

# OPAL

## Ontology Portal for Astronomy Linked-data

**Baptiste Cecconi — Southern Spring 2024 Interop IVOA — Semantics session**



# OPAL proposal

## Main ideas

- Astronomy = several sub-communities with siloed semantic ecosystems => build bridges
- Typical use cases:
  - **Exoplanets**: more and more resolution in IVOA community, comparison with planetary observations (remote and in-situ) are essential. But: IVOA object-type “planet” means “exoplanet” => careful mapping needed
  - **Space Weather**: agencies developing Space Weather services are classical weather agencies. Gap between weather service providers (Earth science world) and data providers (heliophysics).
  - Need for coordinated implementation of **provenance** schemas and **variable descriptions** for model and observation, as well as cross sub-domains, interoperability
  - **Harmonization** of generic terms and concepts common to the sub-communities (reference frames, observatory names, instrument types, etc).
- In addition, the development and evolution of the semantic artefacts will be the occasion to make them more FAIR. So that they can be reused in generic repository metadata.

# OPAL proposal

**Funded by an OSCARS cascading grant.**

- Goal: operate an ontology portal for the astronomy community (celestial astronomy, heliophysics, planetary sciences, and particle physics)
- Based on [ontoportal.org](http://ontoportal.org)
- Upgrading a prototype developed within FAIR-IMPACT:  
<http://voparis-ontoportal-dev.obspm.fr>
- Collaboration between INRAE, ObsParis and the Ontoportal Alliance
- Starting: January 1st 2025, for 2 years
- OSCARS portal page:  
<https://oscars-project.eu/projects/opal-ontology-portal-astronomy-linked-data>

# OPAL project

## Upgrade of ontoportal instance

- Ontoportal Features:
  - semantic artefact catalogue
  - cross-matching of ontology
  - exploration (web and API)
- Current version is the basic appliance version.  
Limited capabilities, and a few bugs
- Upgrade to version developed at INRAE in France.  
Includes many features, implements FAIR assessment, APIs, metrics...
- Linking with other ontoportal instances (especially Earth sciences), or other semantic artefacts (PANOSC ontology)

# OPAL project

## Upgrade of ontoportal instance

Now

The screenshot shows the 'Browse' page of the current OntoPortal. It features a search bar, a 'Submit New Ontology' button, and filters for 'Entry Type' (Ontology, Ontology View), 'Uploaded in the Last' (dropdown), 'Category' (NASA PDS, IHDEA-), and 'Group' (OWL, SKOS, UMLS). A list of ontologies is displayed, including 'Unified Astronomy Thesaurus (UAT)' with 2,373 concepts. A detailed view of the UAT is shown, listing 'Astrophysical processes' and its sub-categories like 'Cosmology', 'Exoplanet astronomy', and 'Stellar astronomy'.

APIs Catalogue

Listings:  
- classes  
- properties

Upcoming

The screenshot shows the 'Upcoming' AgroPortal interface. It features a search bar, a 'Submit ontology' button, and filters for 'Show ontology views' and 'Show retired ontologies'. A search for 'AGROVOC' shows 194 results. A detailed view of 'AGROVOC (AGROVOC)' is shown, including its description, statistics (1,265,746 concepts, 10 classes, 3 notes, 7 projects), and a 'FAIR score' of 293.0 (61.0%). The FAIR score is broken down into Findable, Accessible, Interoperable, and Reusable categories. A 'Visits' chart shows a peak in August 2024. A 'Views of AGROVOC' section shows no views available.

APIs Catalogue

Listings:  
- classes  
- properties  
- schemas  
- individuals  
- collections

metrics

# OPAL content

## First vocabularies/ontologies to be included

- IVOA vocabularies (many)
- Heliophysics:
  - SPASE data model (ontology version available, thanks Ryan McGranaghan)
  - SolarNet metadata keywords
- Planetary:
  - PDS4 information model (Steve Hughes inputs)
  - OGC planetary vocabularies
- Particle Physics:
  - CERN open data terms
- VAMDC metadata schema

# OPAL Advisory and User Group

## Volunteers needed

- The *Advisory and User Group* (AUG) will support the OPAL team by:
  - helping identifying vocabularies and semantic artefacts
  - bridging between communities
  - providing support for decisions
- The AUG will be composed of key stakeholders and knowledgeable personalities from the various astronomy sub-communities, in order to assess the priorities and developments of the portal.
- The AUG will be composed of 6 to 10 persons covering the astronomy, planetary sciences and heliophysics science communities, as well as other stakeholders like archive data managers, space weather industry, etc.
- If you want to be part of the OPAL AUG, please contact us!  
Contact: [opal.contact@sympa.obspm.fr](mailto:opal.contact@sympa.obspm.fr)