

TAP 1.1 Implementation

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TAP-1.1 Implementation

- demo version available that implements ~all TAP-1.1 features

<http://demo.cadc-ccda.hia-ihp.nrc-cnrc.gc.ca/tap/>

- landing page docs **not** up to date
- uses our production database back-end
 - same content: ObsCore-1.1 & CAOM-2.3
 - different content: tap_schema (versioned)
- both old-style (TAP-1.0) tables and new-style (DALI-1.1) tables can be uploaded and round-trip successfully
 - but could be bugs in there :-)

TAP-1.1 Implementation

- primary new feature: DALI-1.1 / TAP-1.1 type system
 - `<datatype,arraysize,xtype>` from VOTable
- modifying existing (complex) libraries was not so easy
 - many methods had single string argument for datatype
 - conversion to using `<datatype,arraysize,xtype>` tuple was painful and depended on a large suite of tests + bug fixing
- but: it was worth it as the code is much more robust
 - removed a lot of string comparison
 - many ADQL morphing operations based on column names now based on type metadata
 - several morphing operations that never worked for uploads now do

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- VOSI-tables-1.1 implemented entirely with VODataType
 - TAPType on VODataService could be deprecated

```
<column>
```

```
<name>s_region</name>
```

```
<description>region bounded by observation</description>
```

```
<unit>deg</unit>
```

```
<ucd>phys.outline;obs.field</ucd>
```

```
<utype>obscore:Char.SpatialAxis.Coverage.Support.Area</utype>
```

```
<dataType xsi:type="vod:VODataType" arraysize="*"
           extendedType="polygon">double</dataType>
```

```
<flag>indexed</flag>
```

```
</column>
```

- VOTable FIELD metadata from DALI-1.1
 - no ADQL datatypes/xtypes unless used in upload tables

```
<FIELD name="s_region"
```

```
  datatype="double" arraysize="*" xtype="polygon"
```

```
  ucd="phys.outline;obs.field" unit="deg"
```

```
  utype="obscore:Char.SpatialAxis.Coverage.Support.Area">
```

```
    <DESCRIPTION>region bounded by observation</DESCRIPTION>
```

```
</FIELD>
```

- non-scalar CAOM fields using DALI-1.1 xtypes

```
<FIELD name="position_bounds"  
  datatype="double" arraysize="*" xtype="polygon"  
  unit="deg"  
  utype="caom2:Plane.position.bounds" >  
  <DESCRIPTION>positional coverage of the data</DESCRIPTION>  
</FIELD>
```

- non-scalar CAOM fields using DALI-1.1 xtypes

```
<FIELD name="energy_bounds"
```

```
  datatype="double" arraysize="2" xtype="interval"
```

```
  unit="m" utype="caom2:Plane.energy.bounds" >
```

```
  ...
```

```
</FIELD>
```

```
<FIELD name="time_bounds"
```

```
  datatype="double" arraysize="2" xtype="interval"
```

```
  unit="d" utype="caom2:Plane.time.bounds">
```

```
  ...
```

```
</FIELD>
```

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- non-scalar CAOM fields using DALI-1.1 xtypes

```
<FIELD name="energy_bounds_samples"
```

```
  datatype="double" arraysize="2x*" xtype="interval"
```

```
  unit="m" utype="caom2:Plane.energy.bounds.samples">
```

```
  ...
```

```
</FIELD>
```

```
<FIELD name="time_bounds_samples"
```

```
  datatype="double" arraysize="2x*" xtype="interval"
```

```
  unit="d" utype="caom2:Plane.time.bounds.samples">
```

```
  ...
```

```
</FIELD>
```


- CAOM fields using DALI xtypes

```
<FIELD name="lastModified"
```

```
  datatype="char" arraysize="21*" xtype="timestamp" >
```

```
  ...
```

```
</FIELD>
```

- CAOM fields using custom xtypes

```
<FIELD name="publisherID"
```

```
  datatype="char"  arraysize="128*"  xtype="uri" >
```

```
  ...
```

```
</FIELD>
```

```
<FIELD name="obsID"
```

```
  datatype="char"  arraysize="36"  xtype="uuid" >
```

```
  ...
```

```
</FIELD>
```

- converting existing library was painful
- writing one from scratch would be much easier than 1.0
- Open-source plug:
 - <https://github.com/opencadc/dal> (DALI-1.1 impl)
 - <https://github.com/opencadc/tap> (TAP-1.1 impl)
 - <https://github.com/opencadc/caom2service> (CAOM-2.3 ext)