OSCARS
Open Science Clusters' Action for Research & Society

The ESCAPE Science Cluster

A. less

Funded by the European Union

ESCAPE is one of the five Science Clusters established to link EOSC with ESFRI-endorsed Research Infrastructures (RIs) and other world-class RIs (H2020 FP).

SCIENCE-CLUSTERS.eu
Research Infrastructures for Open Science

https://science-clusters.eu/

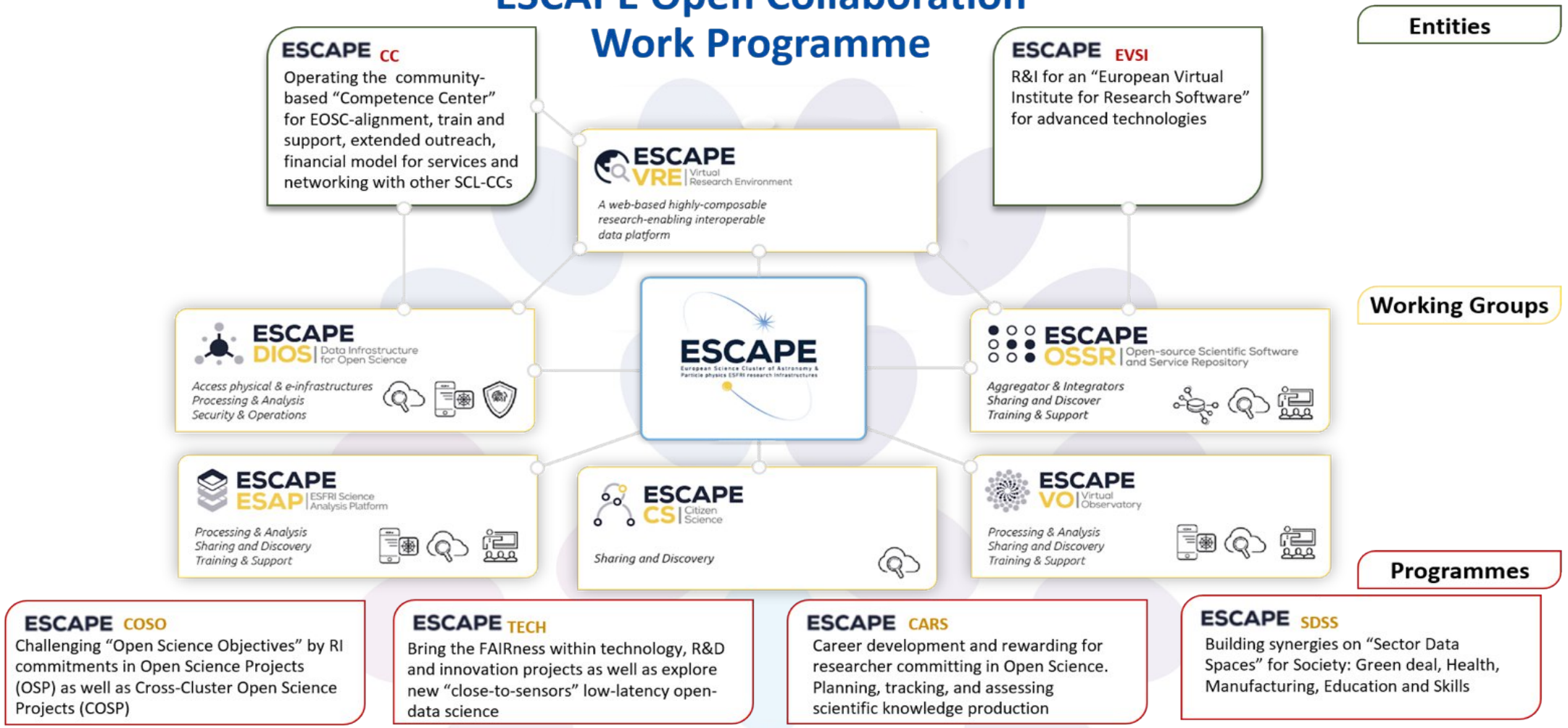
The 5 Science Clusters are:

- ENVRI - Environmental Science
- ESCAPE - Astronomy and Particle Physics
- LS RI - Life Science
- PaNOSC - Photon and Neutron Science
- SSHOC - Social Sciences and Humanities

- ESCAPE currently not an EOSC Node, but CERN partner RI hosts a thematic node.
- Strategy aligned with national initiatives (PUNCH4NFDI, INFN).

EOSC Node | CERN Physical Sciences & Engineering

ESCAPE Open Collaboration Work Programme



Part of the mission of ESCAPE is to provide mentoring to **onboard into EOSC** open science results from the projects funded under the OSCARS calls.

Outputs should be Findable, Accessible, Interoperable, Reusable (FAIR).

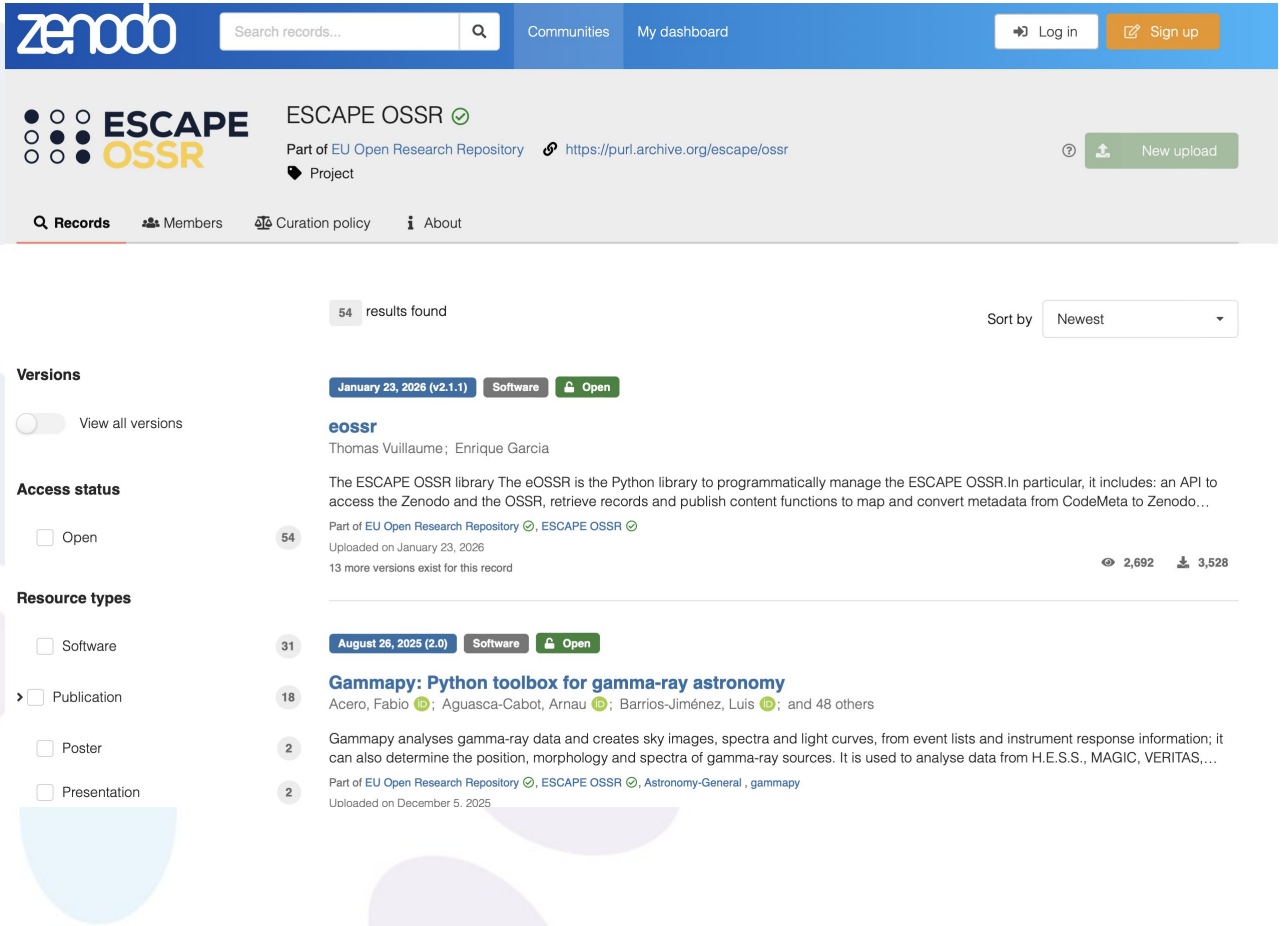
- Make your astronomical data FAIR following VO interoperability standards
- Upload software, data, publications and other project outputs to the **ESCAPE OSSR** Community on Zenodo, following the onboarding procedure.
- Make your software discoverable and reusable on the **ESCAPE VRE** hosted at CERN.

- Discoverable on **OSCARS** website and **ESCAPE** website.

The ESCAPE Open-source Scientific Software and Service Repository

The ESCAPE OSSR (Vuillaume et al. 2023) set up a **sustainable open-access repository to share scientific software**, digital libraries for data analysis, datasets, data products for the ESCAPE science cluster community.

- ESCAPE OSSR Zenodo Community
- Software guidelines and recommendations (as described in EOSC EVERSE)
- validation tool for software metadata
- eOSSR Python library
- Curated review process

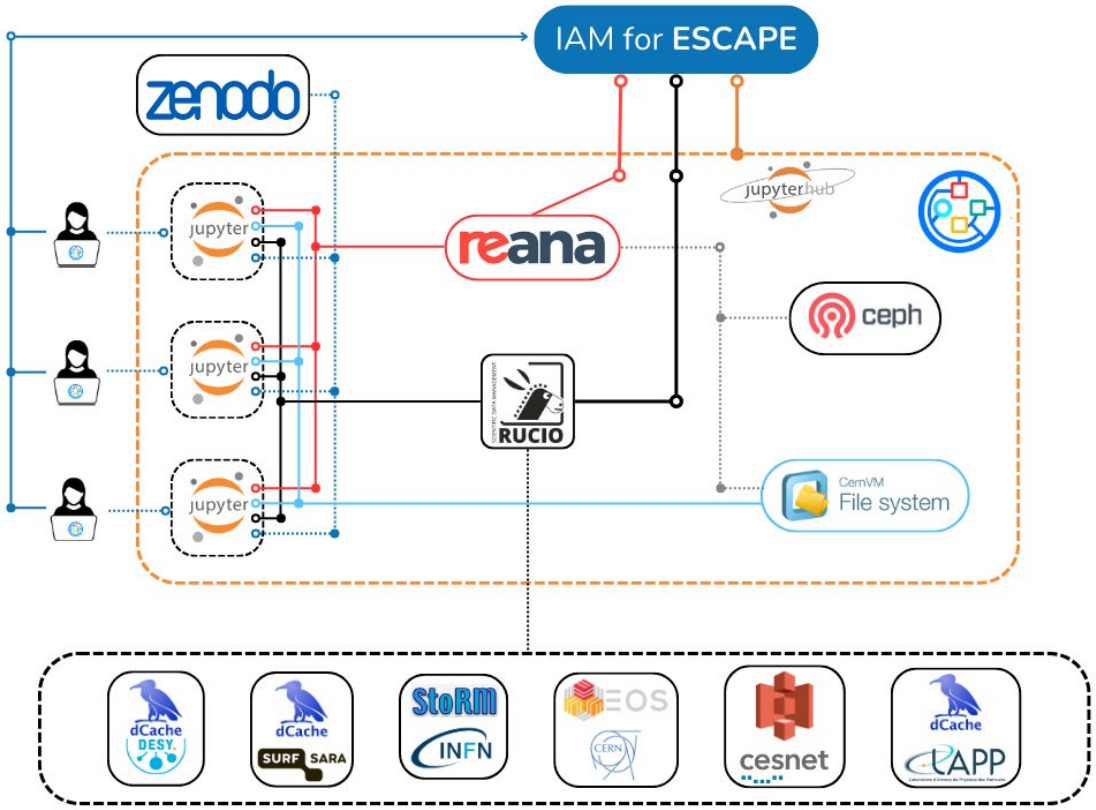


The ESCAPE DIOS and Virtual Research Environment

Leverage the ESCAPE VRE (Garcia et al. 2025) and share your **containerized software to run analysis** within your scientific community!

- AAI: A federated and reliable **Authentication and Authorization** layer
- The Rucio Data Lake: A **federated distributed storage** solution, providing functionalities for data injection and replication through a Data Management framework (Rucio)
- REANA: A **computing** cluster supplying the processing power to run full analyses with REANA, a re-analysis service
- CVMFS: A read-only file system designed to distribute software, and more.
- JupyterHub: A **notebook interface** with containerised environments to hide the infrastructure's complexity from the user.

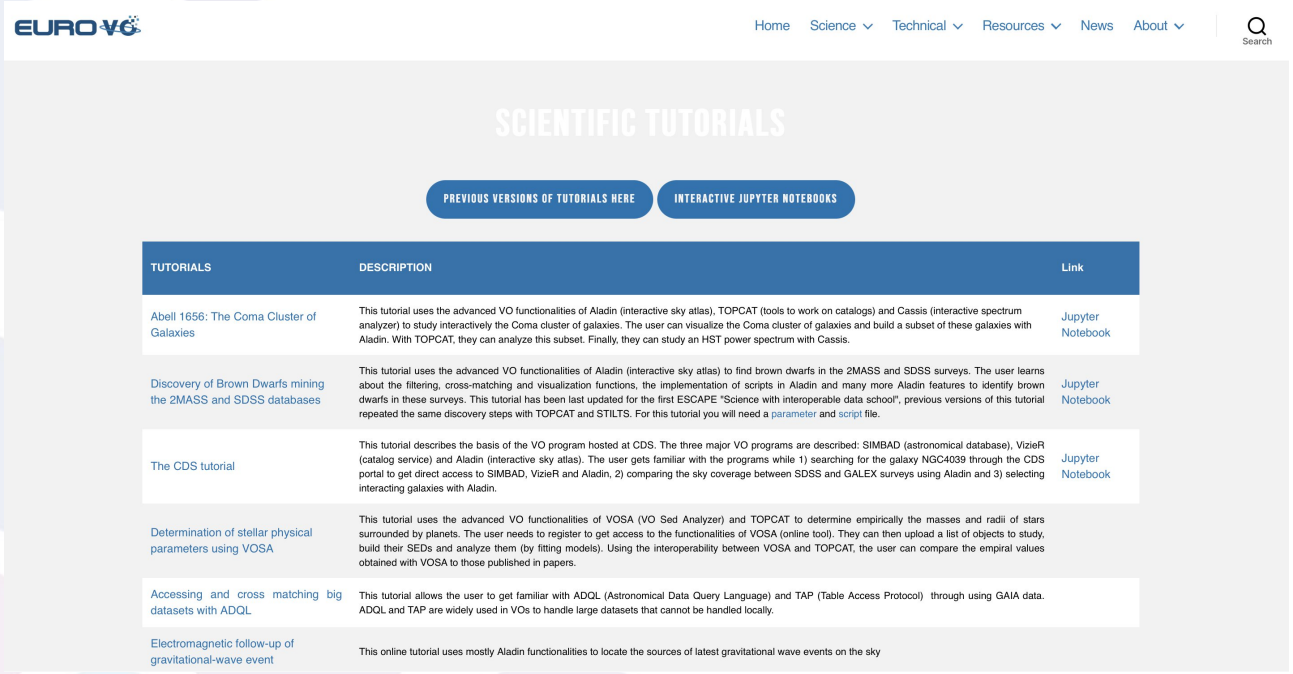
A long track record of successful adoption in scientific training schools and projects (e.g. GW School, EOSC Future TSP)



Credit: G. Guerrieri and the VRE WG

The ESCAPE VO WG adapts, extends, and develops International Virtual Observatory Alliance (IVOA) **interoperability standards** for access to large astronomy data catalogues and services, for the ESFRI partners within ESCAPE and the astronomy community.

- IVOA standards to publish astronomical data
- Runs training events and technology forum for data providers, scientists
- Access a VO interface.
- Search for the specific data or services that you need for your research (e.g. with TOPCAT)
- Access and reuse astronomical data (e.g.with the ESO Science Portal)



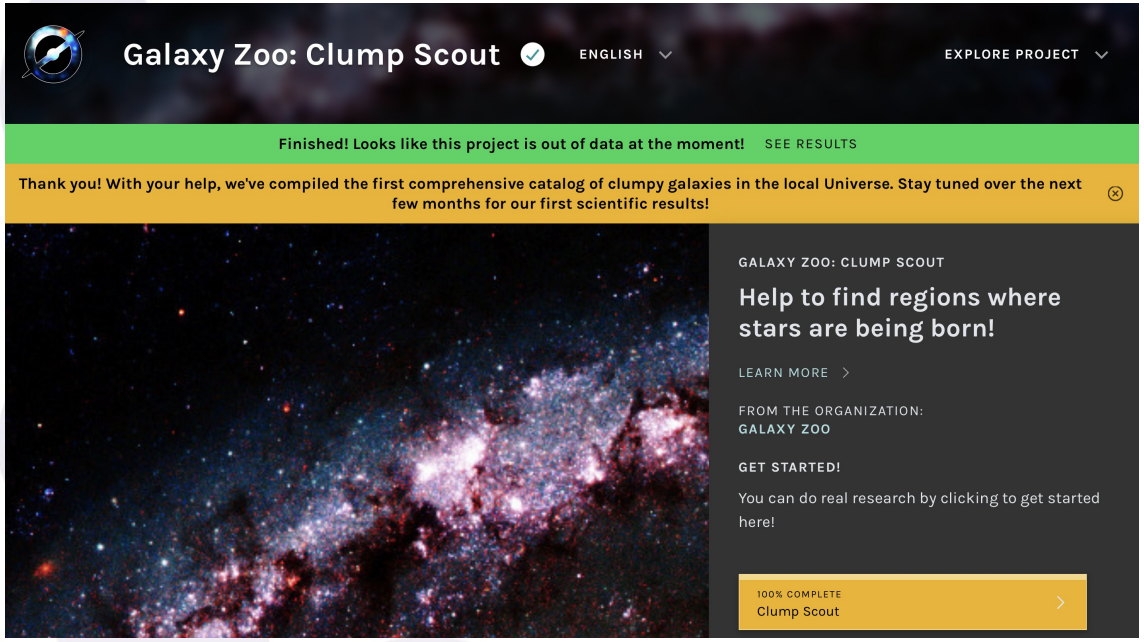
Credit: M. Allen and the VO WG

The ESCAPE CS WG allows the science-inclined public to take part in research projects to perform tasks that could not otherwise be solved algorithmically to contribute fundamental scientific discoveries.

It provides expertise in design and implementation of citizen science project and guidance to increase engagement of the general public.

Successful examples:

- Galaxy Zoo Clump Scout
- Radio Galaxy Zoo: LOFAR
- Black Hole Hunters



From: https://www.zooniverse.org/projects/hughdickinson/galaxy-zoo-clump-scout

Get in touch with the **ESCAPE Competence Centre**!

competence.centre@projectescape.eu

And link with the **ESCAPE Working Groups**!

- Data Infrastructure for Open Science (DIOS, VRE): G. Guerrieri
- Virtual Observatory (VO): M. Allen
- Open-source Scientific Software and Service Repository (OSSR): K. Graf
- Citizen Science (CS): S. Serjeant

OSCARS
Thank you