

IVOA Interop. Meeting May 2023 - DAL 2

Thursday 11th May 2023 - 16:00 CEST (Bologna)

Participants (12): Petr Skoda (PS), Margarida Castro Neves (MCN), Markus Demleitner (MD), Jesus Salgado (JS), Gregory Dubois-Felsmann (GDF), Patrick Dowler (PD), Mark Taylor (MT), Grégory Mantelet (GM), François Bonnarel (FB), Alberto Micol (AM), James Tocknell (JT), James Dempsey (JD)

Agenda

1. Petr Skoda - Echelle spectra and the ways toward their VO interoperability
2. Margarida Castro Neves - LineTAP implementation in SPLAT-VO
3. Patrick Dowler - DALI
4. François Bonnarel - SIA2/DAP + SODA
5. Grégory Mantelet - Simbad's Cone Search implementation
6. Various - DAL RFC Overview

Petr Skoda - Echelle spectra and the ways toward their VO interoperability

- Spitzer is also an echelle spectrograph
- $m \Rightarrow$ absolute order - critical for interpreting the data
- Spectra include repeating structures (blaze functions overlapping)
- Can be gaps in the spectrum
- Examples - X-SHOOTER, HARP-S/HARPS-N
- Many observatories recommend at looking at a combined spectrum but instead use the individual orders
- Normalisation of combined orders can cause significant problems - not science suitable
- Would like to query by order to retrieve the unblazed, unmerged spectra
- Need SODA style cutout of these spectra
- SSA requires vacuum wavelength but observation is in air and there is no absolute convers

Margarida Castro Neves - LineTAP implementation in SPLAT-VO

- LineTAP standard presented in previous meeting
- Implementations in CASSIS, SPLAT
- Radio resources - not many spectra available
- Demonstration of finding Barium lines in a theoretical spectra using LineTAP service
 - Search for lines in wavelength range, retrieve from service
 - Overplot on spectrum
 - Sort by strength
 - Zoom plot - only show strongest lines unless one zooms in
 - Hover mode - plot line under cursor to explore
- Molecule search - query by InChi

Question:

- [?]: Is there a way to filter the lines by type of source (given there are so many theoretical lines)?
- MCN: That is not currently supported
- MD: Currently good to a factor of 10. This should be science driven, please contact
- MD: On curated lists - would be good to have multiple services which curate lines relevant to particular science, then can select the relevant service
- JS:
- GDF: Would it be better to compile these lists by reference than by value?
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Patrick Dowler - DALI

- DALI 1.2 changes (not yet PR):
 - clarify
 - MAXREC and OVERFLOW interplay
 - MIN and MAX by xtype
 - VOSI-availability - optional
 - VOSI-capabilities - only required in registered services
 - new xtypes - in WD
 - shape - any of circle, polygon, multipolygon
 - moc - ascii MOC serialization - request for MOC expert to review text
 - multipolygon -
 - new xtypes - not yet in WD
 - uri

- uuid
- range - coordinate range - should end up included in shape too
- Out of scope
 - VOTable 2D arrays
 - phrases - issues with specifying a delimiter
 - words - space delimited - not terribly useful
- Finalise and go RFC in ~weeks

Question:

- GDF: Concerned about multi-polygon to shape which implies it gets into SIA2 and SODA
- PD: Not required to include it in shape for now - no string solid use cases for input right now
- MT: Have we considered an xtype for sexagesimal
- PD: Would be straightforward to include but would need two terms dms and hms
- MT: Yes will raise an issue
- GM: Enough material for a running meeting

François Bonnarel - SIA2/DAP + SODA

- See previous talks on existing work on SIA2/SODA
- Extending SIA2 to cover all data product types
 - Need support for time series and spectra
 - For spectra could be consistent with ObsCore
 - Discovery of all sky datasets
- SODA - extended dataset metadata
 - Need WCS info when extracting sub cube from velocity cube - this isn't in ObsCore
 - SODA could send the extra metadata
 - So SODA expands to cover other operations
 - Example implemented at CADC
- Rebin and reprojecting
 - Needs extra parameters (already in SIA2)
- Product type of output - could use DPTYPE to control the output type
- Format transformation
 - e.g. hips2fits
 - Use HiPS as an advanced discovery tool (e.g. moment maps) and extract from that
 - 2D HiPS from 3D HiPS (See Thomas Boch talk)
 - Examples to extract fits and 2d transform of 3D HiPS
- Will raise new PRs for discussion - not merging
- WD by Nov Interop

Questions:

- [?]: Why need DAP - could do ADQL and TAP
- [FB] True, but some providers prefer having protocol
- [GDF] Much easier for clients
- [AM] Velocity cubes - need min and max velocity - best in ObsCore and that's where we generally see SODA metadata
- [FB] Cannot have all metadata in ObsCore - feel SODA is the best place for this as it is post discovery e.g. send request for WCS
- [JT] Datacentral - have surveys with many spectra l products - have pre-calculated views of data - would be good to have SODA service with more complex view on the cube
- [PD] tranformations list could grow a lot and when would it be better to actually send code than
- [GDF] So it would be a DSL for processing requests
- [MD] See Array SQL ISO standard for array operations

Grégory Mantelet - Simbad's Cone Search implementation

- Replace outdated cone search - old was slow, single output format, sorting
- Cannot cache as data changes too quickly
- Would like to sort by eg. number of references (citations)
- Stack: Java 11/Quarkus/Gradle
- Columns metadata from TAP_SCHEMA
- Reactive/Asynchronous programming, native compilation
- Multiple response formats via RESPONSEFORMAT param or accept header
- Sort - ORDER_BY and ORDER_DIR parameters
- Want to reject unknown params to let user know about errors (contrary to current spec, changing in v1.1)
- Use UCD1+
- Links in the result - on object name and type toward the corresponding Simbad webpage
- Extra metadata on data origin in INFO element in VOTABLE
- OpenAPI/Swagger docs
- New service running besides old one
- May provide a VERSION param to allow fallback to v1.03 behaviour
- Already working with Aladin and TOPCAT

Various - DAL RFC Overview

- ADQL 2.1
- Datalink 1.1