

Towards SIAP2-next and SODA-next



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SIAP2 and SODA feedback summarized in IVOA note



Recent DAL protocols feedback

Version 1.0

IVOA Note 2018-07-22

Working group

DAL

This version

<http://www.ivoa.net/documents/RecentDALProtocolsFeedback/20180722>

Latest version

<http://www.ivoa.net/documents/RecentDALProtocolsFeedback>

Previous versions

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Abstract

This document gathers comments and feedback of implementation for DAL protocols developed to fulfil the DAL multi-D science priority. It can help in writing an implementation note for those protocols, as well as to start revisions of them.

Status of This Document

This is an IVOA Note expressing suggestions from and opinions of the authors. It is intended to share best practices, possible approaches, or other perspectives on interoperability with the Virtual Observatory. It should not be referenced or otherwise interpreted as a standard specification.

A list of current IVOA Recommendations and other technical documents can be found at <http://www.ivoa.net/Documents/>.



SIAP2 parameters: availability of list of possible values

Several SIAP2.0 parameters have a limited list of possible values

- Some have lists limited by protocol (and obscure)
 - POL (Stokes, LINEAR, etc..)
 - DPTYPE (image, cube, visibility, timeseries ;..)
 - CALIB : levels
 - FORMAT : fits, jpeg , png, etc..
- Some have free string values
 - COLLECTION (HST, WISE, etc...), FACILITY (VLT, Keck, Chandra), INSTRUMENT (ACS, MEGACAM, etc.)
- PARAMETERS less useful if we have no prior idea of their possible values



SIAP2 : Replace « may » by a « SHOULD » in 2.1.20

2.1.20 Service PARAMETER self description

Any service may include a DataLink [8] service descriptor in the VOTable output to describe itself. This descriptor would describe the supported query parameters (standard and custom), including list of values for those with a fixed list (e.g. COLLECTION, INSTRUMENT, FACILITY, DPTYPE, CALIB, and FORMAT).

- This will allow to discover « possibilities » of the service prior to usage and * optimize the queries



Discovery and access :

virtual data versus axis completion

Physical axis
Completion
For query and description

SIAP1 / SSA / SIAP2 + ObsTAP	SSA SIAP2+ObsTAP	SIAP2+ObsTAP	SIAP2+ObsTAP
SIAP1 cutout SIAP2-ObsTAP + SODA	SSA ?		
SIAP1 mosaic			

From archived data to
More and more complex
Virtual data



Discovery and access :

virtual data versus axis completion

- **SIAP1 had « cutout » and « mosaic » modes beside « archive » mode**
 - 1 shot but only spatial
- **We now have :**
 - **SIAP2.0 or ObsTAP**
 - **+ SODA : for cutouts only (all axes)**
 - **+DataLink (Service descriptor and/or {links} table)**
 - **→ 2 shots**
- **A lot of interest for SODA among large projects (session yesterday)**
 - **Can we discover SODA immediatly ?**
 - **The nice thing is that SODA and SIAP2.0 are consistent**



Discovery and access :

a first proposal for change

2.1 {query} resource

The {query} resource is a synchronous web service resource that conforms to the DALI-sync description [1]. The implementer is free to name (set the path of) this resource however they like; the client will find the resource path using the VOSI-capabilities resource.

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2.1.1 POS

The POS parameter defines the positional region(s) to be searched for data. The value is made up of a shape keyword followed by coordinate values. A POS constraint is satisfied if the specified shape intersects the bounds (s_region in the ObsCore [7] data model) of the observation.

- Add at the beginning of 2.1 a new « VIRTUAL » boolean parameter
- Default is FALSE.
- If TRUE : the other parameters are used both for discovery and cutout
- IF TRUE : the Access.refrence URL is directly a SODA URL
- But it's only for cutout
- What about reprojection on sky, transformations on spectral or time axis



Beyond simple cutout :

a proposal for SODA-next (virtual data)

- **ADD standard parameters to SODA for**
 - **Spatial resolution : SPATRES**
 - **Rotation : ROTA**
 - **Sky Projection : PROJ**
- **Alternatively : WCS = (full text of WCS part of FITS header)**
- **OTHER (non related) proposal : pixel cutouts**



Beyond simple cutout :

CDS SODA-next Prototype : HiPStoFITS

- **Has been shown in College Park**
 - **Based on HiPS reprojection on a grid**
 - **Free Resolution, size, projection and shape**
 - **Servlet mode**
 - **Can be accessed directly or via a SIAP2.0 virtual service prototype**



Access to DSS2 red image generated by hipstofits with position, size and resolution selected by the user through a dedicated html interface

Image Maker V2

Survey:

Cutout constraints:

Direct input

Consider the bounding box around this target area

Order:

Resolution (arcsec):

Other parameters:

Projection:

Rotation:

WCS params

```
http://localhost:8080/hipstofits/getfitsV2?surveyurl=http%3A%2F%2Falasky.u-strasbg.fr%2FDSS%2FDSS2Merged&positionType=direct&pos=Circle%20308.72%20%2B60.15%200.5&resType=order&order=9&projection=Tangential&rotation=0.8  
http://localhost:8080/hipstofits/getfitsV2?surveyurl=http%3A%2F%2Falasky.u-strasbg.fr%2FDSS%2FDSS2Merged&positionType=direct&pos=Circle%20308.72%20%2B60.15%200.5&resType=order&order=9&projection=Tangential&rotation=0.8  
http://localhost:8080/hipstofits/getfitsV2?surveyurl=http%3A%2F%2Falasky.u-strasbg.fr%2FDSS%2FDSS2Merged&positionType=direct&pos=Circle%20308.72
```

File View Zoom Scale Color Regions WCS Analysis Help

1922.360 20:35:12.695 +60:40:54.30 (FK5) 410.000 666.000 (physical)

Same interface, Pan-STARRS, driven by WCS header

Survey Pan STARRS g

Cutout constraints:

Direct input

WCS params

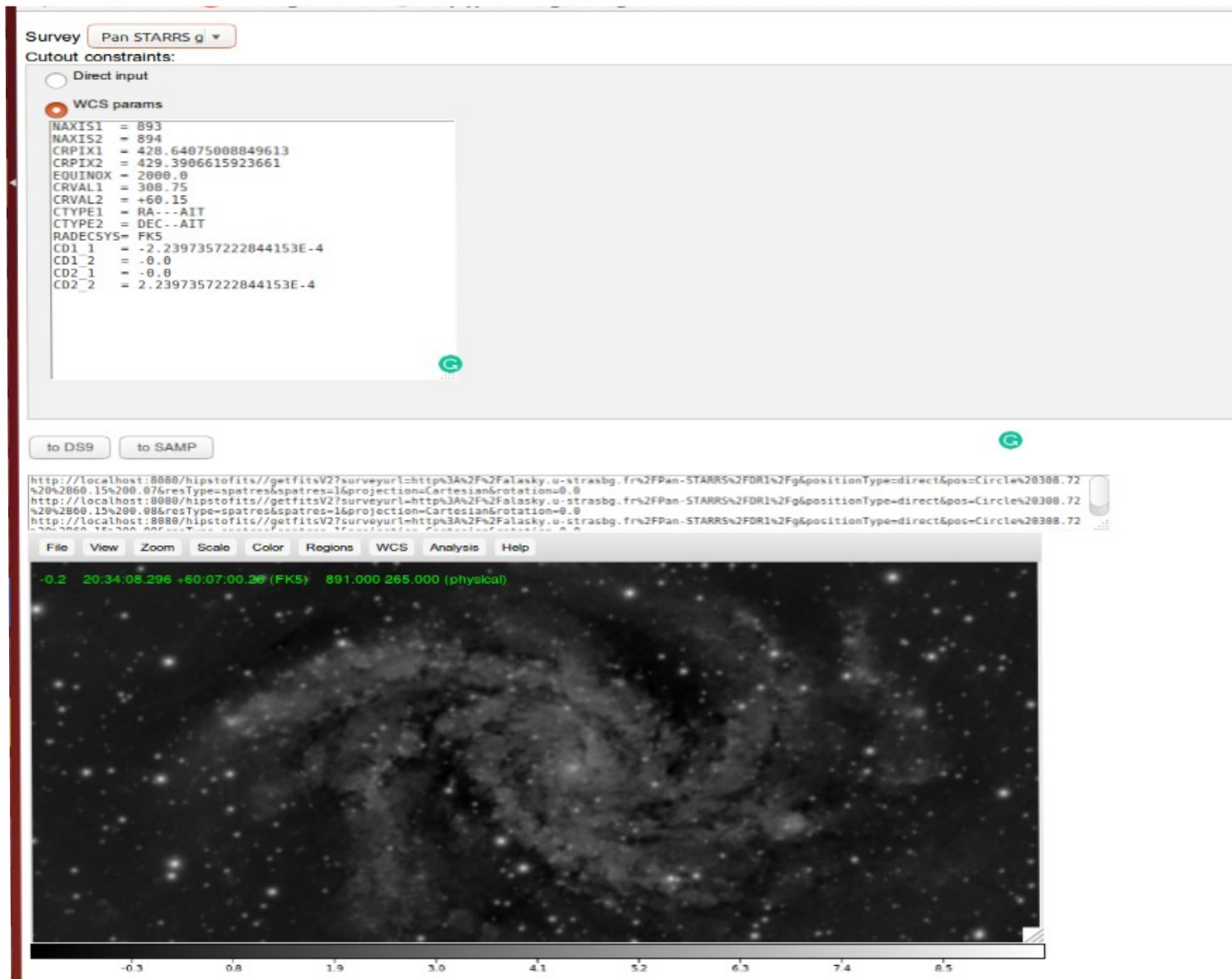
```
NAXIS1 = 893
NAXIS2 = 894
CRPIX1 = 428.64075008849613
CRPIX2 = 429.3906615923661
EQUINOX = 2000.0
CRVAL1 = 308.75
CRVAL2 = +60.15
CTYPE1 = RA--AIT
CTYPE2 = DEC--AIT
RADECSYS= FK5
CD1_1 = -2.2397357222844153E-4
CD1_2 = -0.0
CD2_1 = -0.0
CD2_2 = 2.2397357222844153E-4
```

to DS9 to SAMP

```
http://localhost:8888/hipstofits//getfitsV2?surveyurl=http%3A%2F%2Falasky.u-strasbg.fr%2FPan-STARRS%2FDRI%2Fg&positionType=direct&pos=Circle%20388.72%20%2060.15%200.07&resType=spatres&spatres=16&projection=Cartesian&rotation=0.0
http://localhost:8888/hipstofits//getfitsV2?surveyurl=http%3A%2F%2Falasky.u-strasbg.fr%2FPan-STARRS%2FDRI%2Fg&positionType=direct&pos=Circle%20388.72%20%2060.15%200.08&resType=spatres&spatres=16&projection=Cartesian&rotation=0.0
http://localhost:8888/hipstofits//getfitsV2?surveyurl=http%3A%2F%2Falasky.u-strasbg.fr%2FPan-STARRS%2FDRI%2Fg&positionType=direct&pos=Circle%20388.72%20%2060.15%200.09&resType=spatres&spatres=16&projection=Cartesian&rotation=0.0
```

File View Zoom Scale Color Regions WCS Analysis Help

-0.2 20:34:08.296 +60:07:00.20 (FK5) 891.000 265.000 (physical)



-0.3 0.8 1.9 3.0 4.1 5.2 6.3 7.4 8.5

OPEN questions

- **Do we extend rebinning/reprojection beyond spatial axis in SODA1.1 ?**
 - Maybe useful for TimeSeries access
 - For spectral and polarization axis
 - Cube generation from visibility data
- **Do we add these SODA1.1 access in VIRTUAL SIAP2.1 mode ?**
- **How do we simulate SIAP2.1 behavior in ObsTAP context ? dedicated Extension of ADQL ?**
- **Should we allow SIAP2/SIAP1 mixture in the meantime?**
 - This is possible : add new parameters in the query and field in the response.
 - Doesn't have to be normalized (personal opinion)



Conclusion

- **A couple of simple changes for SIAP2. When do we start ?
Before fall-interop ? Join me**
 - **SODA-next can be discussed by the same. Maybe we need
more feedback on SODA1.0 before starting real work ?
Any advice on this ?**
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