# Firefly Support

## Service Descriptors
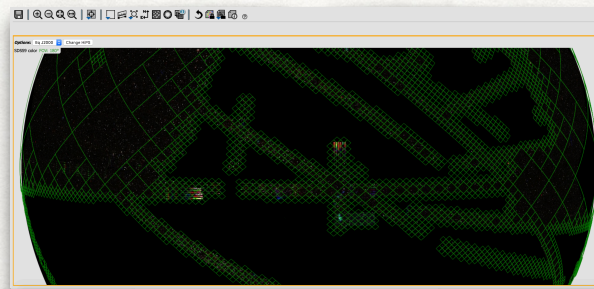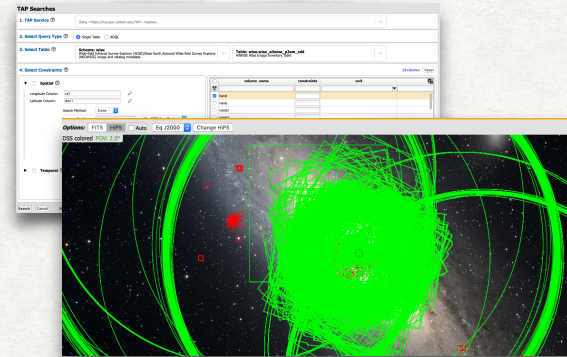
- May 2018: **HiPS**
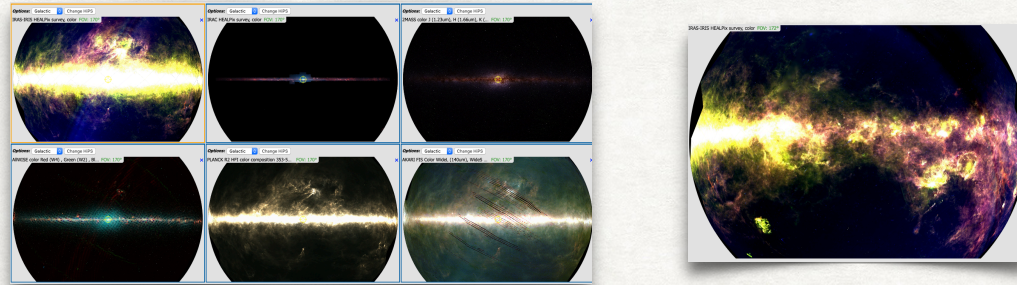
- Fall 2018 - **MOC**

- Spring 2019
  - ‣ **TAP**
  - ‣ **ObsCore & DataLink (partial)**
  - ‣ **s_region** visualization

- Winter 2020 - Service Descriptors
  - ‣ **Datalink (Completed)**
  - ‣ **Standalone**

```
<RESOURCE type="meta" utype="adhoc:service">
  <DESCRIPTION>Link to ZTF light curve for ztf_dr3 collection</DESCRIPTION>
  <GROUP name="inputParams">
    <PARAM name="id" datatype="char" arraysize="*" ref="col_0" value="">
      <DESCRIPTION>Identifier of a ZTF object.</DESCRIPTION>
    </PARAM>
    <PARAM name="bad_catflags_mask" datatype="int" value="0">
      <DESCRIPTION>Bitmask used to exclude lightcurve points with at least one of the indicated catflag bits set. Default is 0.</DESCRIPTION>
    </PARAM>
    <PARAM name="time" datatype="char" arraysize="*" value="">
      <DESCRIPTION>Date-time range for which lightcurve data is to be retrieved, unlimited by default. Space-separated range endpoint(s) are int
    </PARAM>
  </GROUP>
  <PARAM name="standardID" datatype="char" arraysize="*" value="ivo://ivoa.net/std/DataLink#links-1.0"/>
  <PARAM name="accessURL" datatype="char" arraysize="*" value="https://irsa.ipac.caltech.edu/cgi-bin/ZTF/nph_light_curves?collection=ztf_dr3"/>
</RESOURCE>
```

# What was Easy

- Spec easy to follow

- We have existing services (CADC, IRSA new service) to try

- VO file are easy to edit and try stuff

- It is clear that Datalink and Service Descriptors have tremendous potential

- Service Descriptors could be added to virtually any homogeneous data product table

# UI Challenges

- Must Analyze the Data

    - VO: How many tables?

    - FITS: how many HDUs? What are they?

    - Solution: Download and Analyze

- Multiple data products (file) each with multiple data sets

- Getting input from array parameters

- Optional vs required parameters

Can we indicate optional/required in the spec?

# Challenges with Standalone Service Descriptors

## Service Descriptors: With Datalink *vs* Standalone

| Issue | With Datalink | Standalone |
|---|---|---|
| content_type | *given* | Must Download or header (HEAD) |
| content_length | *given* | Must Download or header (HEAD) |
| semantics | *given* | No solution |
| description | *given* | Maybe if Service Descriptors include a <description> tag |
| What is in the file | Must Download and Analyze | Must Download and Analyze |

Can we put all of it in the Service Descriptor?

# Challenge with creating URLs

```
<PARAM name="CIRCLE" datatype="double" arraysize="3" ucd="obs.field" unit="deg" xtype="circle" value="">
    <VALUES>
      <MAX value="10.685001466285922 41.25363121467171 0.7002317445980466" />
    </VALUES>
 </PARAM>
```

- *Should this be?*
  - `&CIRCLE=10.6,41.2,0.7`     *or*
  - `&CIRCLE=10.6;41.2;0.7`     *or*
  - `&CIRCLE=10.6 41.2 0.7`     *or*
  - `&CIRCLE=[10.6,41.2,0.7]`

- Does is support scientific notation? 7E-3

Could Service descriptors include a working example?

# Challenges with launching other Web Apps

- Data Products *vs* Web Application

- How do we know if the service is a web application?
  - Our Solution:
    - content type: "text/html"
    - Launch app

- Protocol does not really have a web to define a URL that takes another URL

Could the spec include data product or App?

# Challenge: Did we implement it correctly?

### It would be nice to have a validation suite

- Server running in the docker container

- Takes a TAP request and returns the same result for any tap search

- Implements obscore and services descriptors

- Maybe has about 5 or 10 different data product files that is returns

Datalink

ObsCore

Service Descriptors

# Huge Potential