ESCAPE

European Science Cluster of Astronomy & Particle physics ESFRI research Infrastructures

EOSC Activities in Astronomy and Astrophysics. The ESCAPE project

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ESCAPE - The European Science Cluster of Astronomy & Particle Physics ESFRI Research Infrastructures has received funding from the European Union's Horizon 2020 research and innovation programme under the Grant Agreement n° 824064.

IAA

Instituto de Astrofísica de Andalucía, IAA-CSIC

EXCELENCIA SEVERO OCHOA

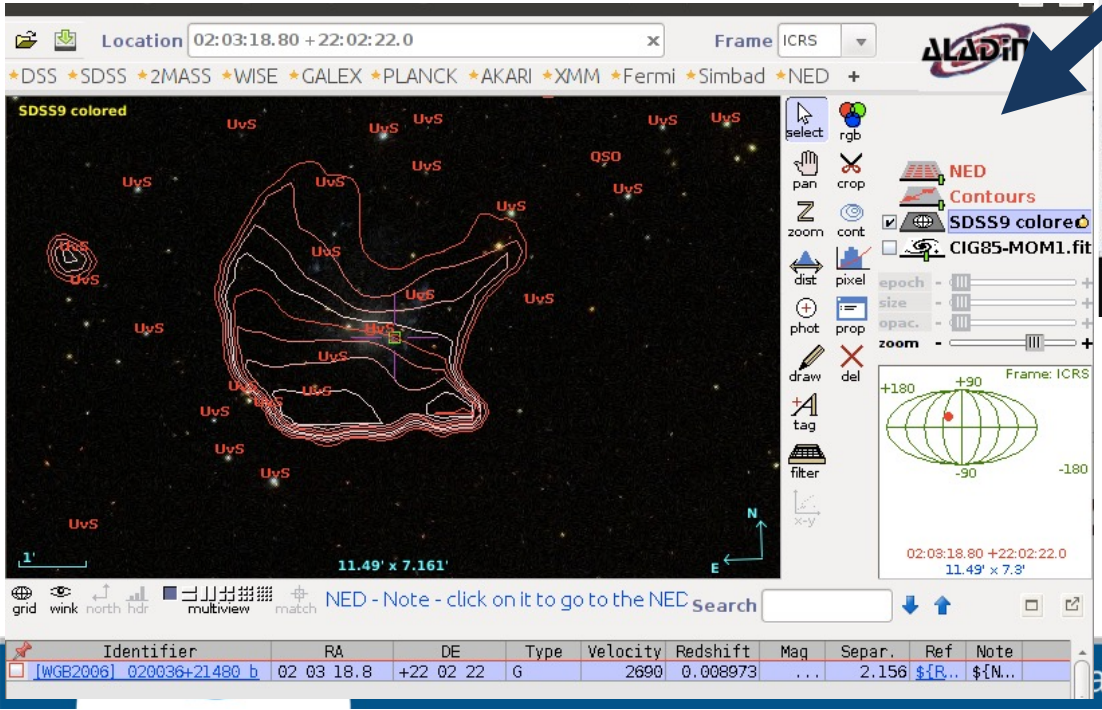
OUTLINE

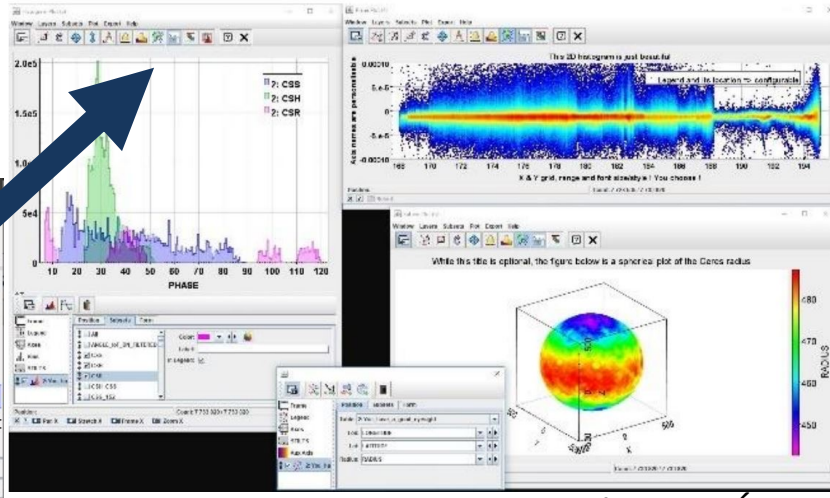
- Highlights of Open Science in A&A before EOSC
- The ESCAPE consortium
- ESCAPE services
  - CEVO
  - DIOS
  - ESAP

Highlights of Open Science in A&A before EOSC

International Virtual Observatory Alliance

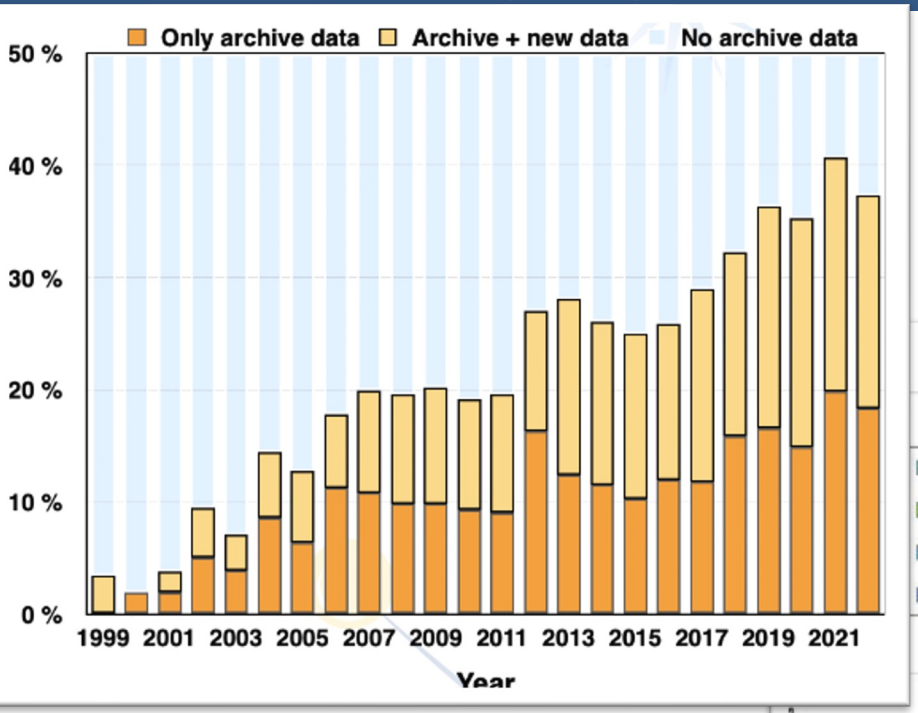
- Bottom-up initiative from 2001
- Pioneer in Open data sharing
- Coordinated in Europe by Euro-VO
  - National VO partners
  - EC Projects: ASTERICS , ESCAPE





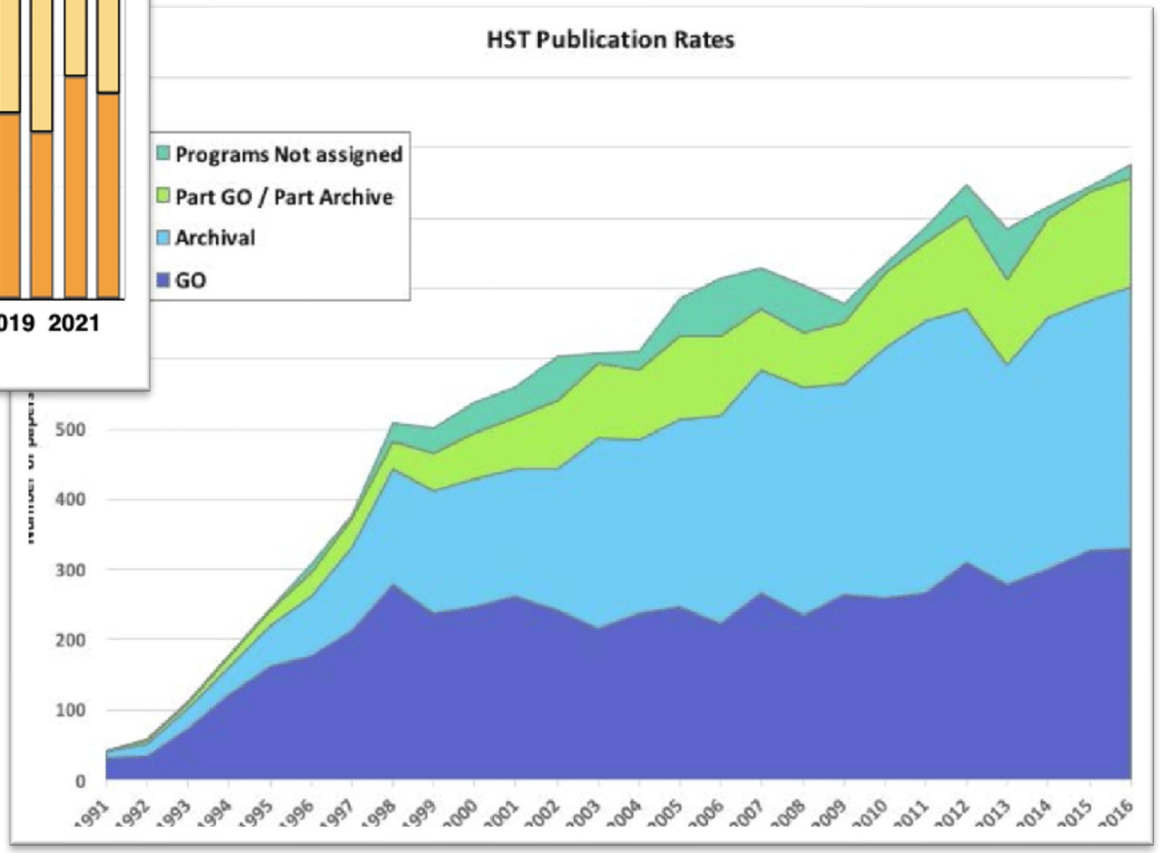
Source: *Batiste Rousseau, Stéphane Érard*

Highlights: Opening A&A data



Source: M. Romaniello's talk "The VO-Service at ESO". ESO Telescope Bibliography

- Data are preserved in archives
- Published after an embargo period
- Culture of re-using data



Source: 10.1051/epjconf/201818610003

Enhancing the scientific returns from investments in astronomical infrastructures

A&A Workflows, Research Objects

Just some examples to show the early engagement of the A&A community with the Open Science

ASCL.net
Astrophysics Source Code Library

"Astrophysics Source Code Library". Funded in 1999

Workflow 4Ever

FP7-270192 "Advance Workflow Preservation Technologies for Enhanced Science" (2010-2013)

IAA

FP7-312579 "Building an European Research Community through Interoperable Workflows and Data" (2012-2014)

ads

Astrophysics Data System by NASA. Linking publications to data

ESCAPE

Consortium:

Source: https://projectescape.eu/sites/default/files/2022-04-12%20%E2%80%94%20SCiMMA%20Webinar.pdf

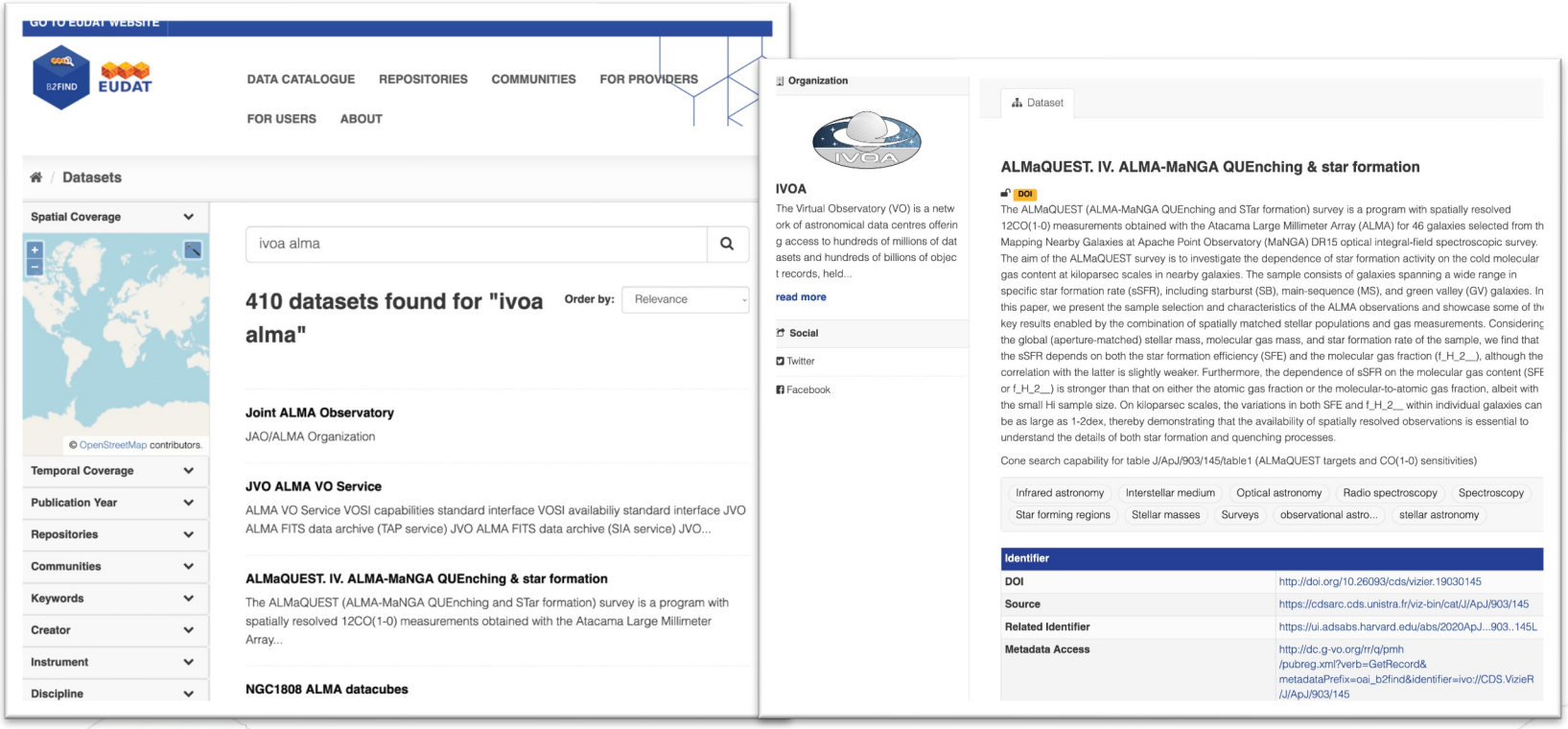
- Budget: **15.98 M€**
- From **Feb. 2019** until **Jan. 2023 (extended)**
- Coordinator: **CNRS-LAPP**

ESCAPE SERVICES

Credit: ESCAPE

CEVO - Connecting ESFRI projects to EOSC through the VO framework

- New / Updated standards to support a wider community
- ESFRI data published according to FAIR principles through the VO
- Community training: data providers and scientists
- IVOA Registry into EOSC via EUDAT B2FIND

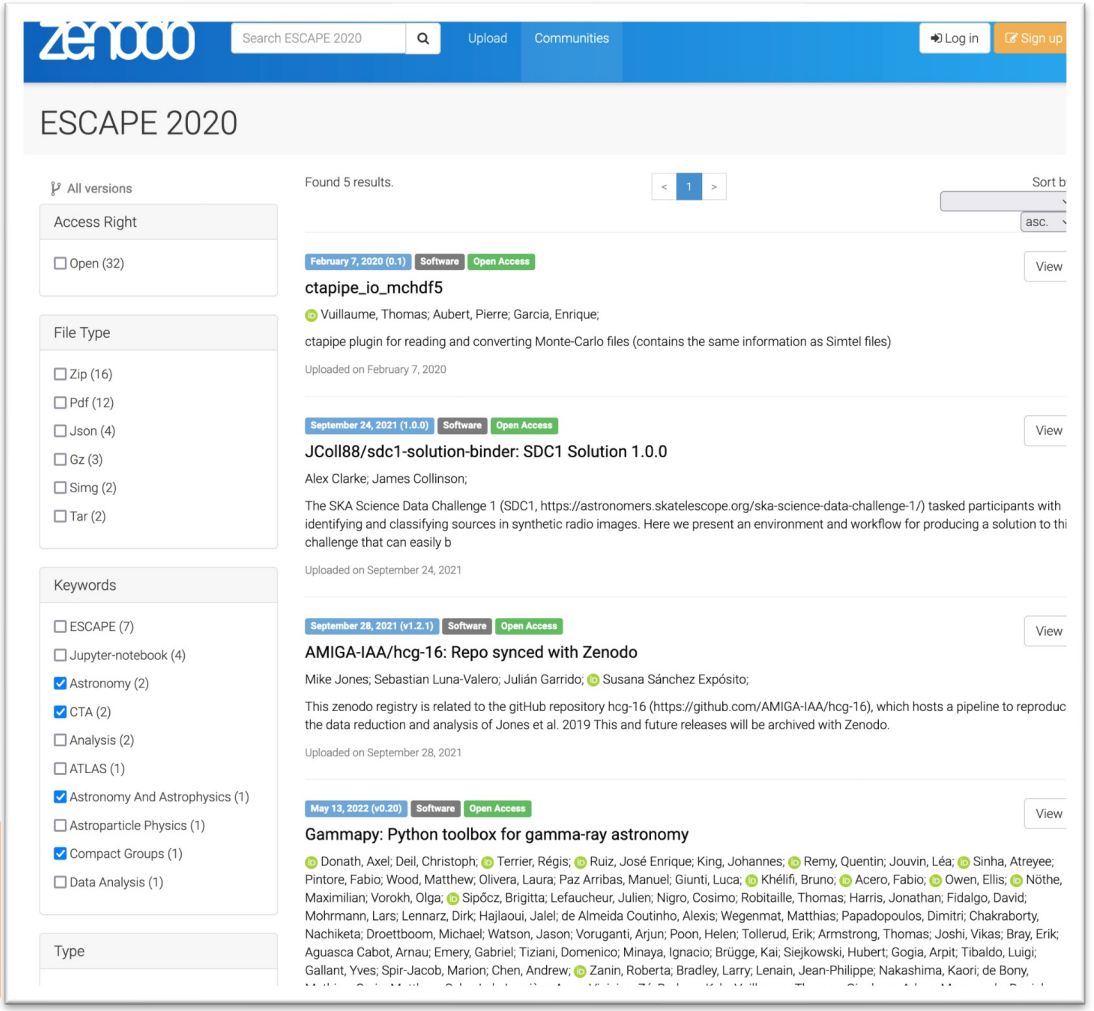


OSSR – Open-Source Scientific Software and Service Repository

- Curated Zenodo community:
- https://zenodo.org/communities/escape2020
- Integrated with several tools to enable a complete software life-cycle

e.g

Integration with ESAP for software execution (next slides)

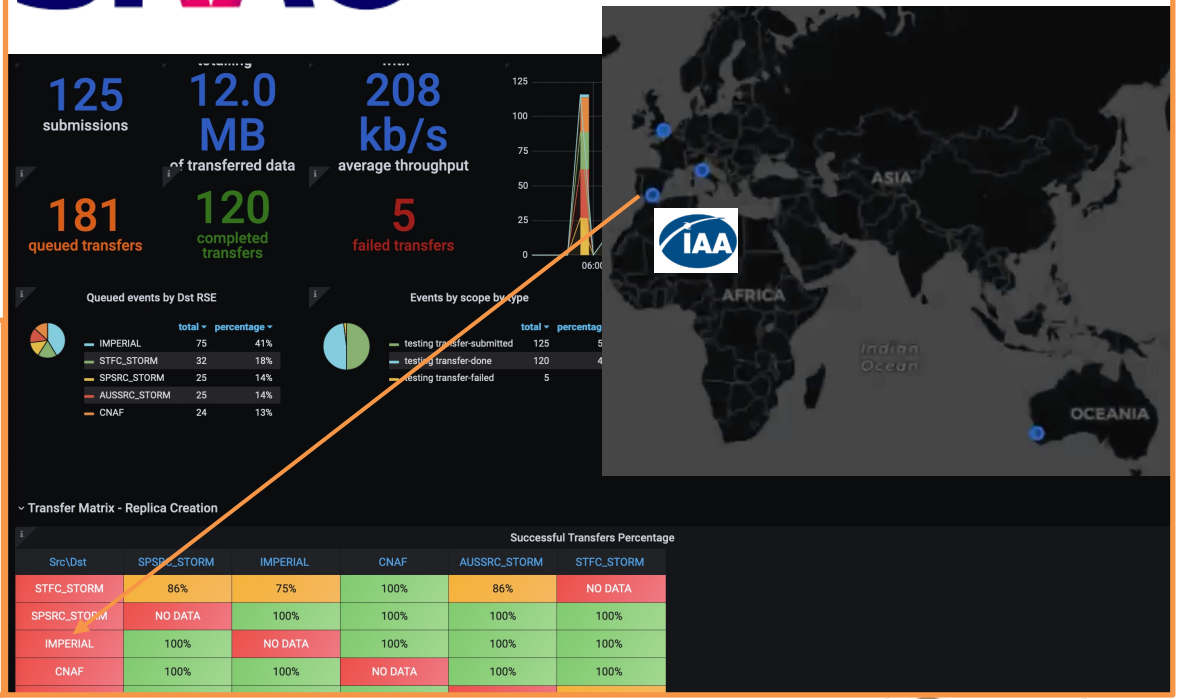


DIOS – Data Infrastructure for Open Science

Distributed data infrastructure capable of managing Exa-scale data

- Data manager and orchestrator
- Data transfer
- Auth/Authz/IM

SKAO **RUCIO DATA LAKE**

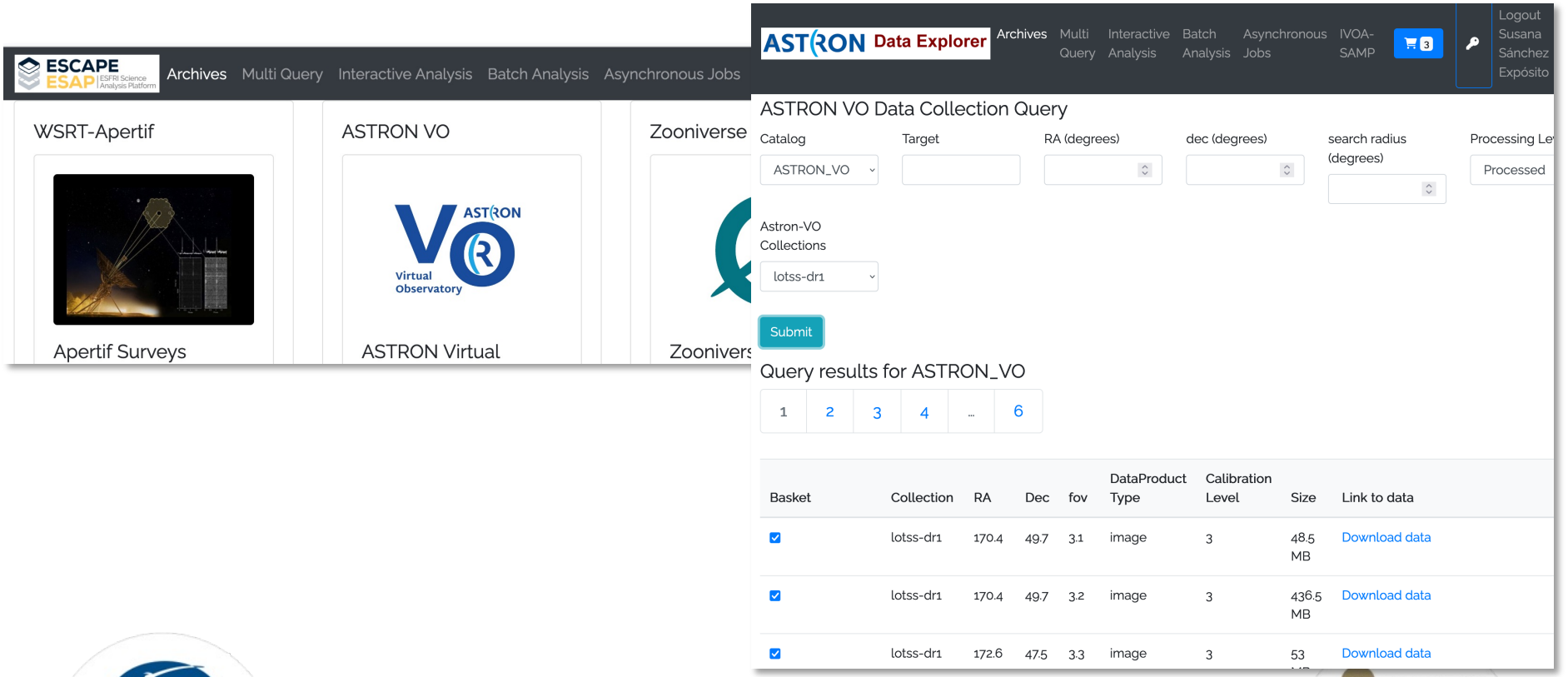


ESCAPE DL architecture applied to implement a Data Management System **prototype for the SKA Regional Centre Network**

ESAP – ESFRI Science Analysis Platform

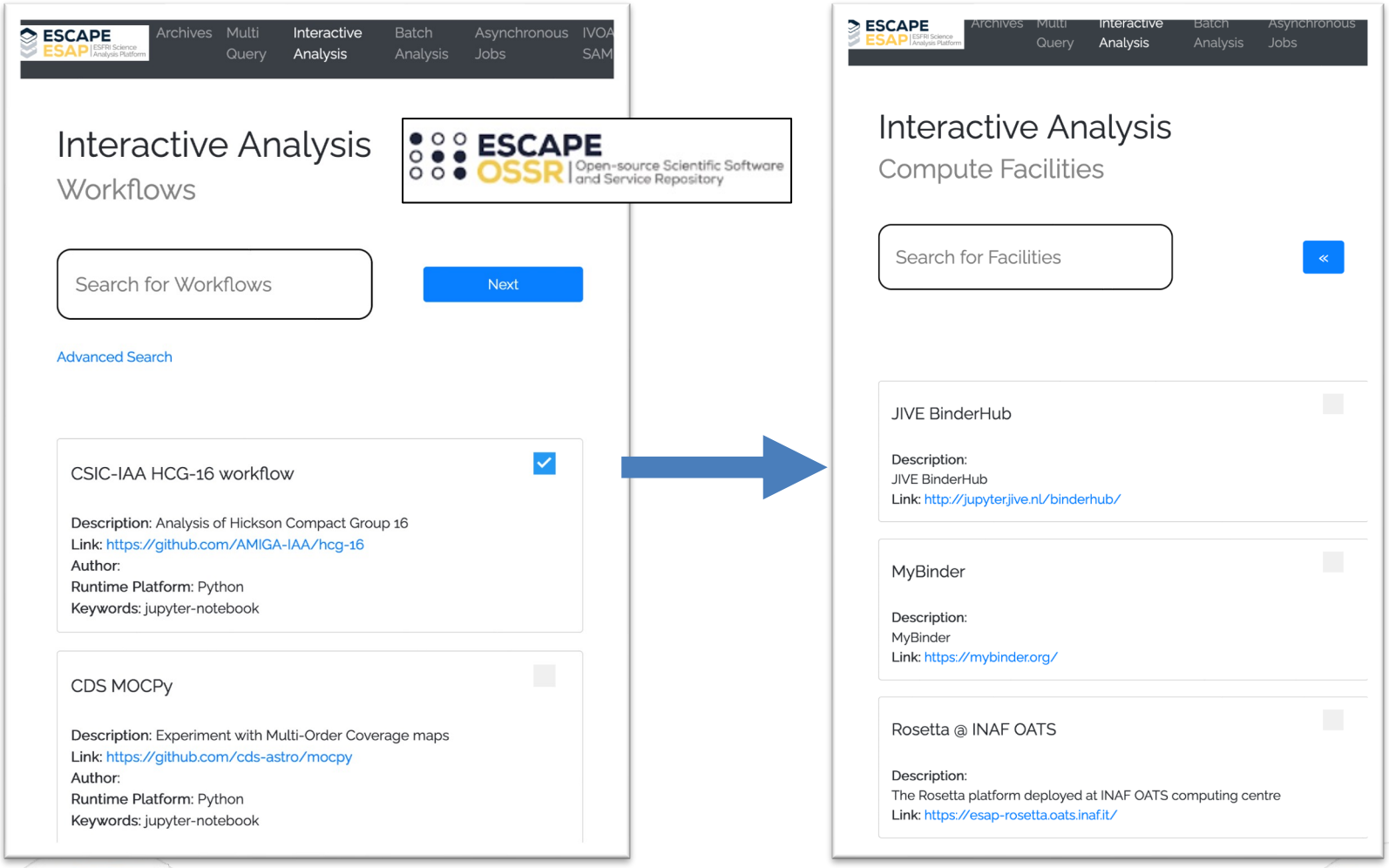
Toolkit for building custom science platform.

- Integration of catalogue services
- Upload of data from the VO ecosystem (SAMP)
- Data orchestration among different services



ESAP – ESFRI Science Analysis Platform

- Load software from the OSSR catalogue
- Interactive data analysis through BinderHub services



THANK YOU!

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References:

- The ESCAPE project: Data Lake and Science Platform, Y. Grange, K. Kliffen, J. Swinbank
- CEVO achievements and outlook, M. Allen
- The ESAP GUI: https://sdc-dev.astron.nl/esap-gui/