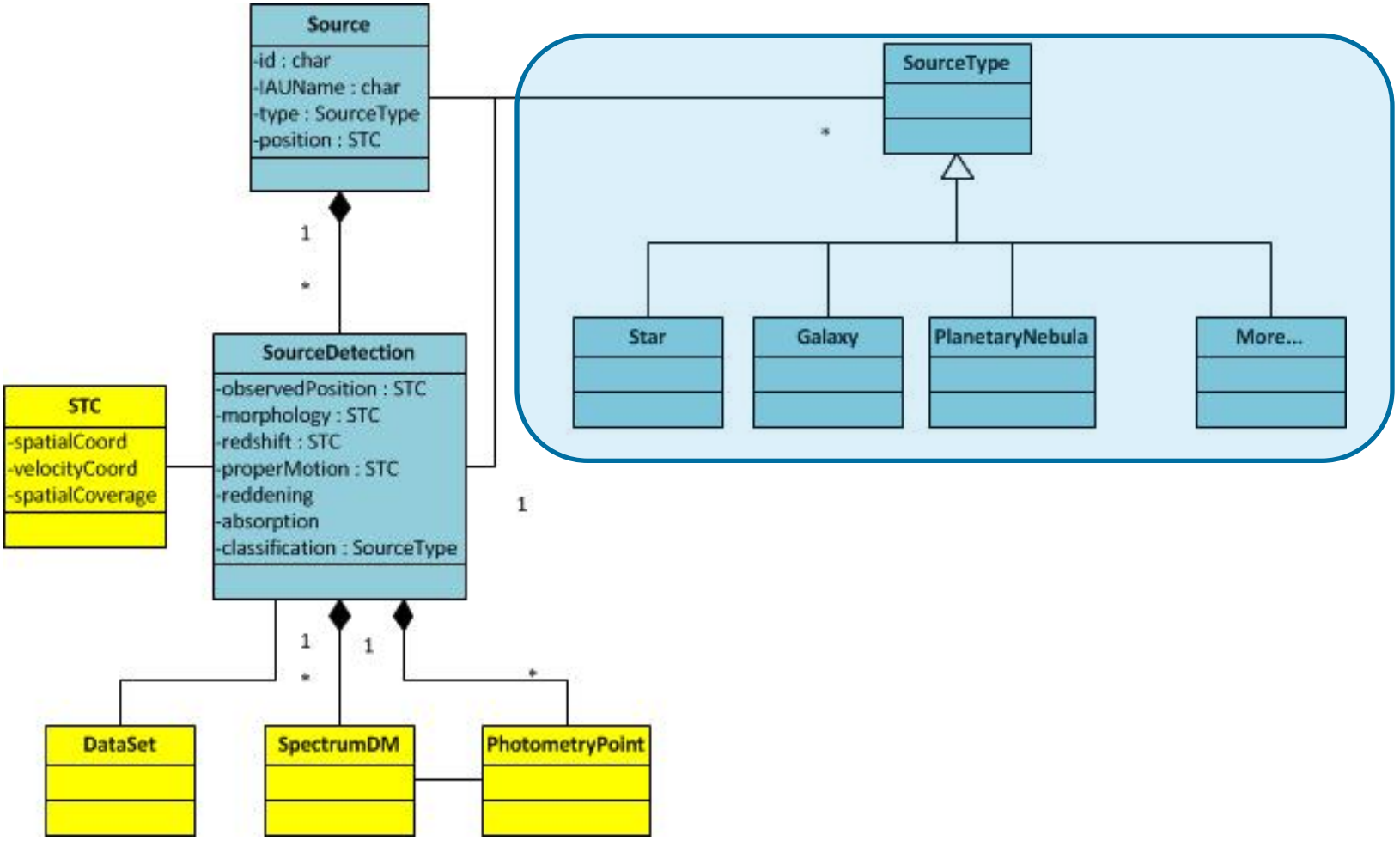
Discussion: STC support

Source DM geometrical support

- STC-2
- Attributes for:
  - Position
  - Errors
  - Epoch/Reference frames
  - Velocities/proper motion
  - Extended sources (?)
  - Redshift
- How to map from Source DM?



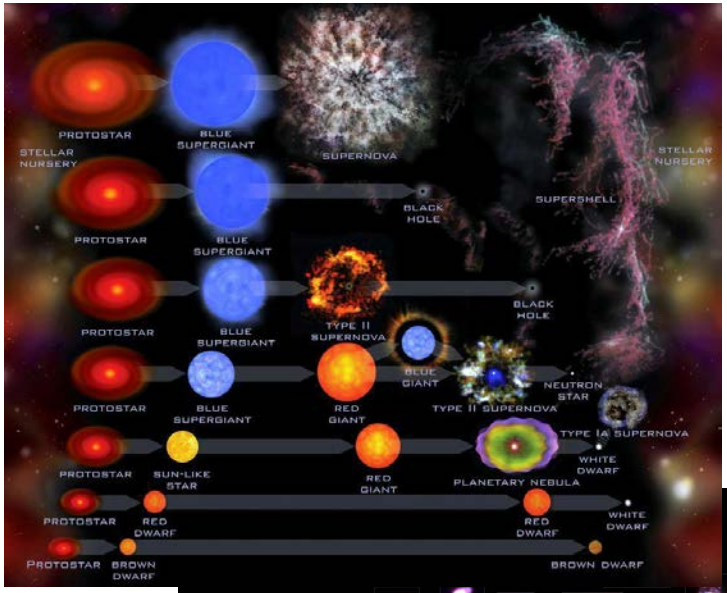
IVOA Source DM v0.1

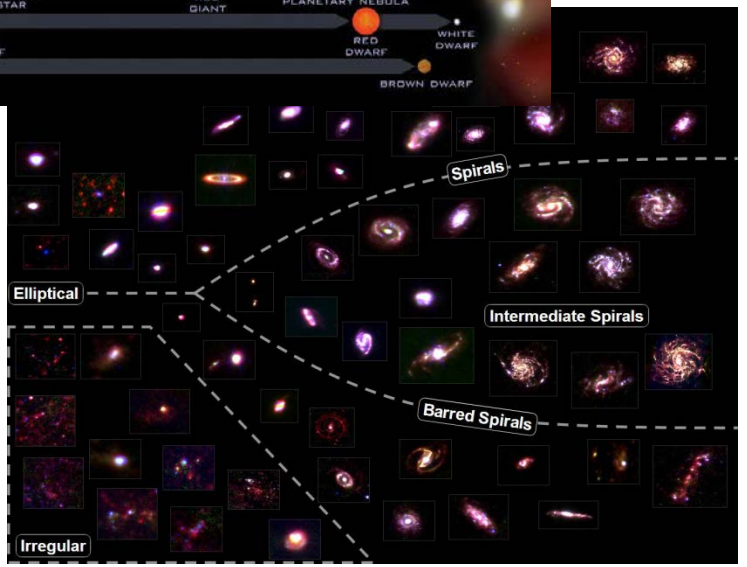


Source DM: Classification

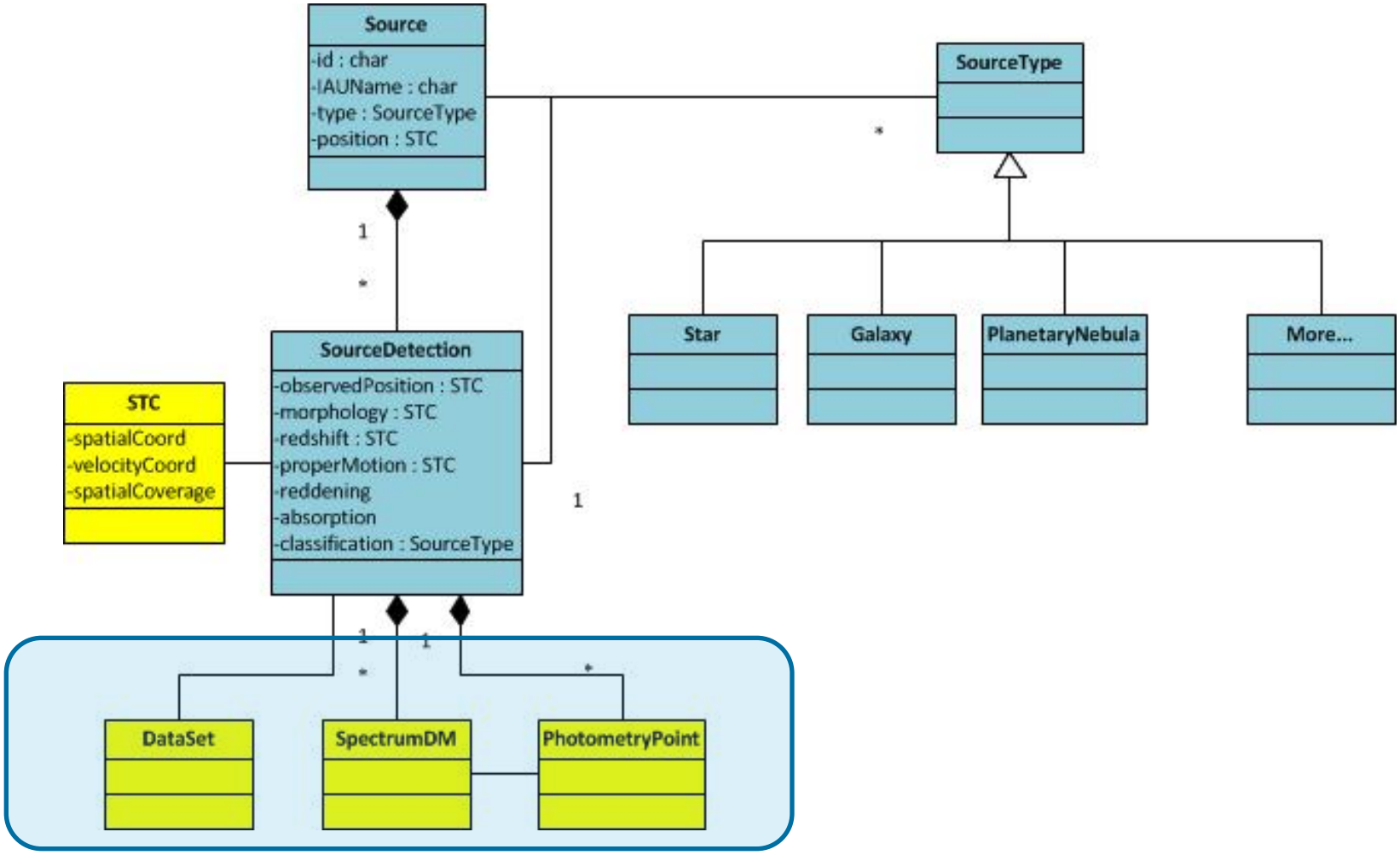
Source classification

- Usually done through ontologies
- Should we have a limited set of types?
- Which ones?
- Is this list of types a correct approach? Enumeration? Ontologies?





IVOA Source DM v0.1



Luminosities

- Direct connection with Photometry DM?
- Connection with Spectral 2.0 DM?
- How to handle time series?

THANK YOU

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