Fig. 1

Fig. 2

1. SODA. Fuss. Sigh.

(cf. Fig. 1)

Markus Demleitner
msdemlei@ari.uni-heidelberg.de

(cf. Fig. 2)

- What SODA should do
- Service descriptor
- Multiplicities
- Dependencies
- RA, PIXEL
- Minor trouble

Disclaimer: These are my opinions, not necessarily those of the REC authors.

2. What is SODA?

"Service Operations on Data in Astronomy": cut-outs, recalibrations, collapsing axes, etc, on the server side.

My plan: Clients retrieve a datalink document that contains a service descriptor from which they can infer UIs.

Custom UIs (as in "draw boxes on sky images") made possible by three-factor-semantics (name, unit, and UCD).

3. Service Descriptor Sketch

```
<RESOURCE ID="apidnlmesudn" type="meta" utype="adhoc:service">
  <GROUP name="inputParams">
    <PARAM name="ID" ucd="meta.id;meta.main"
      value="ivo://org.gavo.dc/~?califa/datadr2/UGC12519.V1200.rscube.fits">
      <DESCRIPTION>The pubisher DID of the dataset of interest</DESCRIPTION>
    <PARAM arraysize="2" datatype="double" name="DEC" ucd="pos.eq.dec"
      unit="deg" value="" xtype="interval">
      <DESCRIPTION>The latitude coordinate</DESCRIPTION>
      <VALUES>
        <MIN value="15.9438963186"/>
        <MAX value="15.9638963328"/>
    <PARAM arraysize="*" datatype="char" name="KIND" ucd="" value="">
      <DESCRIPTION>Set to HEADER to retrieve just the primary header,
      leave empty for data.</DESCRIPTION>
      <VALUES>
        <OPTION name="Retrieve header only" value="HEADER"/>
        <OPTION name="Retrieve the full data, including header (default)"
          value="DATA"/>
  <PARAM name="standardID" value="ivo://ivoa.net/std/SODA#async-1.0"/>
```

4. Multiplicities

The info is not quite enough to infer interfaces:

Which parameter can be repeated and which cannot?

Current draft: has hard-coded requirements per standard parameter and capability (sync or async).

My take: Leave open, wait for proper VO-DML Parameter DM. Perhaps ad-hoc something for enumerations.

5. Dependencies

Consider a dataset that has a spectral axis on array axis 3. Specifying both PIXEL_3 and BAND in this case might not be what the user wants.

It'd be cool if a client could grey out a BAND when something is in PIXEL_3. For that, we'd need a way to annotate "X and Y are mutually exclusive".

My take: Develop PDL+VO-DML to do that, prototype in the clients that certainly will come in large numbers. Build on user smarts until then.

6. RA, DEC

(Unfortunately) SODA uses an alphabet soup parameter called POS for spatial constraints.

Consequence: Clients don't know where a dataset is (unless they managed to snarf data from possible previous discovery steps, but that's difficult and complicated at best).

Simple solution: Require RA and DEC whenever someone as POS.

7. Pixel Cutouts

There are no provisions for pixel coutouts.

Even without WCS, there's lots of use cases for those (e.g., known parts of WCS in IFU archives, stepping through planes).

Simple solution: Have PIXEL_1, PIXEL_2, . . . PIXEL_n parameters.

8. More Gripes

Here's a snippet from a recent mail, covering my program for my series of gripes via the DAL list:

```
(1) The big one (Francois)
(2) No gratuitous xtypes (OK)
(3) In-DAL SODA descriptor optional, introductory text (Francois)
(4) Mandated multiplicities considered harmful (Pat)
(5) No single-value arguments for intervals
() @value and @ref semantics documented for PARAMs
() Spatial coverage discovery and the RA and DEC parameters
() Pixel coutouts: PIXEL_n
() Behaviour for no-ID queries?  For queries with only ID?
() Examples stuff: example example, and perhaps a dl-id term?
```

9. A Plea

I know these mails are long.

I know it's hard to say something sensible when you've not implemented this stuff or anything like it.

But it shouldn't be Rocket Science, and some issues are actually straightforward. Also, it sucks to be alone. If you can contribute, please do.

Like, . . . , now.