IVOA Interop 2021
Applications Session
Tuesday May 25 20:30 UTC
~84 participants

Pierre Fernique, Ada Nebot, Sébastien Derriere
Status on MOCs in the IVOA
We will present the current status of the "MOC: Multi-Order Coverage map version 2.0" document, and in particular the differences and progresses from the current standard, and the exension to the time domain with TMOC and STMOC expanding the SMOC capabilities. We will discuss the implementation of the new capabilities in libraries, applications, and the description of existing datasets. The presentation will be followed by a short demonstration of STMOC usage on simple science cases.
MOC 1.1 allows creation coverage maps based on sky position, but not on time.
MOC 2.0 is a working draft towards becoming a standard which supports a time component in the coverage map.
Allows us to look for simultaneous observations. Computations are very fast: unions, intersections of both position and time.

Note in 2018 introduced the idea of time MOC
- created TMOCs for hundreds of Vizier catalogs
- MOCpy implementation for space/time MOCs

Now there are 2 implementations (Java and Python). Also have a validator.
Collectin all that info on the MocInfo wiki page
(https://wiki.ivoa.net/twiki/bin/view/IVOA/MocInfo)
- Integrated in Aladin desktop and HiPSgen

MOCpy is Astropy-affiliated package
- needs a little work to make it fully compatible with current working draft.

Demo...

Questions
Is these a way to filter catalogs by positions and time in Aladin desktop.
Yes, in latest Aladin desktop, as well as in MOCpy.
Link to demo: https://www.youtube.com/watch?v=IhWBSvM8Khk

How does this relate to ObsLocTAP?
Not related, but one could compute ST-MOCs for the results and for visualization purposes. It was decided not to make ST-MOC results as part of the standard.

Validator talk is on Friday@22:00 UTC

Dave Morris

Registering IVOA software in ESCAPE

The European ESCAPE project is creating a registry of software linked to the project. Our work package in ESCAPE is tasked with promoting IVOA standards andsoftware within ESCAPE. We have started a discussion in ESCAPE about how to promote IVOA software in the context of ESCAPE. This session is to raise the same discussion at the IVOA, collecting thoughts ideas and suggestions about how to promote IVOA software to other communities.

ESCAPE - European Science Cluster of Astronomy and Particle physics
OSSR - Open-source Scientific Software Repository

ESCAPE already harvests the IVOA Registry. But we don't have IVOA s/w in the OSSR.
What is IVOA s/w? (IVOA doesn't produce s/w.) So the software is things like Stilts, Astropy, Topcat, Aladin.
IVOA has avoided endorsing a particular list of s/w.
CDS provides s/w directly as does Dachs.
Can we have a consistent set of IVOA s/w metadata?

Idea of deploying IVOA services in ESCAPE. Maybe treat the deployment package itself as the entity.

Open call for participation!

Also: Apart from curating software, as Dave mentioned the plan is that we will also be able to publish workflows (e.g. Notebook & dataset), and I think that creating and publishing workflows that interact with IVOA services and utilize VO tools would help advertise them to the ESCAPE community

Questions
Is pyvo in there?
Not as yet. So far focused on end user applications, so no libraries yet. Astropy also not yet included. Registered items become a citable object in Zenodo. What do people think about libraries being registered?

ASCL is another software repository. Why not use that? (Partial answer is that ASCL entries are from peer-reviewed papers.)

IVOA website has a list of s/w for astronomers:
https://www.ivoa.net/astronomers/applications.html
How well-curated is it?

Past discussions at registering s/w in the IVOA have lead to not doing it. Some difficulites are in curation.
One aspect of OSSR is the historical record the a version of the s/w existed at one time, but curation is still and issue since another use is to discover and deploy it.
We are reluctant to register s/w on behalf of someone else.

Baptiste Cecconi, Pierre Le Sidaner, Philippe Hamy
VESPA-Cloud
Dachs on Docker
EOSC experiment for automated deployment of TAP service
VESPA - Virtual European Solar and Planetary Access
Based on IVOA protocols, particularly TAP. EPNCore similar to ObsCore
Has been running and registered for ~8 years.
Small data providers had some issues maintaining their service. Dachs is used under the hood.
So try to use cloud services. Implement Dachs instances in the cloud.
Implement authN/Z with AAI, with deploys from gitlab

Offer to providers this package. Group management is centralized.
Deployment through Docker.
Registration can be done for services, but isn't done yet as it is a prototype.

See presentation for many details about the configuration and deployment process.

Questions
Any trouble with Postgres on Docker?
The DB is not part of the Docker image.

Why do you use apache (as a proxy I suppose) and not connect directly to DaCHS?
For awstats stats?
Yes, for AWStats

Jiri Nadvornik
HDF5 and the VO
An emerging practice in machine learning is to combine data from different domains, such as spectra and images, to gain additional knowledge. Combining such data brings its own challenges which we solved by using HDF5 for creating a specialized data model. It is used to store and process combined spectra and images efficiently.
In this talk, I will discuss the possibility to connect HDF5 via VO protocols to existing tools, such as Topcat or Aladin to explore the combined data

Hierarchical Semi-Sparse (HiSS) data cubes
Using HDF5
Not entirely dense, not entirely sparse
Data import with several Python libraries
Export data cube for use. E.g. 3D visualization in Topcat

Need to support
- slicing (locking 2 dimensions), rolling up or drilling down, or dicing (ind. spectra

for example)
- geometric queries

Ideas how to solve it:
- Build simple cone search plus DataLink
- TAP with HDFql (looking into ADQL)
- Process in Python and communicate with SAMP
- Compute ST-MOCs for coverage. Doesn't solve all visualization.

HiSS cube and article link:
https://authors.elsevier.com/a/1d3pX7tDLPHzZi
Questions

Is this flexible for other multidimensional hypercubes?
For visualization in Topcat for example, you can do whatever you like. Within HDF5, it depends.

Maybe IVOA could play a role in giving guidelines for mapping HDF5 attributes to IVOA concepts (for interoperability).