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Cube Access prototype

- **Data Discovery via TAP + ObsCore**
 - query response contains metadata to call DataLink service
- **DataLink service to find download URLs and service(s)**
 - supports multiple files per discovered dataset
 - supports multiple services offering different capabilities
- **CutoutService takes a single STC-S string specifying subsection**
 - supports spatial and spectral cutouts
 - service performs all the MEF file groking and WCS computations
 - client sees a simple URL

Cube Access prototype

```
select * from ivoa.ObsCore where dataproduct_type='cube'  
and intersects( CIRCLE('ICRS',191.18, -54.515, 0.02), s_region) = 1  
and em_min <= 1.3004e-3 and 1.3004e-3 <= em_max  
and t_min <= 55893.53 and 55893.53 <= t_max  
and pol_states like '%I%'
```

Cube Access prototype

```
curl --location -d 'REQUEST=doQuery&LANG=ADQL' \  
  --data-urlencode QUERY@demo_pos.adql \  
  http://beta.cadc-ccda.hia-ihp.nrc-cnrc.gc.ca/tap/sync
```

Cube Access prototype

```
<FIELD name="obs_publisher_did" ID="datalinkID"  
  utype="obscore:Curation.PublisherDID"  
  ucd="meta.ref.url;meta.curation"  
  xtype="adql:VARCHAR"  
  datatype="char" arraysize="256*">  
  <DESCRIPTION>  
    publisher dataset identifier  
  </DESCRIPTION>  
</FIELD>
```

Cube Access prototype

```
<GROUP utype="dal:service">
  <PARAM name="resourceIdentifier" datatype="char" arraysize="*"
    value="ivo://cadc.nrc.ca/datalink" />
  <PARAM name="standardID" datatype="char" arraysize="*"
    value="ivo://ivoa.net/std/DataLink#links" />
  <PARAM name="accessURL" datatype="char" arraysize="*"
    value="http://beta.cadc-ccda.hia-ihp.nrc-cnrc.gc.ca/caom2ops/datalink" />
  <FIELDref ref="datalinkID" />
</GROUP>
```

Cube Access prototype

```
curl --location -d 'ID=caom:ALMA/uid___A002_X3302c8_X436/Boom.cm.cln' \  
http://beta.cadc-ccda.hia-ihp.nrc-cnrc.gc.ca/caom2ops/datalink
```

```
curl --location http://beta.cadc-ccda.hia-ihp.nrc-cnrc.gc.ca/caom2ops/datalink? \  
ID=caom:ALMA/uid___A002_X3302c8_X436/Boom.cm.cln
```

Cube Access prototype

```
<FIELD name="ID" datatype="char" ucd="meta.id" arraysize="*" />  
<FIELD name="accessURL" datatype="char" arraysize="*" />  
<FIELD name="serviceType" datatype="char" arraysize="*" />  
<FIELD name="description" datatype="char" arraysize="*" />  
<FIELD name="semantics" datatype="char" arraysize="*" />  
<FIELD name="contentType" datatype="char" arraysize="*" />  
<FIELD name="contentLength" datatype="long" unit="byte" />  
<FIELD name="errorMessage" datatype="char" arraysize="*" />  
<FIELD name="productType" datatype="char" arraysize="*" />  
      utype="caom:Artifact.productType" />
```


Cube Access prototype

<TR>

<TD>caom:ALMA/uid___A002_X3302c8_X436/Boom.cm.cln</TD>

<TD>http://www.cadc-ccda.hia-ihp.nrc-

cnrc.gc.ca/data/pub/ALMA/Boom.cm.cln</TD>

<TD>ivo://ivoa.net/std/DataLink/v1.0#DOWNLOAD</TD>

<TD />

<TD />

<TD>application/fits</TD>

<TD>7899840</TD>

<TD />

<TD>science</TD>

</TR>

Cube Access prototype

```
<TR>
```

```
<TD>caom:ALMA/uid___A002_X3302c8_X436/Boom.cm.cln</TD>
```

```
<TD>http://beta.cadc-ccda.hia-ihp.nrc-cnrc.gc.ca/caom2ops/cutout?
```

```
uri=ad:ALMA/Boom.cm.cln</TD>
```

```
<TD>ivo://ivoa.net/std/CutoutService/v1.0</TD>
```

```
<TD />
```

```
<TD />
```

```
<TD>application/fits</TD>
```

```
<TD />
```

```
<TD />
```

```
<TD>science</TD>
```

```
</TR>
```

Cube Access prototype

```
curl -v -d 'CUTOUT=Circle ICRS 191.18 -54.515 0.01' \  
http://beta.cadc-ccda.hia-ihp.nrc-cnrc.gc.ca/caom2ops/cutout?  
uri=ad:ALMA/Boom.cm.cln
```

```
curl -v http://beta.cadc-ccda.hia-ihp.nrc-cnrc.gc.ca/caom2ops/cutout?  
uri=ad:ALMA/Boom.cm.cln&CUTOUT=Circle+ICRS+191.18+-54.515+0.01
```

```
< Location: http://www.cadc-ccda.hia-ihp.nrc-  
cnrc.gc.ca/data/pub/ALMA/Boom.cm.cln?cutout=%5B0%5D  
%5B63%3A256%2C54%3A256%2C*%2C*%5D
```

```
e.g. cutout=[0][63:256,54:256,*,*]
```

Cube Access prototype

```
curl -v -d 'CUTOUT=Circle ICRS 191.18 -54.515 0.01 SpectralInterval 1.3003  
1.3004 mm'
```

```
http://beta.cadc-ccda.hia-ihp.nrc-cnrc.gc.ca/caom2ops/cutout?  
uri=ad:ALMA/Boom.cm.cln
```

```
curl -v http://beta.cadc-ccda.hia-ihp.nrc-cnrc.gc.ca/caom2ops/cutout?  
uri=ad:ALMA/Boom.cm.cln\&CUTOUT=Circle+ICRS+191.18+-  
54.515+0.01+SpectralInterval+1.3003+1.3004+mm
```

```
< Location: http://www.cadc-ccda.hia-ihp.nrc-  
cnrc.gc.ca/data/pub/ALMA/Boom.cm.cln?cutout=%5B0%5D  
%5B63%3A256%2C54%3A256%2C9%3A17%2C*%5D
```

```
e.g. cutout=[0][63:256,54:256,9:17,*]
```