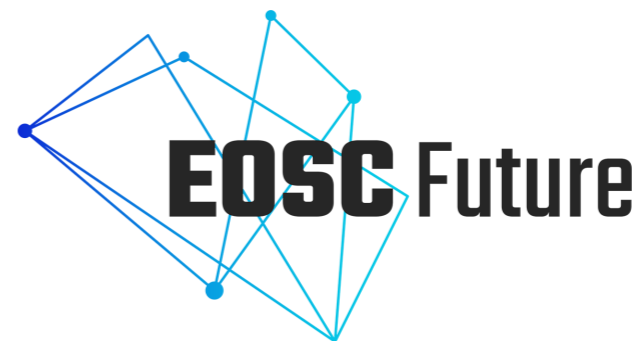


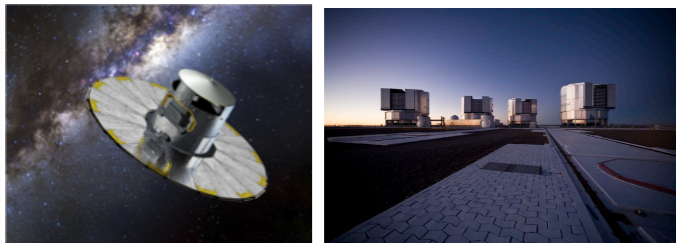
Experience of CDS and ESCAPE-VO on-boarding to EOSC.

Mark Allen, Manon Marchand, Sébastien Derriere, Stefania Amodeo, Hendrik Heinl, André Schaaff, Marco Molinaro (ESCAPE/INAF)



CDS is part of the global astronomy data infrastructure

Partnerships with the Observatories and Space Agencies



Collaboration with other Astronomy Data Centres



- Harvard Smithsonian ADS
- NASA Extragalactic Database

Astrophysics Journals



+ ...

Building the Data Sharing framework of Astronomy: *The Virtual Observatory*



Certified:



International networks:



European Projects:



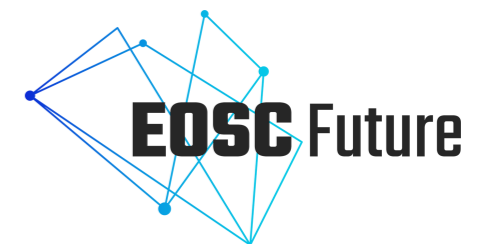
□ Status of CDS

- **Research Infrastructure.**
 - *MESRI National Strategy for RIs.*
- **INSU National Observation service (SNO).**
- **University de Strasbourg - Platform.**
- **Thematic Reference Centre.**
 - *Recherche Data Gouv (new in 2022).*
- **Scientific team.**
 - *Of the Observatoire Astronomique de Strasbourg (ObAS, UMR 7550).*



□ Involvement in EOSC

- H2020 (INFRAEOSC-2018) **European Science Cluster of Astronomy & Particle physics ESFRI res. infrastructures**
 - Leading WP4 on connection of VO to EOSC — *including on-boarding of Astronomical VO to EOSC.*
- H2020 (INFRAEOSC-03-2020) Research and Innovation Action — *Science project support, ESCAPE consolidation and training.*
- **CDS VizieR** service records harvested in multiple ways.
 - ~23000 records (OAI-PMH, DOIs)
- **CDS SIMBAD** service on-boarded to EOSC.
- CDS Participation in **EOSC TF on Researcher Engagement and Adoption** (*plus earlier work in EOSC Secretariat*).
- Contributions/interactions: EOSC Pillar, FAIRsFAIR.



ESCAPE – *addressing the Open Science challenges* of astronomy, astroparticle and accelerator particle physics ESFRI and RIs

Builds on complementary expertise in data stewardship:

- Astronomy Virtual Observatory infrastructure
- High Energy physics expertise in Exabyte-scale data management and large-scale distributed computing

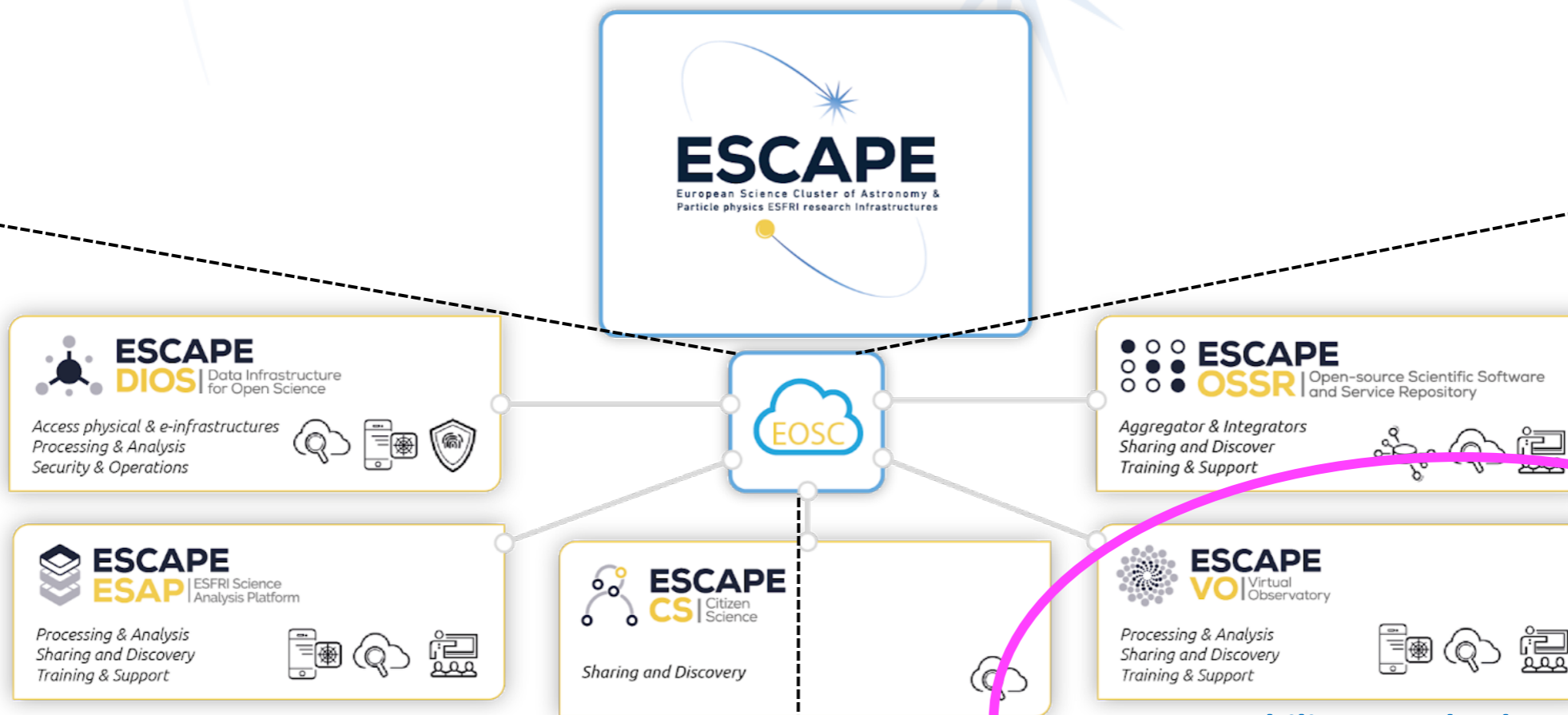
31 partners, ~16 M€, 48 months



Interoperability standards for ESFRI needs are an integrated part of the ESCAPE work program

Data Lake:
Build a scalable, federated, data infrastructure as the basis of open science for the ESFRI projects within ESCAPE.

Software Repository:
Repository of "scientific software" as a major component of the "data" to be curated in EOSC.



Science Platforms:
Flexible science platforms to enable the open data analysis tailored by and for each facility as well as a global one for transversal workflows.

Citizen Science:
Open gateway for citizen science on ESCAPE data archives and ESFRI community

Interoperability Standards
Metadata / Protocols
International context -



Virtual Observatory:
Extend the VO FAIR standards, methods and to a broader scientific context; prepare the VO to interface the large data volumes of next facilities.



□ Interoperability Standards

Community defined and supported Virtual Observatory standards

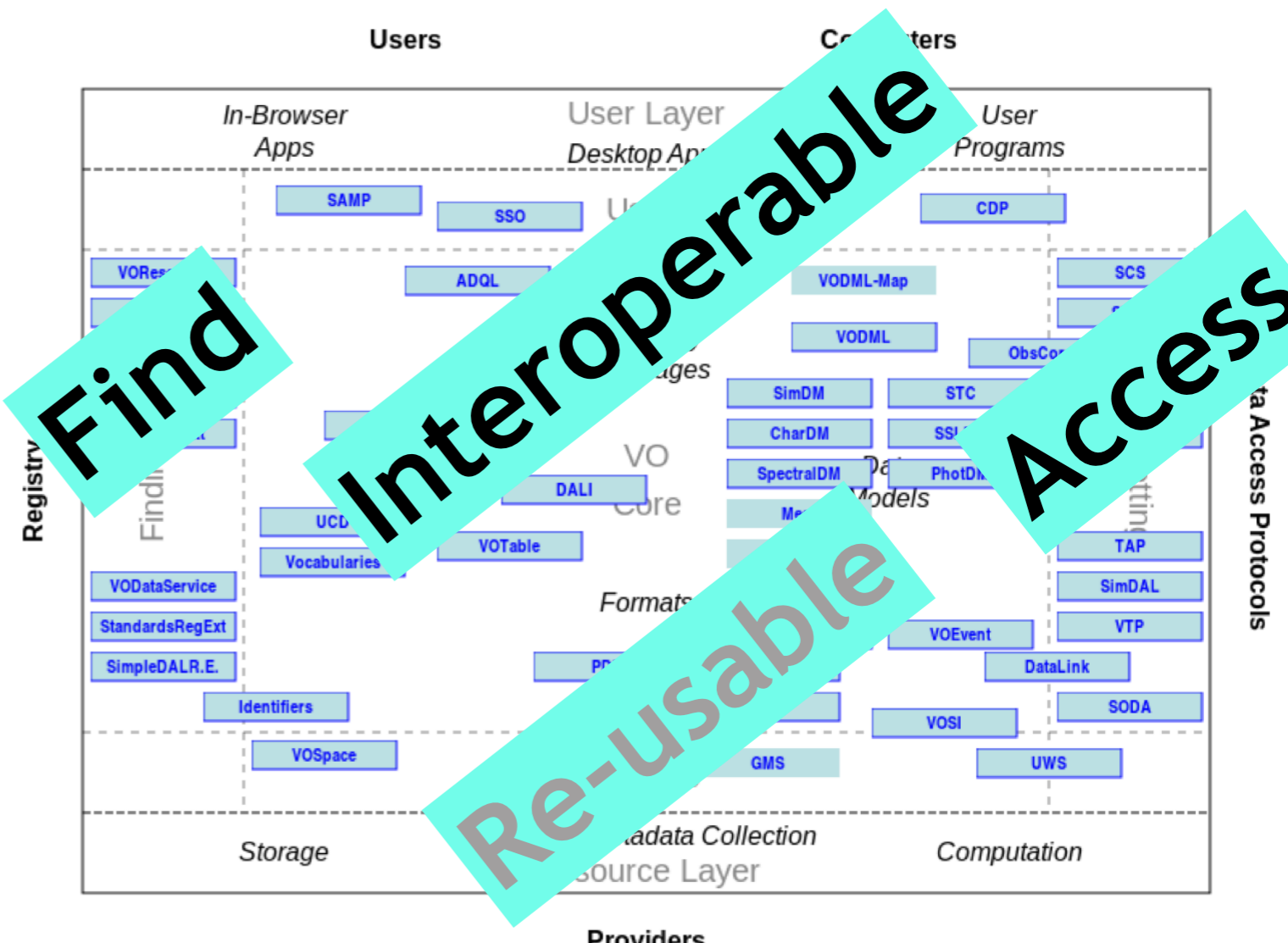
- IVOA formed in 2001.
 - VO is a framework with many portals and compatible tools.
 - Many lessons-learned about difficulties of interoperability!!

Governance

- International level.
- National members and International Organisations

Coordination

- National Projects.
- Euro-VO.
- EC support.



ESCAPE integration with EOSC



Some aspects being pursued in EOSC Future
- consolidation of ESCAPE work.

Data Lake
Software Repository

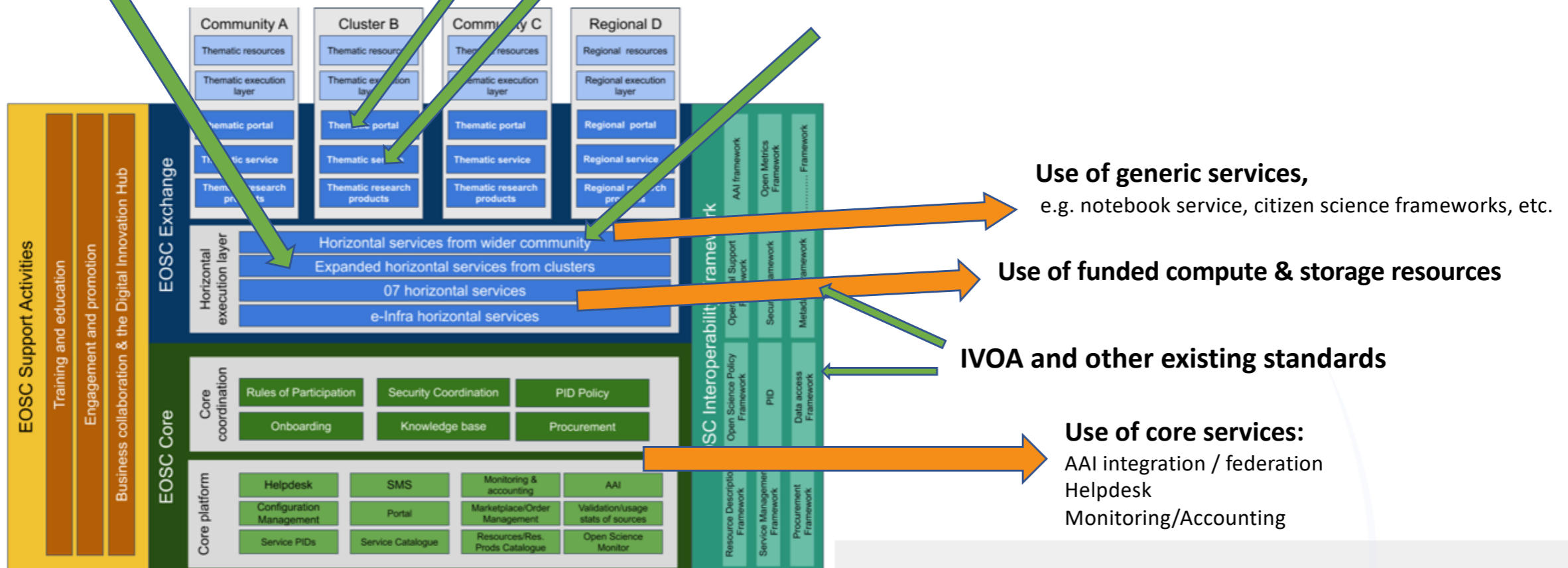
ESCAPE cluster

Virtual Research Environment

Virtual Observatory services, ESFRI workflows

Citizen Science

→ ESCAPE contributes
→ ESCAPE uses



VO in EUDAT B2FIND ...EOSC

- ESCAPE project work:
 - VO registry is on-boarded to EUDAT B2FIND via OAI-PMH – Thanks EUDAT !!
 - **Unfortunately not yet findable in EOSC Portal.** (But what about EOSC Explore??)
 - Help being sought from EUDAT and also from EOSC Future. **(Need to fix this!!)**

The screenshot displays the EUDAT B2FIND search interface. At the top, there are logos for B2FIND and EUDAT. A search bar contains the text 'IVOA', and below it, a message states '22,234 datasets found for "IVOA"'. The 'Order by' dropdown is set to 'F'. Below the search results, there are three entries:

- ESO TAP_OBS: a TAP service to browse and access raw and reduced**
TAP_OBS is the ESO Science Archive TAP endpoint for observations (raw and ambient measurements (atmospheric seeing, turbulence, water vapour, relative
- UCL DaCHS server TAP service**
The UCL DaCHS server's TAP endpoint. The Table Access Protocol (TAP) lets against our database tables, inspect various metadata, and upload your own c
- The VO @ ASTRON TAP service**
The The VO @ ASTRON's TAP end point. The Table Access Protocol (TAP) lets you execute queries against our database tables, inspect various metadata, and upload your own data. It is thus the VO's premier way to access public data holdings.
Tables exposed through this endpoint include: main from the lbcas schema, main, mom0 from the sauron schema, img_main, main from the lofartier1 schema, img_main, main from the tgssadr schema, main, msssvf_img_main from the mvf schema, columns, groups, key_columns, keys, schemas, tables from the tap_schema schema, hetdex_images, img_main from the hetdex schema, img_main from the msss schema, obscure from the ivoa schema.

Navigation tabs include 'Dataset' and 'Communities'. Filter buttons for 'ADQL', 'Catalogs', and 'Virtual observatory' are visible. A table shows details for 'The VO @ ASTRON TAP service':

Identifier	Source	Metadata Access	Provenance	Creator	Publisher	Contributor
		https://vo.astron.nl/__system__/tap/run/info				ASTRON
		http://dc.g-vo.org/rr/q/pmh/pubreg.xml?verb=GetRecord&metadataPrefix=oai_datacite&identifier=ivo://astron.nl/tap				ASTRON



CDS SIMBAD in EOSC



EUROPEAN OPEN
SCIENCE CLOUD

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> [Resources](#) > [Sharing & Discovery](#) > [Data](#) > [Scientific/Research Data](#) > [SIMBAD](#)



SIMBAD

SIMBAD



The SIMBAD astronomical database provides basic data, cross-identifications, bibliography and measurements for astronomical objects outside the solar system.

Organisation: [Strasbourg astronomical Data Centre](#)

☆☆☆☆☆ (0.0 /5) 0 reviews Add to comparison Add to favourites

Access the resource

FULLY OPEN ACCESS

[→ Webpage](#) [→ Helpdesk](#) [→ Helpdesk e-mail](#) [→ Manual](#)

[Ask a question about this resource?](#)

ABOUT

DETAILS

REVIEWS (0)

The SIMBAD service offers the following functionalities:

- Query by identifiers and around identifiers
- Query by coordinates, specifying the radius and the equinox
- Query by bibcode and partial bibcode
- Sampling with a set of physical criteria
- Query by lists of objects, coordinates or bibcodes

CLEAR ALL

Compare

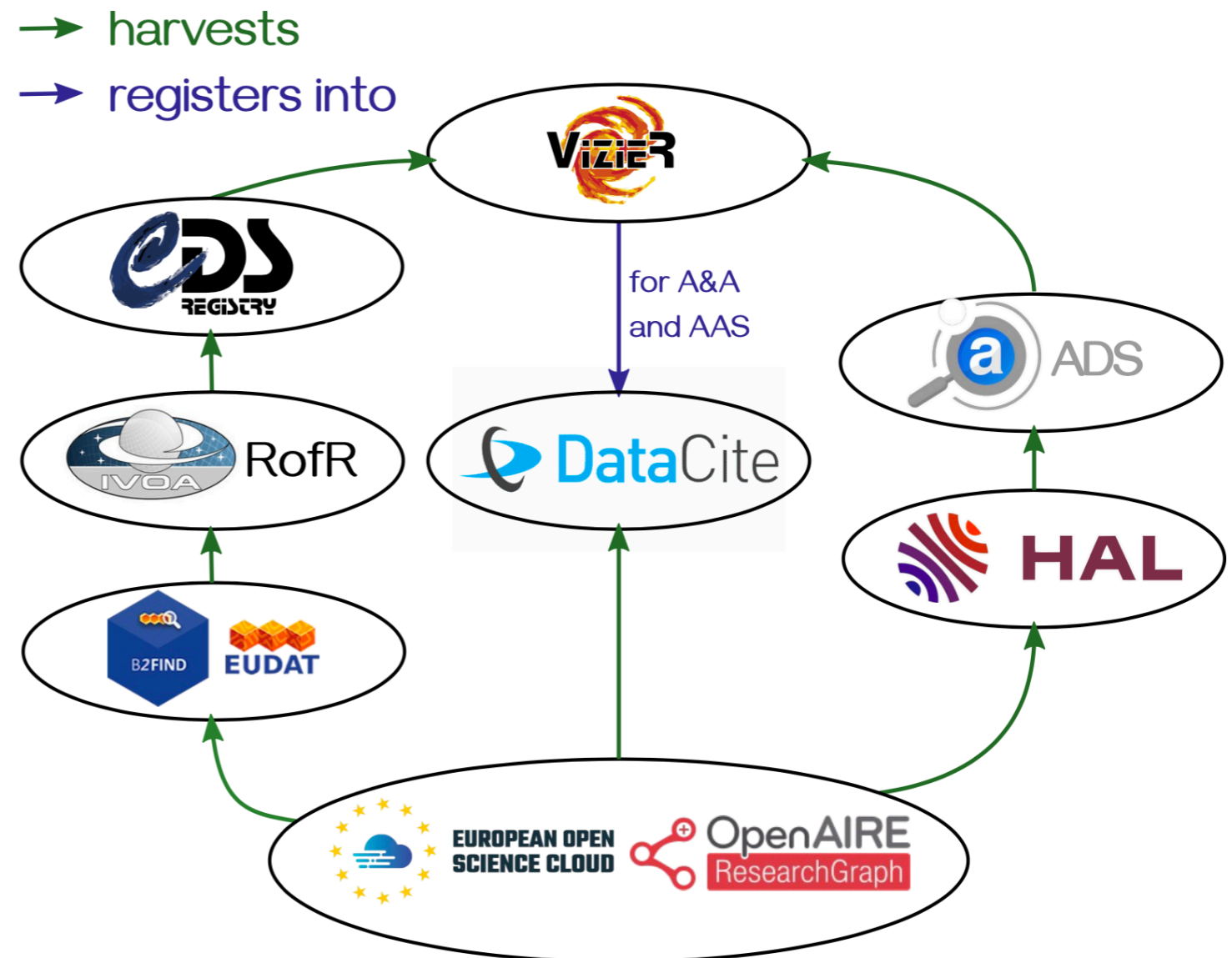
Provide feedback

10

□ Harvesting of metadata records

- Key to making the whole system work.
- Potential issues arise for multiple harvesting and duplication:
 - It already happens.

- Recherche Data Gouv will harvest records.
- Understanding the network of harvesting is complex.
 - We can manage, but the system is evolving very fast.
 - Which unique IDs ??



□ Ongoing and next steps

- ESCAPE project concludes on 31 January 2023.
 - Open Collaboration agreement continues for Research Infrastructures.
 - EOSC Future - on-boarding efforts continue.
 - IVOA standards and tools supported/developed in the project will stand as legacy, and lead into next projects. Should be integrated into the EOSC interoperability framework.
 - More international Open Science projects are coming!
 - e.g. NASA: Transform to Open Science (TOPS) .
 - CDS connected to journals/publishers and evolution expected.
 - Astronomy Notebooks tutorials *“bringing everything together”*
 - On-boarded to ESCAPE software repository (OSSR).
 - Deployable in ESCAPE Platform and VRE.
 - Findable via EOSC Portal.
- *Essential step for bringing computing-to-the-data.*

□ Links

- CDS: <https://cds.unistra.fr>
- ESCAPE: <https://projectescape.eu>
- IVOA: <https://www.ivoa.net>