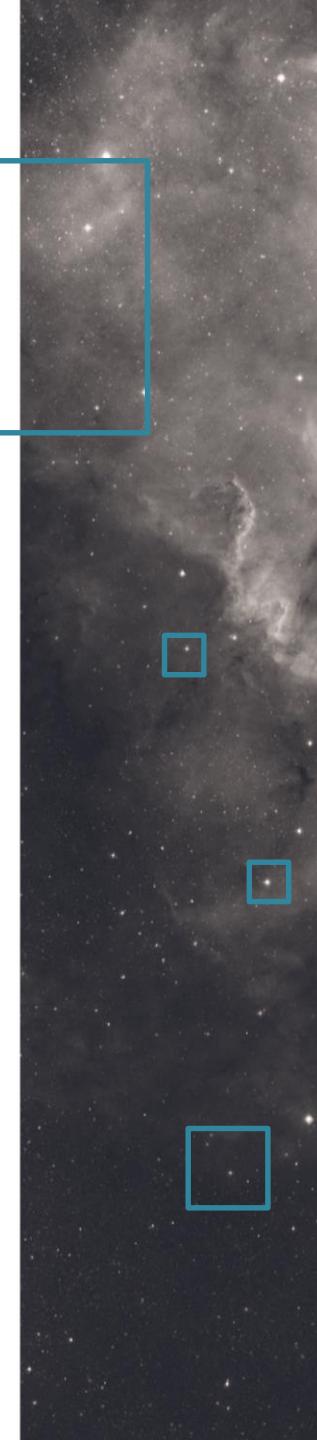
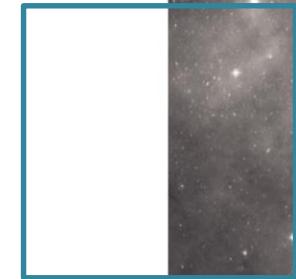


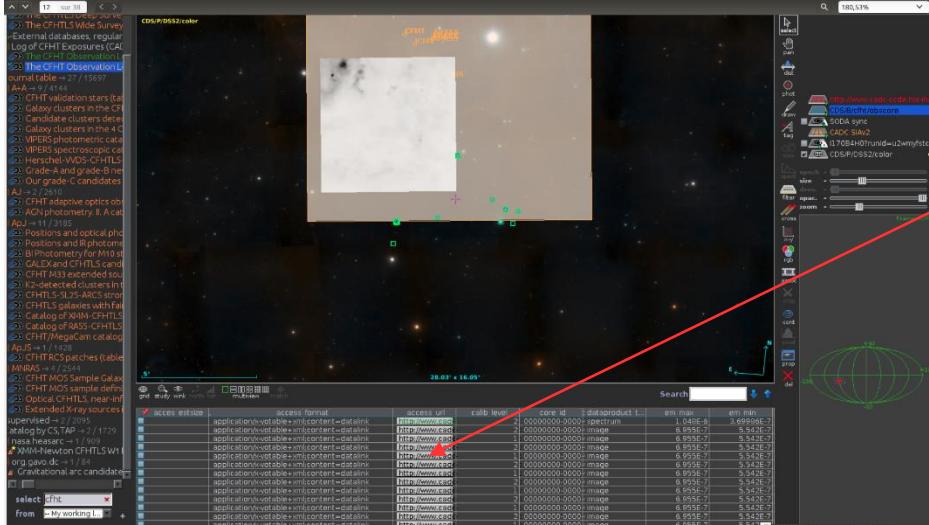
# Datalink recognition outside Obscore context

---

F.Bonnarel  
on behalf of M.Louys,G.Landais,Pierre Fernique

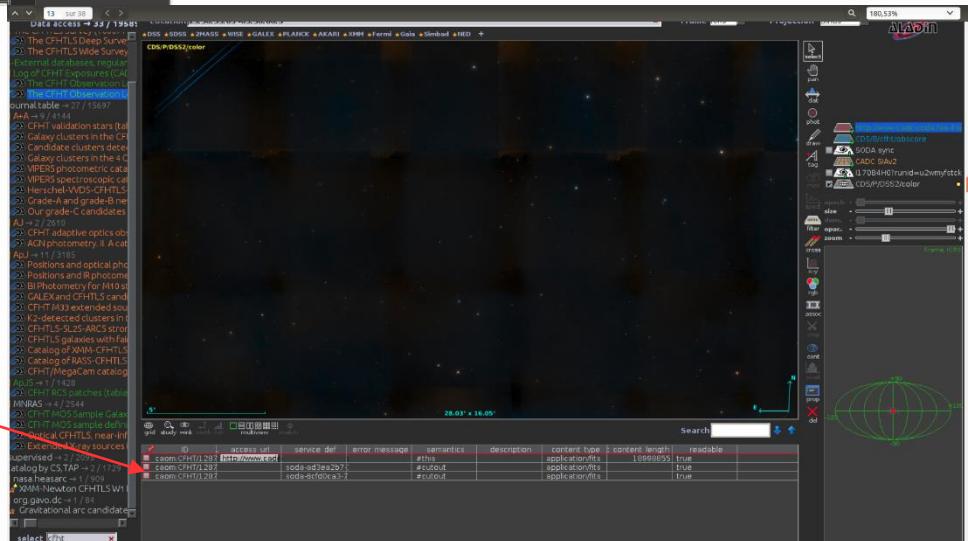


# The datalink issue (excerpt of Chaitra presentation)



DataLink table is displayed  
in a wrong mode / not  
recognized as such

The field with the Datalink url is not recognized as such. Client cannot prepare appropriate behavior (DataLink popup window)



# Possible solutions

## 1) Asterics Hackathon one

- Add a complement to the url ucd of the field

```
<FIELD name="url" ucd="meta.ref.url;meta.type.datalink" datatype="char" arraysize="128*">
```

- Pros :

- Self consistent

- Cons :

- Ucd approach Difficult to generalize.  
Fuzzy+fuzzy not always accurate meaning
  - Doesn't work if url format changes from line to line

# Possible solutions

## 2) additional obscore access utype

- Add a « access.datalink » utype to ObsCore
  - Pros :
    - self consistent
    - Let ucd usage free
  - Cons :
    - Modification of ObsCore
    - Doesn't work if url format changes from line to line

# Possible solutions

## 3) VOTABLE solution : LINK

- use the LINK element specifying a FIELD:

- <FIELD...> <LINK content-type="xxx" href="xxx" ...>

- Example for a FITS image:

```
<FIELD name="Image" ucd="meta.ref.url" datatype="char" arraysize="1">
<DESCRIPTION>[YN] Epic image of this observation (FITS)</DESCRIPTION>
<LINK content-type="image/fits" title="image" href="http://vizier.u-strasbg.fr/viz-bin/nph-htx/A?%5cvizContent%7b${image}foo&bar"/>
</FIELD>
...

```

- Current list of content-types : image/fits, spectrum/fits, catalogof/fits , etc..

- Behavior of application (Aladin) changes according to that

- Add content-type = "votable/xml;datalink

- Pros :

- Extends already working functionality.

- URL templating

- Self consistent

- Cons :

- Doesn't work if url format changes from line to line

# Possible solutions

## 4) ObsCore-like solution

- Add a format column + other ObsCore-like columns

```
<RESOURCE ID="yCat_102009" name="B/xmm">
<DESCRIPTION>XMM-Newton Observation Log (XMM-Newton Science Operation Center, 2012)</DESCRIPTION>
<COORDSYS ID="12000" system="eq_FK5" equinox="J2000"/>
<TABLE ID="B_xmm_xmmlog" name="B/xmm/xmmlog">
<DESCRIPTION>The XMM-Newton Observation log (2017-04-24)\vizContent\image\fits</DESCRIPTION>
...
<GROUP utype="Obs:obsdataset.access$block">
<FIELDREF ref="A" utype="Obs:obsdataset.dataproducttype" />
<FIELDREF ref="B" utype="Obs:obsdataset.access.format" />
<FIELDREF ref="C" utype="Obs:obsdataset.access.reference" />
<FIELDREF ref="D" utype="Obs:datatd.title" />
</GROUP>
...
<FIELD ID="A" name="Product">
<DESCRIPTION>Product type (image | spectre | timeseries | document)</DESCRIPTION>
</FIELD>
<FIELD ID="B" name="Format">
<DESCRIPTION>Encoding format</DESCRIPTION>
</FIELD>
<FIELD ID="C" name="Image" ucd="meta.ref.url" datatype="char" arraysize="1">
<DESCRIPTION>[YN] Epic image of this observation (HTS)</DESCRIPTION>
</FIELD>
<FIELD ID="D" name="Label">
<DESCRIPTION>Product label </DESCRIPTION>
</FIELD>
...
<DATA><TABLEDATA>
<TR>
...
<TD>image</TD>
<TD>fits</TD>
<TD>http://vizier.u-strasbg.fr/viz-bin/nph-htx?myimage3145</TD>
<TD>image 3145</TD>
```

- Pros :

- Utype/ucd complementarity
- Allows variability from line to line
- Full description

- Cons :

- Requires adding fields (or params) and a group

# Possible Evolution of dataset discovery and access

---

F.Bonnarel (CDS)



# Current multidimensional data protocols (SIAV2 set)

- A full family of bounded protocols
  - SIA2.0
  - ObsTAP with Obscore 1.1
  - DataLink
  - SODA
- Main properties
  - ObsTAP and SIA2 allow archived dataset discovery
    - Constraints on all four data axes (spatial, spectral, time and pol) by ADQL (ObSTAP/Core) or PQL (SIA2.0)
  - SODA only allows cutouts and selection
  - Glue among those is made by DataLink technology
  - DALI compliant / sync and async / ucd 1+ and utypes + xtypes

# Quick look to older protocols

## SIAV1 and SSA

- SCS not relevant for datasets
- SIAV1 had no standard possibility to query on BAND / TIME / POL
- SIAV1 had old style ucd, no utypes, no DALI compliancy, etc..
- SIAV1 had virtual data discovery functionality including rebinning/reprojection on provided WCS → not in SIAV2 set
- SSA also provided some virtual data discovery (apparently insufficient / see Petr Talk) ---> not in SIAV2 set
- SSA had specific spectral input parameters eg VARAMP and REDSHIFT ---> not in SIAV2 set
- SSA had more output fields (target description , accuracy on all axes) than ObsCore.
- --> protocols less achieved but with a few things still missing in « SIAV2 set »

# TimeSeries requirements

Don't forget : top 1 CSP priority

- For Discovery (see my talk in TDIG/DAL/DM session)
  - Basic Obscore +
    - Time standard deviation
    - Time sampling location, bounds, standard deviation
    - Time frequency characterisation
    - Variability, period ???
    - Target name and class
  - Virtual data discovery : TimeSeries has to be created from the database content by the query

# TimeSeries requirements

Don't forget : top 1 CSP priority

- For access (see also ASTERICS requirements on Thursday)
  - Delivering set of ND points with generally sparsed time axis and one to several dependant axes (flux, velocity, position, ... spectra, images ....)
  - Provenance of ND point or ND point additional metadata
  - Time scale / time frame description.
  - MJD representation
  - periodograms

# Spectra (see Petr talk)

- More input parameters for targets
- Virtual data discovery
  - to avoid 2 step discovery and SODA access via DataLink and get similar discovery/access parameters
- Extension of standard SODA to spectra
- More functionalities in SODA (formats, rebinning, axis transformation)
- Etc...

# Images and cubes

- Virtual image (or cube) discovery ( à la HEASARC « Skyview »)
- Pixel cutouts and rebinning/reprojection
- HiPS  $\leftarrow\rightarrow$  « SIAV2 set of services » back and forth combination



# Towards a new Discovery protocol ?

- Instead of SIA2.1 + SSA2 +TS1.0, new DsDisc protocol defined by
  - ObsCore extensions
    - Extension of Obscore for TS metadata
    - Extension of Obscore for spectra
    - Extension for others : visibilities ,
  - New dataproduct type specific PQL parameters
  - Virtual data discovery = access.reference is a « best match » SODA Url

# SODA 1.1 ? /SODA 2 ?

- Valid for TimeSeries, spectra, others
- Providing rebinning/reprojection and pixel cutout
- HiPS combination
- Providing extended metadata (special dataset view)
  - using datamodel (VO-DML) serialization
  - Used to be in SIAV2.1 getGoryDetails → getMetadata
- Forced by requested dataset representation
  - ObsCore / Dataset/Cube DM