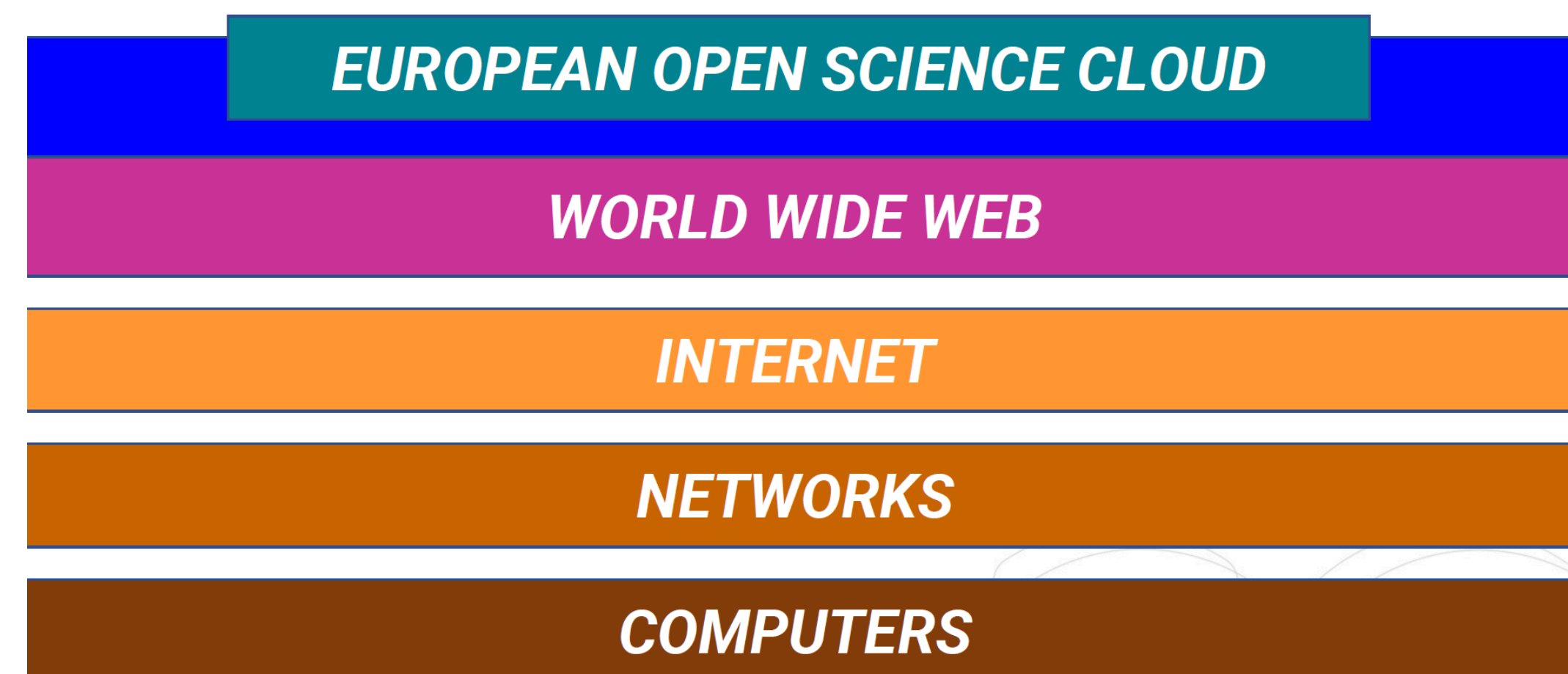INAF ISTITUTO NAZIONALE DI ASTROFISICA

eosc

USC VIII

INAF in the co-programmed European partnership EOSC (Open Science Cloud) to realize the web of FAIR data and interoperable services for science

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In the context of the INAF participation as a member of the EOSC Association (EOSC-A) implementing the European Open Science (EOSC) vision in its new structure with 3 task forces and 6 opportunity area expert groups, the possibility of new collaborations and projects is hightlighted with the aim of integrating Astrophysics into the federation of EOSC as a node infrastructure for data repository, resources and services allowing for sharing and reusing outputs and results of research and innovation between different disciplines.

System of systems

EUROPEAN OPEN SCIENCE CLOUD
WORLD WIDE WEB
INTERNET
NETWORKS
COMPUTERS

Credits: EOSC

Modelled after: World Wide Web - Wi

WHAT — The European Web of data and interoperable services under the Open Science policy: easy to find, access, interoperable and reusable (FAIR asFindable Accessible Interoperable Resusable). It offers to researchers, innovators, companies, and citizens an open, trusted, federated and multi-disciplinary environment where they can publish, find and reuse data, tools, services for research, innovation and educational purposes.

WHY Unlock the full potential of research data and outputs to accelerate discoveries and innovation

HOW
- ensure that the Open Science practices and skills becoming the "new normal"
- enable the definition of standards and the development of tools and services, to allow to find, access, reuse and combine all research results (i.e. digital objects) in terms of data, software, workflow, methodologies, procedures, publications
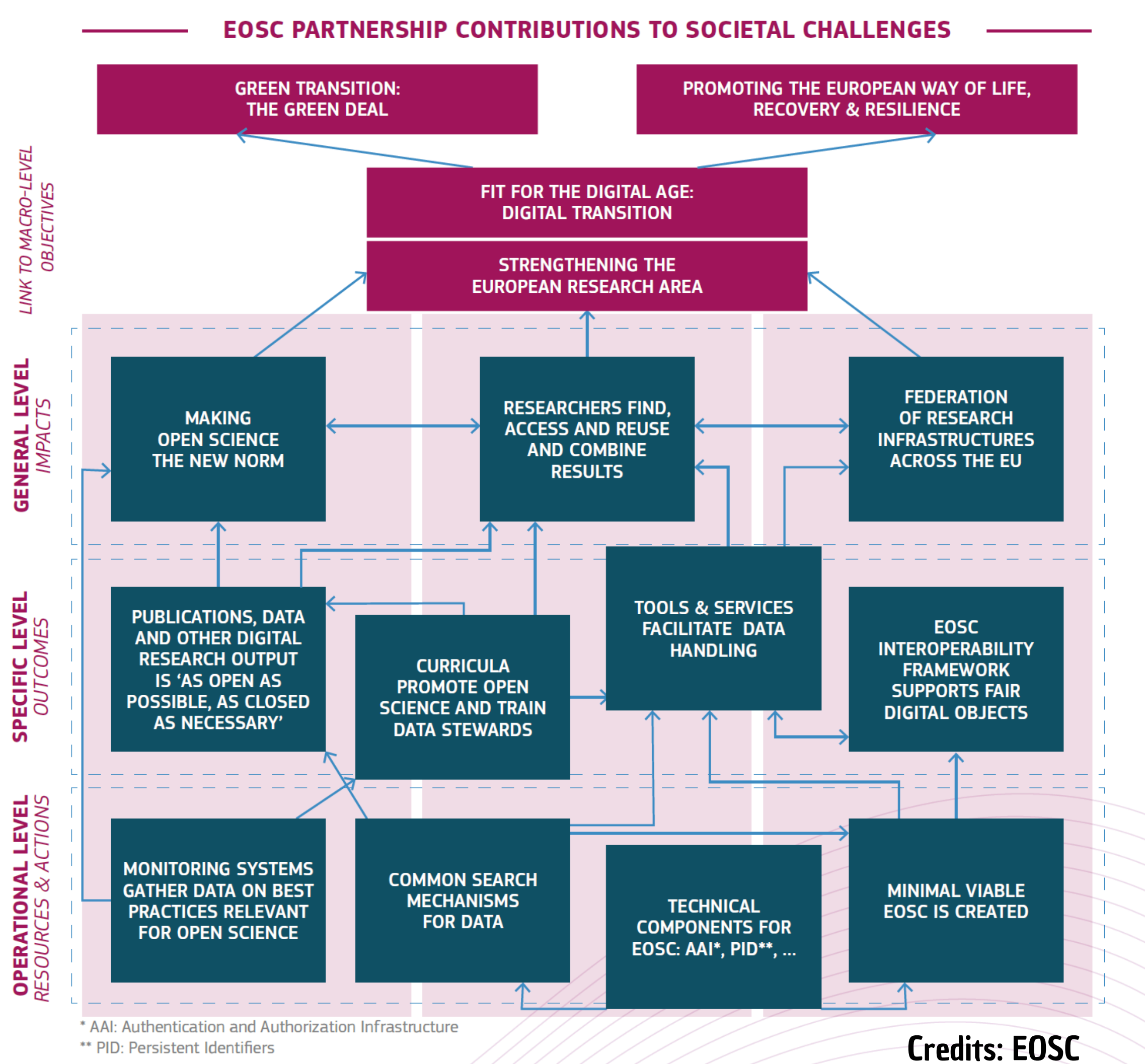- establish a sustainable and federated infrasctruture enabling open sharing of results "at large"

MEMBERS PER TYPE

0.5%
28.8%
32.5%
0.5%
26.4%
11.3%

INDUSTRY	Other Industrial and/or profit Private organisation
UNIVERSITY	University and other higher education organisations
RESEARCH	Public research organisation (including international research organisation as well as private research organisation controlled by a public authority)
PUBLIC	Research funders, ministries, regions, cities
	SMEs
OTHERS	Non-profit, associations, state companies etc.

"Open, trusted virtual federation of existing research communities and related e-infrastructures that enables EU researchers to store, share, process and reuse research digital objects (e.g., FAIR data, software, workflows, publications) using a range of interoperable services operated by or supplied to those communities.

Launched as an initiative of the European Commission since 2015, it was recognised by the Council of the European Union among the 20 actions of the policy agenda 2020-2024 of the European Research Area (ERA). The current phase of implementation (2021-2030) is taking place in the context of EOSC co-programmed partnership supported by the Horizon Europe programme according to a Strategic Resarch and Innovation Agenda (SRIA) co-developed with the entire EOSC-community through the EOSC Association (EOSC-A). INAF is a member of EOSC-A since 2021.

EOSC PARTNERSHIP CONTRIBUTIONS TO SOCIETAL CHALLENGES

Credits: EOSC

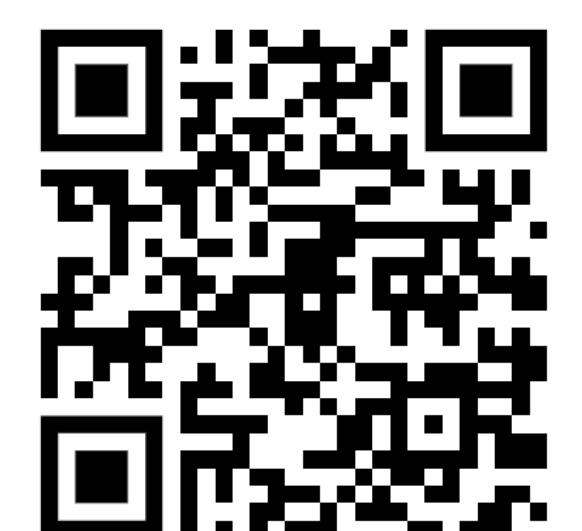| EOSC phase 1: preparatory **2018 - 2020**	EOSC phase 2: convergence **2021 - 2027**	EOSC phase 3: operation **Post-2027**
Funding instruments: H2020 calls/grants approach	Funding instruments: HE INFRAEOSC calls / grants approach EOSC Procurement In kind contributions from the EOSC Association members	Funding instruments: Under discussion
Funders: European Commission (DG CNECT; DG RTD)	Funders: European Commission (DG CNECT; DG RTD) Members of the EOSC A, countries part of the EOSC SB & other in kind contributions	Funders: Under discussion
Total funding: 350 M€	Total funding: 1 billion € (500M€ from the EC + 500M€ as in kind contributions from the EOSC Association members) + other in kind contributions	Total funding: Under discussion
Main purpose: To support the implementation strategy defined in the EOSC roadmap 2018-2020 by the European Commission	Main purpose: To support the implementation of the strategic priorities identified in the Multi Annual Roadmap 2021-2022; 2023-2024; 2025; 2026-2027 of the Strategic Research and Innovation Agenda (SRIA)	Main purpose: To support the EOSC strategy and governance post 2027 *Credits: EOSC*

The long-term process of EOSC implementation and financing through European direct funds

EOSC IMPLEMENTATION: from the providers of the 'EOSC portal (now called Resource Hub) to the federation of EOSC EU Node (official launch october 2024).
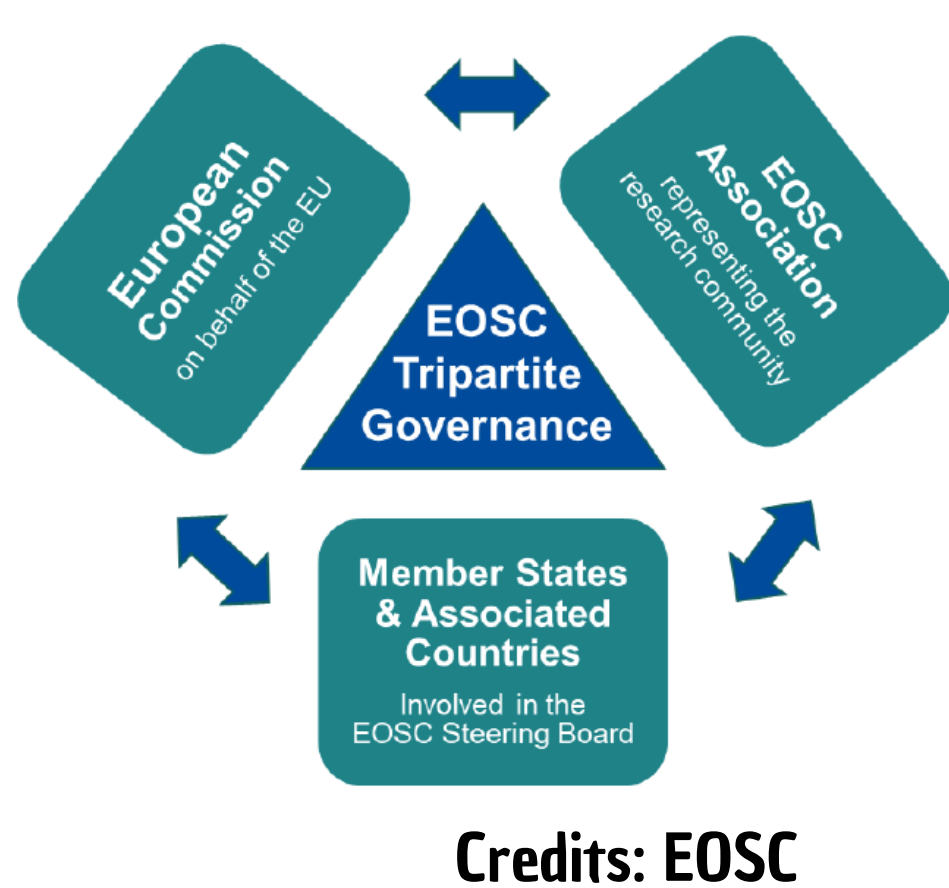
Upcoming Services

The EOSC EU Node will offer the following services (currently under development):

File Sync & Share — Enable automatic file syncing and secure sharing across locations and teams.

Interactive Notebooks — Create and share documents with real-time code execution.

Large File Transfer — Streamline large file transfers online with added security and integrity.

Virtual Machines — Design and conduct experiments with flexibility while ensuring reproducibility.

Cloud Container Platform — Deploy cloud-native containerised applications that can easily scale.

Bulk Data Transfer — Move data effortlessly to data-intensive execution environments.

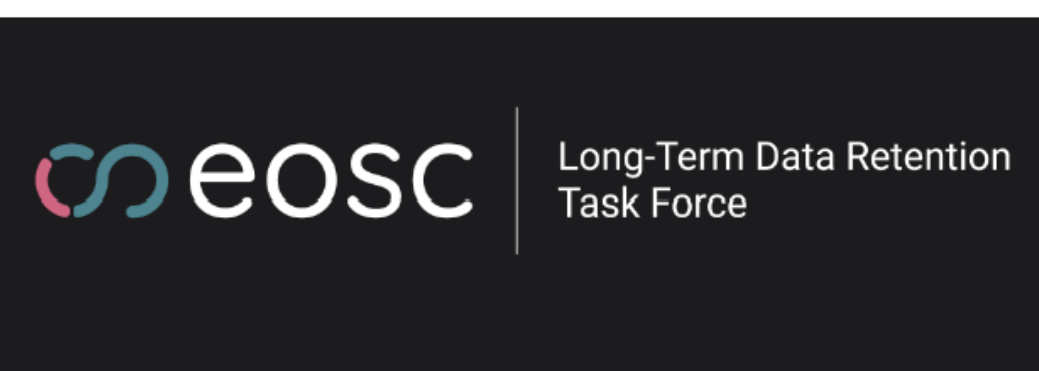Credits: https://open-science-cloud.ec.europa.eu/

GOVERNANCE: "TRIPARTITE COLLABORATION" = European Commission (EC) + EOSC association (EOSC-A) + European member states and associated countries in a steering commitee.

European Commission on behalf of the EU — EOSC Association research community — EOSC Tripartite Governance — Member States & Associated Countries Involved in the EOSC Steering Board

Credits: EOSC

Activities as member of EOSC-A under the auspicious of INAF USC8

2024

- **Training & skills development (cat5)**: *Education, training & skills development in Open Science & FAIR data management of research artifacts*
- **Contribution to the development of new standards, regulations and policies (cat6)**: *support research communities to develop &/| adopt domain-specific standards as well as to consolidate common metadata and/or schema for use in the EOSC context (e.g. IVOA)*
- **supporting ecosystem development (cat7)**: development of consensual EOSC frameworks and guidelines (e.g, for interoperability, AAI infrastructure); support to knowledge building and sharing across disciplines; activities contributing to strategic and operational alignment, coordination/synergies with other structures; being contact point for EOSC uptake
- **communication, dissemination, awareness rasing, citizen engagement (cat 8)**: *EOSC-related communication, dissemination, outreach & awareness raising activities; promoting EOSC at all levels by engaging with revelant communities and stakeholders*
- **other (cat 9): supporting open access; adoption of new policies in open science - COLLABORAZIONE CON con "INAF open science Working Group https://openscience.inaf.it/**

Participation in the new Task Forces

eosc — FAIR Metrics and Digital Objects Task Force

eosc — Technical and Semantic Interoperability Task Force

eosc — Long-Term Data Retention Task Force

Credits: EOSC

2025

- **Support to additional R&I (cat1)**: *Deployment of online tools for FAIRification for astrophysical community*
- **Training & skills development (cat5)**: *Education, training & skills development in Open Science & FAIR data management of research artifacts*
- **Contribution to the development of new standards, regulations and policies (cat6)**: *support research communities to develop and/or adopt domain-specific standards as well as to consolidate common metadata and/or schema for use in the EOSC context (e.g. IVOA)*
- **supporting ecosystem development (cat7)**: *development of consensual EOSC frameworks and guidelines (e.g, for interoperability, AAI infrastructure)*; **building industry-academia cooperation**; *activities contributing to strategic and operational alignment, coordination or synergies with other structures; being the contact point for EOSC uptake at national or institutional level*
- **communication, dissemination, awareness rasing, citizen engamenet (cat 8)**: *EOSC-related communication, dissemination, outreach and awareness raising activities; promoting EOSC at all levels by engaging with revelant communities and stakeholders.*