About ESCAPE and OSCARS

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CNRS-IN2P3-LAPP

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The Science Clusters

The need for close collaboration between the ESFRI and the EOSC was addressed in 2019. Funded within the H2020 FP, five projects linked EOSC with ESFRI-endorsed Research Infrastructures (RIs) and other world-class RIs, forming <u>five Science Clusters.</u>
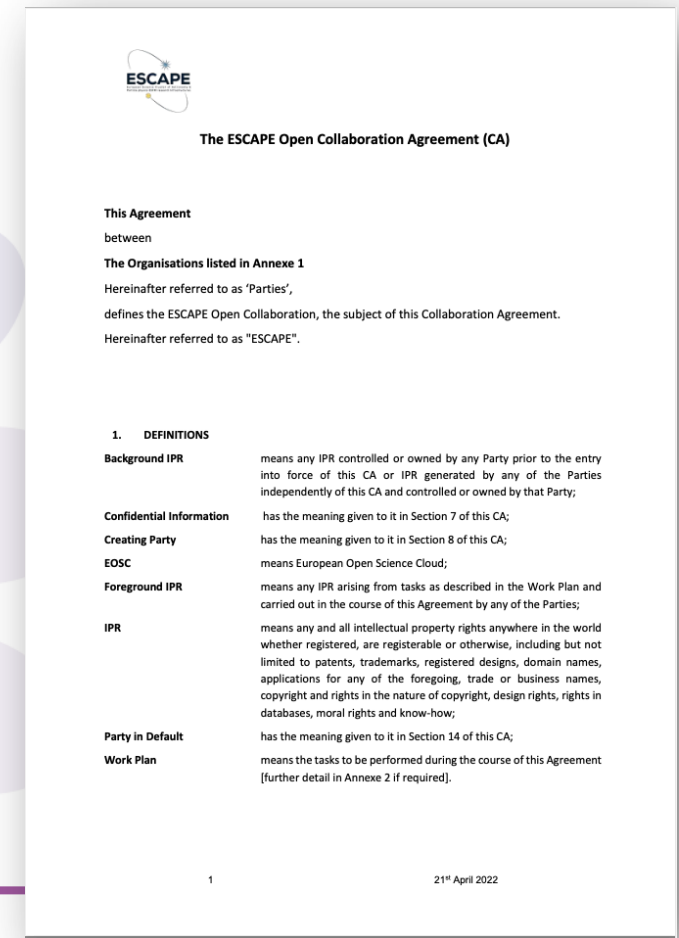
- We offered ourselves an opportunity and a role to help the uptake of Open Science in Europe.
- We build and provide visions.
- We deploy cooperative actions and support a shared work programme

https://science-clusters.eu/

eosc

SCIENCE-CLUSTERS.eu
Research Infrastructures for Open Science

Since February 2023, ESCAPE has a Collaboration Agreement signed by the Directors of all the partner RIs

OSCARS

ESCAPE Open Collaboration Work Programme

Entities

ESCAPE CC
Operating the community-based "Competence Center" for EOSC-alignment, train and support, extended outreach, financial model for services and networking with other SCL-CCs

ESCAPE VRE | Virtual Research Environment
A web-based highly-composable research-enabling interoperable data platform

ESCAPE EVSI
R&I for an "European Virtual Institute for Research Software" for advanced technologies

Working Groups

ESCAPE DIOS | Data Infrastructure for Open Science
Access physical & e-infrastructures
Processing & Analysis
Security & Operations

ESCAPE
European Science Cluster of Astronomy & Particle physics ESFRI research infrastructures

ESCAPE OSSR | Open-source Scientific Software and Service Repository
Aggregator & Integrators
Sharing and Discover
Training & Support

ESCAPE ESAP | ESFRI Science Analysis Platform
Processing & Analysis
Sharing and Discovery
Training & Support

ESCAPE CSI | Citizen Science
Sharing and Discovery

ESCAPE VO | Virtual Observatory
Processing & Analysis
Sharing and Discovery
Training & Support

Programmes

ESCAPE COSO
Challenging "Open Science Objectives" by RI commitments in Open Science Projects (OSP) as well as Cross-Cluster Open Science Projects (COSP)

ESCAPE TECH
Bring the FAIRness within technology, R&D and innovation projects as well as explore new "close-to-sensors" low-latency open-data science

ESCAPE CARS
Career development and rewarding for researcher committing in Open Science. Planning, tracking, and assessing scientific knowledge production

ESCAPE SDSS
Building synergies on "Sector Data Spaces" for Society: Green deal, Health, Manufacturing, Education and Skills

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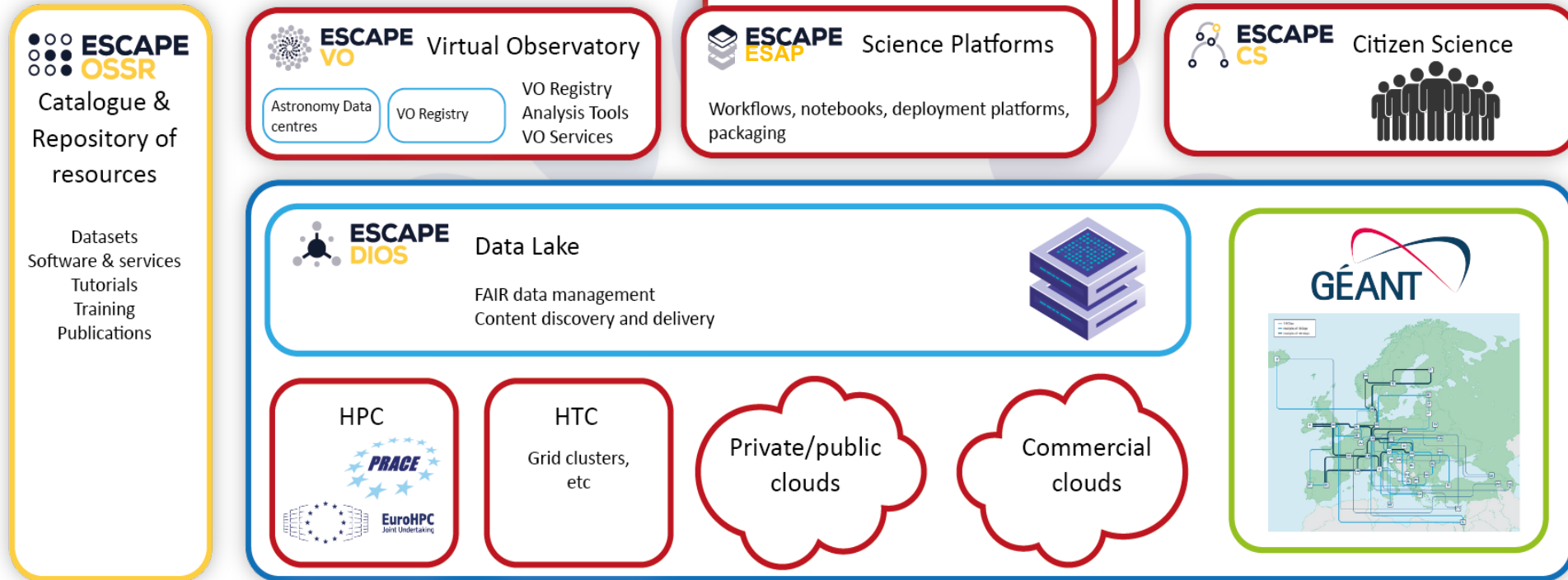Extend the VO *FAIR* standards, methods and to a broader scientific context; prepare the VO to interface the large data volumes of next facilities.

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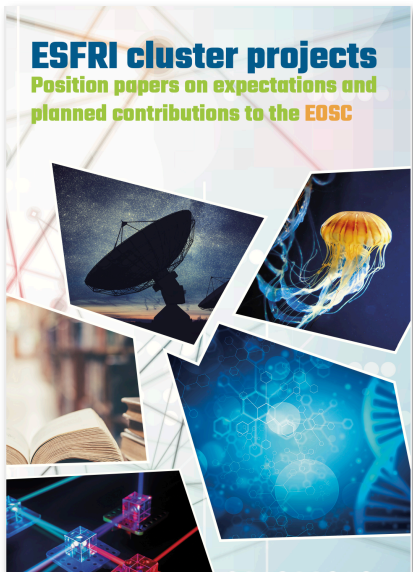Open gateway for citizen science on ESCAPE data archives and ESFRI community

ESCAPE OSSR
Catalogue & Repository of resources

Datasets
Software & services
Tutorials
Training
Publications

ESCAPE VO Virtual Observatory

Astronomy Data centres | VO Registry
VO Registry
Analysis Tools
VO Services

TSP's
RI-Specific Science Platforms

ESCAPE ESAP Science Platforms

Workflows, notebooks, deployment platforms, packaging

ESCAPE CS Citizen Science

ESCAPE DIOS Data Lake

FAIR data management
Content discovery and delivery

HPC
PRACE
EuroHPC Joint Undertaking

HTC
Grid clusters, etc

Private/public clouds

Commercial clouds

GÉANT

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

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

ESCAPE work programme aimed at building a domain-based implemetation of EOSC

OSCARS

The Science Cluster concept was aimed at supporting "**Open-science data-intensive research**" in order to "**raise productivity of researchers and to lead to new insights and innovation**" and has enabled broader synergies and **shared visions**

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3675081 - .X2R2PJNLhTY

https://zenodo.org/record/4889503

https://indico.in2p3.fr/event/24327/

EOSC Future
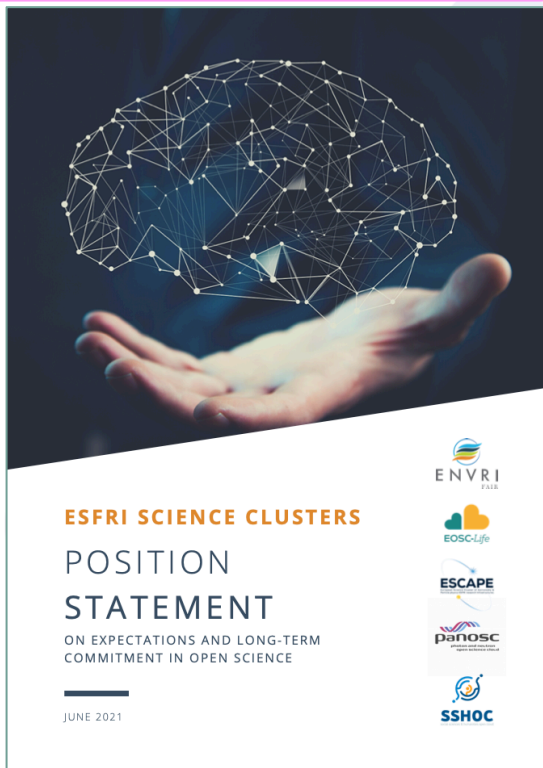
A small but impactful participation and a step forward in shaping the SCL work plan.

- Supporting Open Research Test Science Projects
- Fostering the domain based EOSC exchange services for RIs
- Integrating them with EOSC core functionalities

After H2020 grants, the five Science Clusters are putting long-term structures in place (through MoU or Collaboration Agreements).

Definition of more structuring inter-Cluster objectives.

SCIENCE-CLUSTERS.eu
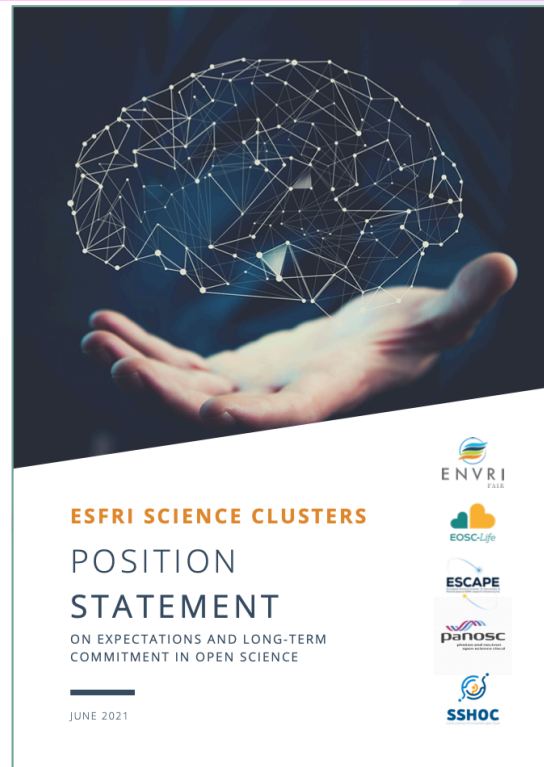Research Infrastructures for Open Science

The Science Clusters in Horizon Europe : OSCARS and EVERSE
- Acknowledge software achievements, raise awareness of the foundation approach (virtual institute), promote careers and skills
- Implement EOSC through highly composable platforms (VRE), including software
- Consolidate SCL services and support the goals of Open Research.

OSCARS

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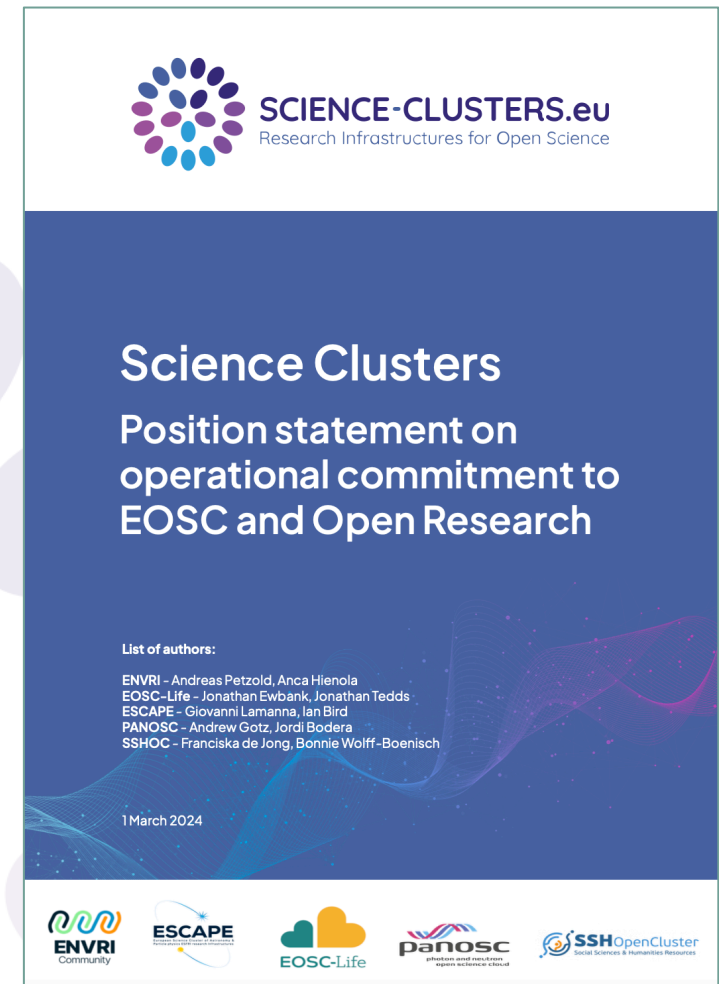

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SCIENCE-CLUSTERS.eu
Research Infrastructures for Open Science

Science Clusters

Position statement on operational commitment to EOSC and Open Research

List of authors:

ENVRI - Andreas Petzold, Anca Hienola
EOSC-Life - Jonathan Ewbank, Jonathan Tedds
ESCAPE - Giovanni Lamanna, Ian Bird
PANOSC - Andrew Gotz, Jordi Bodera
SSHOC - Franciska de Jong, Bonnie Wolff-Boenisch

1 March 2024

https://doi.org/10.5281/zenodo.10732049
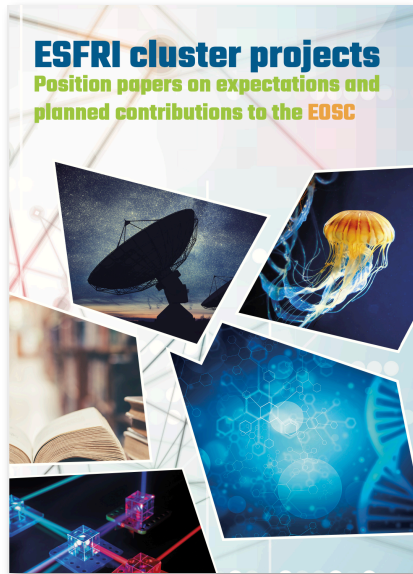
The Science Clusters

- call to be an integral part of the governance of the central EOSC/EU Open Science authority

- look forward to taking part in the evaluation of the procured EOSC services for the EOSC EU Node (and calling for alignment of the evaluation actions with national initiatives).

- are ideally positioned to own the "Exchange for Science" layer. They would assess and maintain the portfolio of high-level services through the Science Clusters' repository of services, software, workflows, tutorials, training supports and expertise. (This is complementary to other hardware and e-infrastructures' Exchange horizontal services, like compute capacity.)

Extension of the role of the Science Clusters :

Strengthening and supporting RIs in ERA would require that the legal authority of EOSC supports and relies on the Science Clusters' role :
- to incentivise an **economies of scale approach** for the **sustainability of ESFRI and other RIs**, as well as for security in data management;
- to maintain and develop innovative training schemes;
- to develop a science strategy in the EU, co-elaborated with EU member states and the EC, for specific science priorities and innovative paths; structure and strengthen science diplomacy, and ways for scientific knowledge to serve public debate as well as decision-makers;
 - to link EOSC **to other sectoral data spaces** by leveraging crosscutting and cluster cross-domain projects connected with these data spaces.

OSCARS

The operational role of the Science Clusters has to be seen in the EOSC Federation through the implementation of five thematic 'EOSC Science Cluster Nodes'.

They would manage:

- cascading grant calls for open science for a period spanning the transition phase, and potentially in the long run;

- a highly composable virtual research environment (VRE) per scientific domain for full hosting of open science projects;

- the federation of data archives (including software catalogues);

- the cooperative schemes with EOSC national Nodes, which could be transdisciplinary, on either specific domain-based open science programmes (including curiosity-driven national access to pan- European RIs actions) or multidisciplinary projects including those bridging with industries, as well as with other sector data spaces;

- to move towards "open data, software and hardware" and more broadly to open access to RIs;

- to lead further initiatives, in coordination with National Nodes, such as supporting a series of outstanding international conferences and camps on "Open Research".

In response to the EU call on EOSC
HORIZON-INFRA-2023-EOSC-01-01

- Building on the **Science Cluster** approach
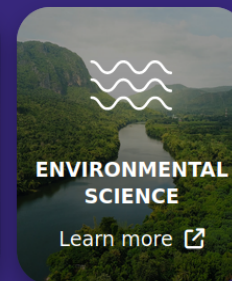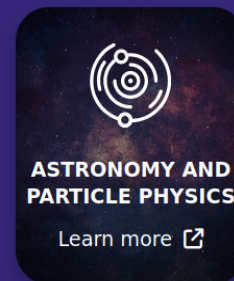- to ensure the **uptake of EOSC by research communities**

Partners

- Coordinator: **CNRS** LAPP
- **15** partners, **2-3** representing each Science Cluster community

Budget and timeline

- Starting date: **1 January 2024**
- Duration: **4 years**
- EC funding: **25 M€** (100%)

Research Infrastructures and Communities

The science clusters have grown out of five collaborative projects funded by the European Union in 2019 to link ESFRI and other world-class Research Infrastructures (RIs) to the European Open Science Cloud (EOSC). The services developed by the clusters and other outcomes of the projects are cornerstones of the emerging EOSC fabric and support both disciplinary communities and multidisciplinary initiatives with harmonised models for access to data, tools, workflows and training. Each cluster unites multiple RIs in their specific scientific domain.

ASTRONOMY AND PARTICLE PHYSICS — Learn more

ENVIRONMENTAL SCIENCE — Learn more

LIFE SCIENCE — Learn more

PHOTON AND NEUTRON SCIENCE — Learn more

SOCIAL SCIENCES AND HUMANITIES — Learn more

https://oscars-project.eu/

Science Clusters fostering the uptake of Open Science in Europe

OSCARS

Science Clusters' Key Exploitable Results

EOSC-Life
- Life science data
- Life-science toolkits
- Data driven research in Europe

ENVRI FAIR
- Catalogue of services
- Knowledge Base
- Training Catalogue
- FAIR Implementation Profiles
- Common metadata schema
- Policy framework

ESCAPE
- DataStorage/Management/Transfer/Access system
- Catalogue for digital scientific products
- Interoperability standards for IVOA approved astronomical data services
- Science Platform for service offering integration
- Training Materials for OS practices and user community engagement

panosc
- FAIR-compliant Data Policy Framework for Research Infrastructures
- Federated Search API + data portal
- Remote data analysis platforms (VISA and H5Web)
- UmbrellaId community AAI
- Training platform
- PaN software catalogue
- Common metadata schema (Nexus+PaNET)

SSHOC
- SSH Open Marketplace
- Virtual Collection Registry (VCR)
- RESTORE
- Improved Repositories
- Training discovery toolkit & Trainers Directory
- SSHOC-Created Networks & Communities

RESULTS CATEGORIES
- Technical Harmonisation
- Policy Harmonisation
- Discovery/Access Platform
- Virtual Reserch Environment (VRE)
- Training Resource
- Knowledge Centre
- Authentication and Authorization Infrastructure (AAI)

A) Consolidating achievements from the five Science Cluster projects into **lasting interdisciplinary services and working practices** towards:

- More cohesion;
- Leveraging **cross-domain approach** and **cooperation with e-infrastructures**;
- **Cross-fertilization** for shared solutions of key services for researchers in all domains;
- Cooperating and supporting the **EOSC partnership**.

OSCARS

B) Leading the involvement of a broad range of research communities in Open Research (EOSC) via the development of new **Open Science projects/services** to drive the uptake of FAIR-data-intensive research throughout the ERA by:

- Contributing to a **data space for science, research and innovation**, integrated into the other data spaces described in the European Strategy for Data.

- Pursuing the creation of **pan-European research-enabling value-added services**;

- Fostering the **coordination** of national activities, European RIs and the scientific community at large, including the long tail of science;

- Fostering **interdisciplinarity** for achieving challenging new science pathways.
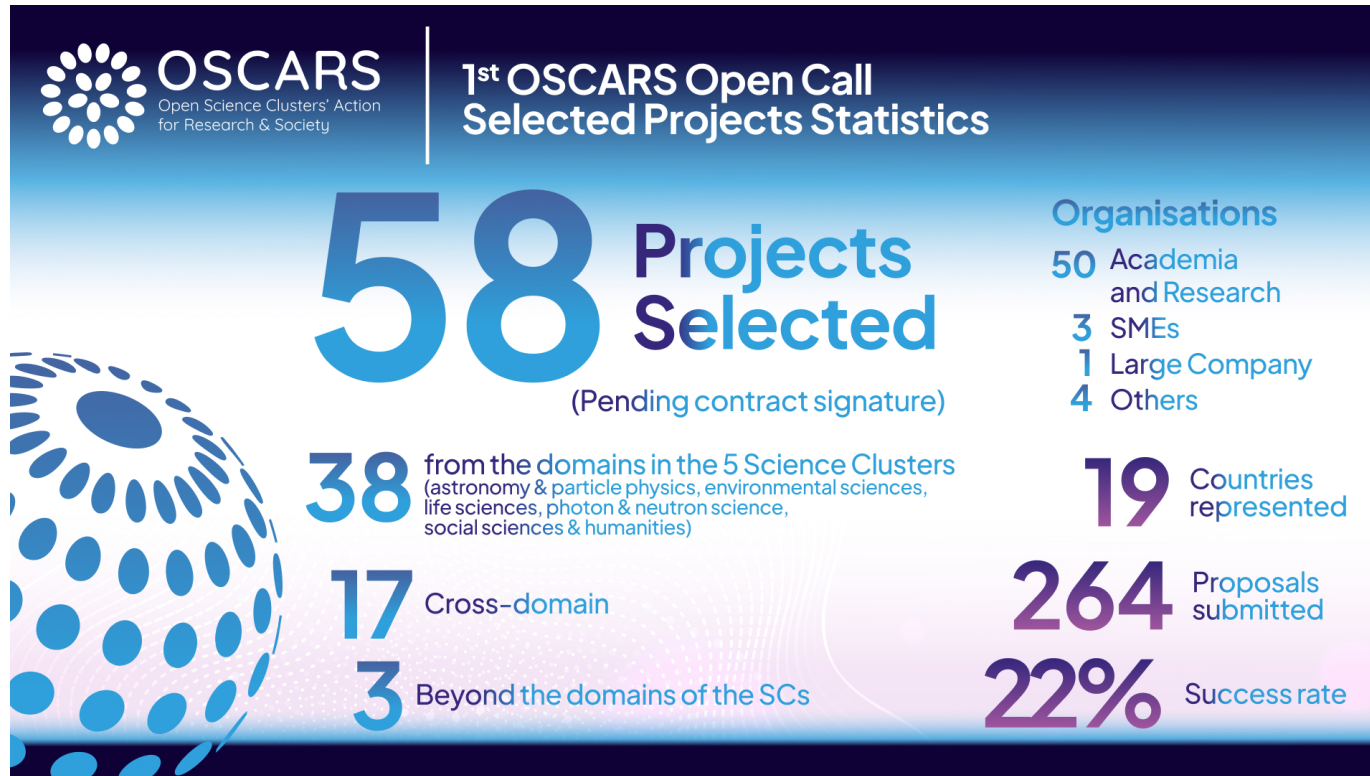
€16 million

IN OPEN CALLS FOR OPEN SCIENCE PROJECTS

OSCARS

The 1st OSCARS Open Call for Open Science (OS) projects and services aimed to source Open Science projects, i.e., scientific research projects, citizen science projects or any other projects that will develop services or networks in the scientific disciplines covered by and beyond the Science Clusters.

Selected projects will make (meta)data, software, tools and/or workflows FAIR and available to fellow researchers and the general public, to facilitate accessibility and reuse by the scientific community at large.

OSCARS
Open Science Clusters' Action for Research & Society

1st OSCARS Open Call Statistics

€13,120,000 in funding available

37% Universities
27% Research Technology Organisations
14% Research Infrastructures
7% SMEs & Startups
6% Non-Profit or NGOs
6% Others
3% International Organisations

264 Proposals submitted
33 Countries represented
30% Of countries are non-EU
226 PIs' Organisations Participating

1st OSCARS Open Call
Selected Projects Statistics

58 Projects Selected
(Pending contract signature)

38 from the domains in the 5 Science Clusters (astronomy & particle physics, environmental sciences, life sciences, photon & neutron science, social sciences & humanities)

17 Cross-domain

3 Beyond the domains of the SCs

Organisations
50 Academia and Research
3 SMEs
1 Large Company
4 Others

19 Countries represented

264 Proposals submitted

22% Success rate

48 projects have opted for the full 24 months duration. The majority of proposals (**50**) have requested a contribution **of more than € 200,000**. **Only eight projects** have asked for less.

Funding will be provided to selected projects upon successful conclusion of a Third-Party Project Agreement signed by the coordinating organisation of the selected projects. This process is expected to be concluded in the second half of September 2024.

OSCARS
Open Science Clusters' Action
for Research & Society

WP1
CLuster Open science
Competence Centres
(CLOCC)

WP2
Composable RI Services
in EOSC (CRISE)

WP3
Testing and Widening
UptakE (TEWE)

Giovanni Lamanna
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Sally Chambers

Romain David

Friederike Schmidt–Tremmel
OSCARS project manager

Gary Saunders

Paul Millar

Anca Hienola

OSCARS

- **Open Science practice**: increased scientific impacts via the support of Open Science projects;

- **Community-based Competence Centres (CCC)**, contributing to the sustainability of the Science Cluster actions, fostering their impacts, supporting and aligning operations of ESFRI and other RIs and involving the long tail of science.

- **Composable Open Data and Analysis Services (CODAS)** (service catalogues, data hubs, analysis platforms, etc.) onboarded into the EOSC, fostering the alignments of practices in scientific data analysis and enhancing researchers' participation in Open Science.

- An **established inter-cluster web-based "scientific social network"** in Europe. Training, mentoring, cross-disciplinary events and cross-cluster developments.

OSCARS

- **Operational Competence Centres**

- Uptake of **web-based highly composable platforms for Open Science data analysis**;

- **Stronger involvement of scientific communities in Open Science** and the shaping of EOSC;

- Enhancing and further structuring of the successful **cross-fertilization** work built by the Science Clusters;

- **Economy of scale** of (cross-cluster) services;

- Enable a **largely participative research ecosystem**, promoting provenance tracking to research outputs and contributing to the evolution of research assessment methodologies.