

Do we really need so much abstraction ?

Use case :

« How to find and use coordinates in a VOTable »

based on VOTable 1.1,1.2 & 1.3
And UTYPES-WD-v1.0 (9 May 2013)

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IVOA interop meeting – may 2013

Remember!

In 2004 - VOTable 1.1

- COOSYS + backward ref + ucd meta.main + control vocabulary

```
<VOTABLE ...>
<COOSYS ID="J2000" equinox="J2000." epoch="J2000." system="eq_FK5"/>
<RESOURCE>
<TABLE>
  <FIELD name="RA" ucd="pos.eq.ra;meta.main" ref="J2000" unit="deg" .../>
  <FIELD name="Dec" ucd="pos.eq.dec;meta.main" ref="J2000" unit="deg" .../>
```

=> *Great success : currently, this method is still used by the vast majority of data providers and VO tools*



Since 2009 - VOTable 1.2 REC

- Method: GROUP + backward ref/forward ref + UCD meta.main + control vocabulary + utype stc in FIELDS & GROUPS

```
<TABLE>
  <GROUP ID="J2000" utype="stc:AstroCoords">
    <PARAM ucd="pos.frame" name="cooframe"
      utype="stc:AstroCoords.coord_system_id" value="UTC-ICRS-TOPO"... />
    <FIELDref ref="col1"/>
    <FIELDref ref="col2"/>
  </GROUP>
  <FIELD name="RA" ID="col1" ucd="pos.eq.ra;meta.main" ref="J2000"
    utype="stc:AstroCoords.Position2D.Value2.C1" unit="deg" .../>
  <FIELD name="Dec" ID="col2" ucd="pos.eq.dec;meta.main" ref="J2000"
    utype="stc:AstroCoords.Position2D.Value2.C2" unit="deg" .../>
```

=> *Totally failed* : Nobody provide or use this method.

Rq : ref string « J2000 » strange for ICRS, but valid.



VOTable 1.3 PR - 2013

- Method: GROUP + forward ref + UCD meta.main + control vocabulary + utype stc (variation) in GROUP + XSD DM ref

```
<TABLE>
  <GROUP utype="stc:CatalogEntryLocation">
    <PARAM name="href"
      utype="stc:AstroCoordSystem.href"
      value="ivo://STClib/CoordSys#UTC-ICRS-TOPO"... />
    <PARAM name="URI"
      utype="stc:DataModel.URI"
      value="http://www.ivoa.net/xml/STC/stc-v1.30.xsd"... />
    <FIELDref utype="stc:AstroCoords.Position2D.Value2.C1" ref="col1"/>
    <FIELDref utype="stc:AstroCoords.Position2D.Value2.C1" ref="col2"/>
  </GROUP>
  <FIELD name="RA" ID="col1" ucd="pos.eq.ra;meta.main" unit="deg" .../>
  <FIELD name="Dec" ID="col2" ucd="pos.eq.dec;meta.main" unit="deg" .../>
```

=> *Wait & see : 1 provider (GAVO), 1 client (Aladin)*



Tiger example

(based on « toy » source DM)

- Method: DMs preamble (XML ref + prefix)
+ predefined utype (vo-dml) in GROUP + control vocabulary + Multi-GROUP
a la VODML + GROUP ref + forward ref + control vocabulary + utype
multiDM (vo-dml,src) in GROUP + utype for type

```
<TABLE>
  <GROUP utype="vo-dml:Model" name="src">
    <PARAM utype="vo-dml:Model.uri" name="uri"
      value="ivo://ivoa.net/SourceDM" />
    <PARAM utype="vo-dml:Model.url" name="url"
      value="https://volute.googlecode.com/.../Source.vo-dml.xml" />
  </GROUP>

  <GROUP utype="vo-dml:Instance.root">
    <PARAM name="type" utype="vo-dml:Instance.type"
      value="src:source.Source" ... />
    <GROUP ID="icrs" utype="src:source.SkyCoordinate.frame">
      :
```

```

:
<GROUP utype="vo-dml:Instance.root">
  <PARAM name="type" utype="vo-dml:Instance.type"
    value="src:source.Source" ... />
  <GROUP ID="icrs" utype="src:source.SkyCoordinate.frame">
    <PARAM utype="src:source.SkyCoordinate.frame.name" value="ICRS"/>
    <PARAM utype="src:source.SkyCoordinate.frame.Equinox"
      value="J2000"/>
  </GROUP>
  <GROUP utype="src:source.Source.position">
    <PARAM utype="vo-dml:Instance.type"
      value="src:source.SkyCoordinate"
      name="datatype" ... />
    <FIELDref ref="col1" utype="src:source.SkyCoordinate.longitude" />
    <FIELDref ref="col2" utype="src:source.SkyCoordinate.latitude" />
    <GROUP ref="icrs" utype="src:source.SkyCoordinate.frame" />
  </GROUP>
</GROUP>
<FIELD name="RA" ID="col1" unit="deg" ... />
<FIELD name="Dec" ID="col2" unit="deg" ... />

```

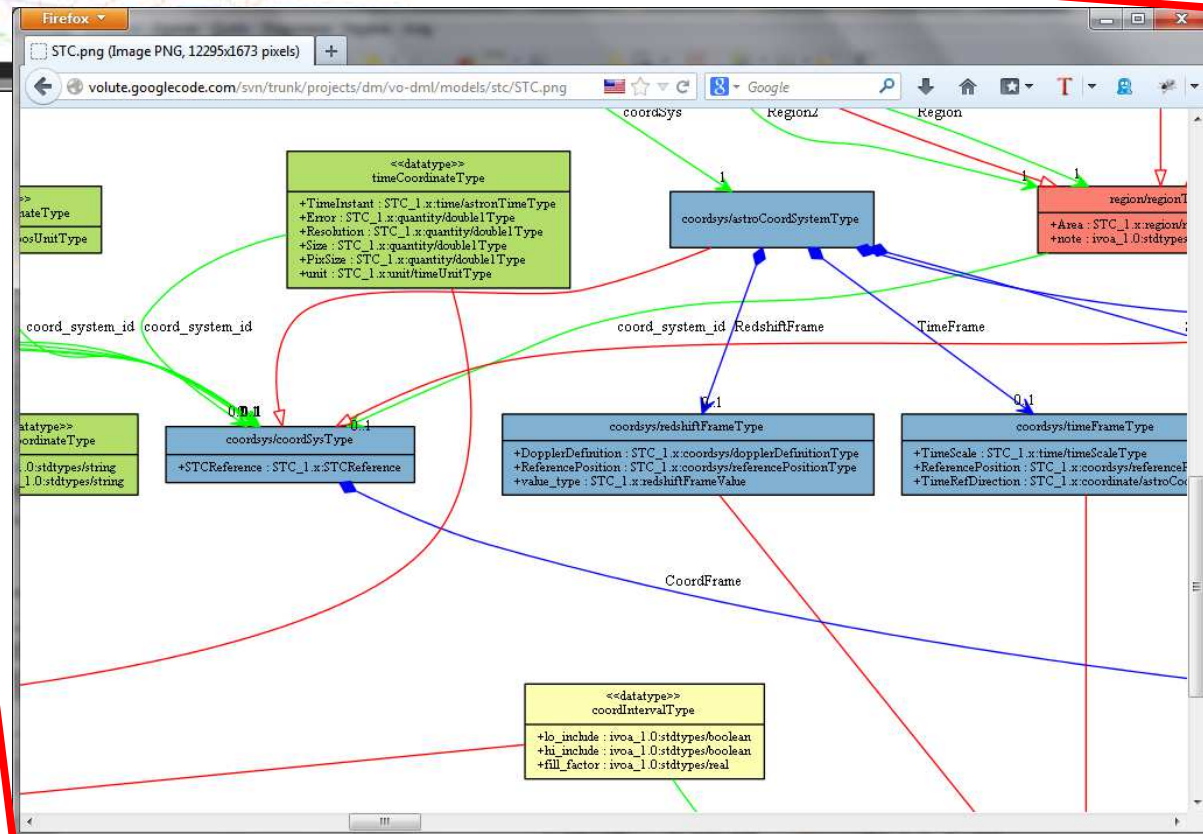
Rq : Strange Equinox in ICRS ? Answer => « *They're obviously toy models. Hopefully nothing in my document suggests otherwise* » (18/3/2013).

Trying tiger proposal (Which «not toy» DM ?)

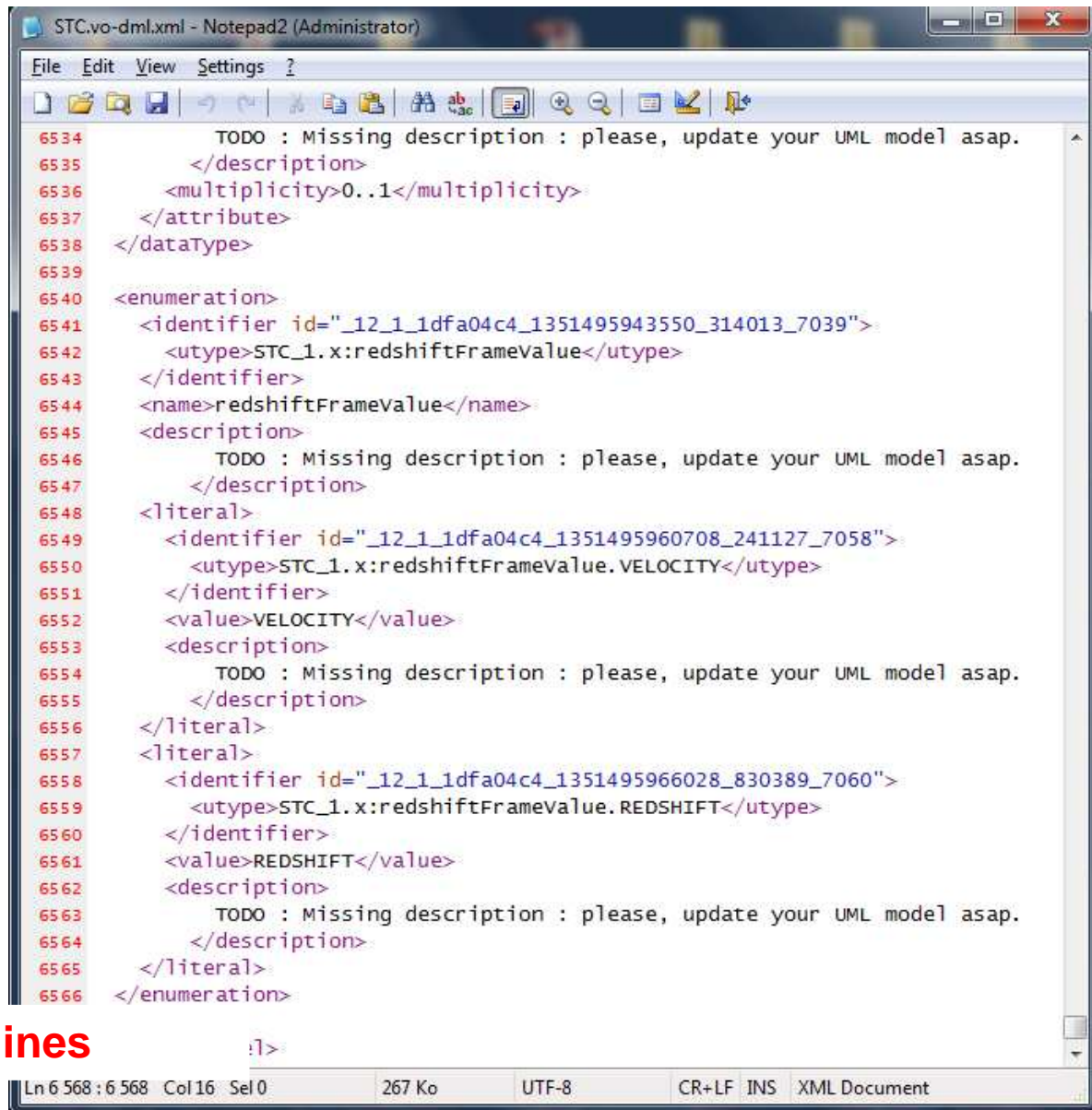
- I tried with STC DM...
 - Do I have to map all the STC DM, or just the fields related to my ra/dec purpose ? I assume just required fields !
 - Woah ! the STC UML diagram is a monster. Which UML boxes I must serialize in my GROUP hierarchy ?
 - Or do I have to use another DM ? But if I do that, my utypes will be probably no longer recognized by « naïve » clients... other DMs => other utypes
- I need some help...answer : *"If (you) wanted to use full STC for the examples, (you)'d need a VO-DML representation of that model."*
+ « *If STC had an STC-light, maybe that model was easier to use* »
(18/3/2013)



Simplified STC_1 UML DM



Simplified STC-1 VO-DML XML file



```
6534         TODO : Missing description : please, update your UML model asap.
6535         </description>
6536         <multiplicity>0..1</multiplicity>
6537     </attribute>
6538 </dataType>
6539
6540 <enumeration>
6541     <identifier id="_12_1_1dfa04c4_1351495943550_314013_7039">
6542         <utype>STC_1.x:redshiftFrameValue</utype>
6543     </identifier>
6544     <name>redshiftFrameValue</name>
6545     <description>
6546         TODO : Missing description : please, update your UML model asap.
6547     </description>
6548     <literal>
6549         <identifier id="_12_1_1dfa04c4_1351495960708_241127_7058">
6550             <utype>STC_1.x:redshiftFrameValue.VELOCITY</utype>
6551         </identifier>
6552         <value>VELOCITY</value>
6553         <description>
6554             TODO : Missing description : please, update your UML model asap.
6555         </description>
6556     </literal>
6557     <literal>
6558         <identifier id="_12_1_1dfa04c4_1351495966028_830389_7060">
6559             <utype>STC_1.x:redshiftFrameValue.REDSHIFT</utype>
6560         </identifier>
6561         <value>REDSHIFT</value>
6562         <description>
6563             TODO : Missing description : please, update your UML model asap.
6564         </description>
6565     </literal>
6566 </enumeration>
```

6568 lines

Ln 6 568 : 6 568 Col 16 Sel 0 267 Ko UTF-8 CR+LF INS XML Document

Conclusion

- Concretely my test failed at this stage!
- I am no longer able to find & use RA/Dec field in my VOTables until IVOA defines a STC light model, maps it in a VO-DML format, and somebody help me to use this VO-DML file for realizing my test.
=> who will be in charge of this task ? And how validate/incorporate this new DM in the existing DM space ? Can I really do that without DM tools ?
- And if yes, for compatibility, I will have to continue to use simultaneously VOTable 1.3 REC coordinate GROUP and the new method (at least for a few years)... Each of them will use utype in GROUP very similarly (in one case based on hard-coded utypes and flat GROUP structure, and in the other case on utypes & GROUP hierarchy associated to a VO-DML DM + a hypothetical future DM)...

*=> I will not bet that COOSYS
will be deprecated soon...*