DSP Working Group Closing

Jesús Salgado & Sara Bertocco Maryland, June 2025

	Wednesday June 4 @09:00 EDT: Room 2309												
DSP	Speaker	Title	Time	Abstract	Material								
Session 1	Dave Morris (Cancelled)	Execution Broker Update	15' 9:00-9:15	The IVOA Execution Broker Working Draft represents a key step toward standardising how astronomical workflows and computational tasks are managed and executed across distributed infrastructures. This talk will provide an update on the current status of the draft specification, outlining its core concepts and goals. It will also highlight ongoing prototype implementations being developed within the context of the SRCNet (Square Kilometre Array Regional Centres Network), demonstrating practical applications and informing the evolution of the standard. The session will offer insights into lessor learned, emerging challenges, and next steps toward community adoption.									
	Joshua Fraustro (In person)	Generation of code from OpenAPI	15' 9:15-9:30	In the ongoing efforts within the International Virtual Observatory Alliance (IVOA), we are working to define our protocols using OpenAPI specifications. This approach aims to make our standards not only human-readable but also machine- actionable, thereby enhancing interoperability and automation. However, the generation of OpenAPI documentation from our existing protocol definitions presents several challenges and limitations.	pdf								
	Mark Taylor (Remote)	IVOA Authentication	15' 9:30-9:45	The challenge of enabling non-browser clients to authenticate against VO services has been discussed over several years. Practice has now stabilised and is in use in production services and has led to an early draft of a new document tentatively named <i>Interoperable Authentication Protocol</i> . The scope and outline of IAP will be described, along with some open issues.	pdf								
	Adrian Damian (Remote)	Towards Federation of CADC AA&I	15' 9:45-10:00	We address the challenges of federating Authentication, Authorisation, and Identity (AA&I) services in the context of integrating the Canadian Astronomy Data Centre (CADC) services with those provided by the upcoming major astronomical facilities such as the SKA and Rubin. For that, we first evaluated existing proxy OIDC solutions, specifically Indigo IAM and CILogon, and also assessed the suitability of Keycloak for our federation needs. Based on this evaluation, we have chosen to prototype the required functionality within our existing Access Control (AC) system. We report on our approach and current progress and outline future development plans to support seamless and secure federated access.	pdf								
	Brian Major	Firefly on CANFAR	15' 10:00-10:10	The Firefly tool is now available on CANFAR deployments. The work exposed some interesting interoperability challenges: AAI integration, container standardization, and the potential for a standardization of platform APIs that would allow tools (Firefly, CARTA, Jupyter, etc) to interact with other tools running on the same platform and other platforms, enabling distributed computation on platform datasets.	pdf								
	Marcos Lopez- Caniego	ESA DataLabs	15' 10:15-10:30	ESA Datalabs is a collaborative platform designed to bring data closer to researchers by enabling on-demand data processing and analysis within ESA's science archives. It integrates high-performance computing, Jupyter-based environments, and standardized data access protocols, allowing scientists to run complex workflows without the need to download massive datasets. This presentation introduces the architecture of ESA Datalabs, showcases use cases from astronomy and planetary science, and outlines how the platform supports reproducible research and interoperability through adherence to IVOA standards. By lowering the barrier to large-scale data analysis, ESA Datalabs accelerates scientific discovery and fosters innovation within the space science community.	pdf								

DSP session 1

- Evaluate various Python server generators for OpenAPI specifications. Best suited for developers who need to quickly integrate a protocol like IVOA.
- Authentication and science platforms tools interoperability
 - working draft called IAP Interoperable Authentication Protocol (on GitHub)
 - (to be renamed as AuthVO)
- CADC experience toward A&A federation
- Interoperability challenges of Firefly tool integration in CANFAR Science Platform (AAI integration, container standardization, and the potential for a standardization of platform APIs)
- ESA Datalabs, science platform co-located with ESA archives to provide compute and collaborative tools alongside data. Potential IVOA APIs integration

AuthVO: Next Steps

- Problem: Non-browser clients struggle to authenticate with diverse VO services.
- Significance: Rapidly evolving, critical for unified VO access and interoperability.
- Current Challenge under discussion: Integrating OAuth 2.0 (Bearer Tokens) for headless operations.

- DSP Round Meeting Needed: Next 1-2 Weeks
 - Solve open issues
 - Thoughts about implementation!

DSP session 2

Thursday	/, June 5 @11:00 El	DT: Room 13	09	
Speaker	Title	Time	Abstract	Materia
ZHANG, Zhen (Remote)	Experiences and lessons learned from EP scientific workflow	15' 11:45-12:00	An automated and efficient workflow is crucial for scientific output in astronomy, particularly in time-domain astronomy. The National Astronomical Data Centre (NADC) has undertaken the development of the workflow for the Einstein Probe(EP), a high-energy X-ray satellite focused on time-domain astronomy. During the development process, we encountered challenges including workflow orchestration, workflow scalability, and the traceability of data product generation processes. To address these issues, we developed a workflow framework based on cloud technologies, including containers, message queues, and workflow orchestrators, etc. This framework offers excellent scalability and portability and significantly enhances the efficiency of complex algorithm integration and deployment in multi-team collaborations. Finally, we proposed our recommendation for provenance and workflow data model. This framework can be further applied to future time-domain astronomy projects, and we hope that our experiences can provide insights for the IVOA workflow standards.	pdf
Baptiste Cecconi	Workflow orchestration for radio interferometri imaging using EXTRACT	15' ^C 12:00-12:15	We present the result of the EXTRACT project, which is proposing a compute continuum framework (with edge, cloud and HPC compute resources) on a distributed data environment. In our presentation, we will show how we deploy multiple cloud-ready and HPC-ready technologies to furnish radio astronomers with a simple interface to describe data processing workflows which dramatically lowers the difficulty threshold of using complex tools from the radio interferometric community. In the case of NenuFAR, we propose workflows to dynamically process the imaging data of the dynamic Sun, which enables the astrometric localisation of the solar bursts (Type II, Type III bursts), and planets (e.g. Jupiter, exoplanets), complementary to beamformed observations. This workflow integrates classical LOFAR tools and methods as well as recent direction-dependent tools (e.g. DDFacet, killMS, DynSpecMS) to perform complex operations on interferometric data, such as the processing of the NLFSS sky survey and the search for exoplanetary signatures using rebuilt dynamic spectra derived from imaging data.	pdf

DSP session 2: Analysis Workflows

- Einstein Probe (EP) Scientific Workflow:
 - Processes data from a space science mission (EP).
 - Key Features: Containerized modules, decoupled control & execution, message queue for extensibility, metadata-rich architecture for traceability.
 - Future Directions: Virtual Observatory (VO) integration, treating workflow activities as VO resources with assigned VO identifiers and standardized metadata.
- EXTRACT Platform:
 - Enables cloud-native astronomy workflows across distributed systems using extreme data (large, complex, diverse, distributed).
 - Core Capability: Distributed data-mining platform for extreme data across the compute continuum (Edge, Cloud, HPC).

DSP session 2: Analysis Workflows (II)

- Critical role of containerisation (e.g., Docker, Kubernetes) for Scientific Data Processing:
 - Isolation from environment and libraries
 - Portability
 - Reproducibility
- Open issue for IVOA:
 - How to discover these containerised astronomical software?
 - Software Discovery Protocol?

Note taking experiment



Note taking experiment

- Otter.Al (https://otter.ai) talks & conversations transcription
- ChatGPT (<u>https://chatgpt.com</u>) summary

Pros:

- More complete notes
- No need to keep notes in the meeting
- Good for questions & answers

Cons:

- Preparatory work to teach ChatGPT the context (e.g. Acronyms)
- Final content needs to be checked
- Some errors/misinterpretations
- Slides could be better
- Works better with mother tongue :)

			mi	nute	s_DS	P_ses	sion1_l	Intero	p_Co	llegePa	r <mark>k_Spr</mark>	ing_202	5.odt	- Libre	Office	Write	er	e		×
File	Edit	View	Insert	t Fo	ormat	: Sty	les Ta	able	Form	Tools	Wind	dow H	elp							
	• 🗊 •	• 👲 •	K	⊜	R	A	6	-	┢	5	⊲ .	Q	Գ ¶		- 🖪		T		•	»
Text Body 🗸 😪				sca.	sc a	Libera	ration Sans		~	12 pt	~	В	I	<u>U</u> .	5	A	A _B	Ą ⊚		
- <u>-</u>		8	1	11	· · ·] 		į.,.,,	1	i ji i	$(\cdots, \underline{r}) \rightarrow \cdots$	4 -	1.1.1	r_ś −	- <u>-</u>	, řé	- <u>-</u> -	1	7		≡
																				-
																				A»
		Josh	ua <u>F</u> j	aus	tro -	Gen	eratio	n of c	code	from C) Dpen/	PI								~

Presentation Summary

Goal

Evaluate various Python server generators for OpenAPI specifications and determine which is best suited for developers who need to quickly integrate a protocol like IVOA.

Context

- · Motivation: Generating server code from OpenAPI specs simplifies development.
- · Why Python?: Widely known, well-liked, and used in various projects.
- Why focus on servers (not clients)?: Clients are plentiful, server generators are few or inadequate. Reluctance in use due to software security and to rely on outside developers for support for the critical software.
- · Common issue: These tools often generate broken or poorly documented code and lack adherence to best practices.

Evaluation Criteria

- Ease of use (e.g. Docker support, setup)
- Code quality (typing, logic separation, tests)
- Specification compatibility (OpenAPI 3.1)
- Documentation availability

(✓) Find All ☐ Match Case Page 1 of 12 Selected: 7 words. 36 characters Default Page Style

Search key not found

a

A

+ 100%

Thanks!

Contact us:

dsp@ivoa.net

Slack channel renamed:

#grid-webservices \rightarrow

#distributed-service-protocols

