EOSC building: sharing perspectives and thoughts for the future

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EOSC French tripartite event, Montpellier, June 2023

EOSC vision in a nutshell

What

EOSC is the European web of FAIR data and related services for research
Research data that is easy to find, access, interoperate and reuse (FAIR)
Trusted and sustainable research outputs are available within and across scientific disciplines

Why

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

How

- *Ensure that Open Science practices and skills are rewarded and taught, becoming the 'new normal'*
- *Enable the definition of standards, and the development of tools and services, to allow researchers to find, access, reuse and combine results*
- *Establish a sustainable and federated infrastructure enabling open sharing of scientific results*

Strategic Research and Innovation agenda (SRIA)
eosc.eu/sria-mar

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From vision to implementation: "the EOSC federation"

The EOSC vision is to set up a 'Web of FAIR Data and Services' for science in Europe. Central to this ambition is the deployment of a trusted, virtual, federation of existing infrastructures in Europe to store, share and reuse FAIR research outputs across borders and scientific disciplines also called the "***EOSC Federation***".

- EOSC is **NOT** a new digital infrastructure

- The EOSC ambition is to ***federate existing data, research and e- infrastructures*** nodes to make them all ***available to European researchers across borders and across disciplines*** (distributed EOSC ´system of systems´)

- In doing so, ***the federation will be augmented with new additional services and tools*** that will enable the EU web of FAIR data and related services (EOSC can be seen as a thin federation layer based on FAIR principles)

- The federation will provide ***coordinated entry points primarily for researchers in Europe (the so called "nodes")*** to find and access FAIR data and interoperable services that address elements of the whole research cycle (from discovery and mining to storage, management, analysis, publication, and re-use)

- ***The entry points for EU researchers will be via their traditional channels*** (e.g. via the national, regional, pan-European or thematic infrastructure nodes they are currently using) ***or via the EU EOSC node central instance*** (for the researchers that do not have existing access channels in place)

- ***EOSC rules of participation and access policies*** will be developed for the users and providers of the federation

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EOSC is not just about technical implementation

- The establishment of EOSC is not only a technical implementation issue

- There are at least six other crucial areas for its success
    - Governance
    - Financing
    - Policies and Regulations
    - Stakeholder Engagement & Adoption
    - Monitoring

EOSC as a policy action

The EOSC initiative is a **policy priority of the European Union** since 2016 driven by DG RTD and DG CNECT.

"The EOSC is recognised by the Council of the European Union among the 20 actions of the policy agenda 2022-2024 of the European Research Area (ERA) with the specific objective to deepen open science practices in Europe. It is also recognised as the "science, research and innovation data space" which will be fully articulated with the other sectoral data spaces defined in the European strategy for data"

European Commission website
research-and-innovation.ec.europa.eu/strategy/strategy-2020-2024/our-digital-future/open-science/european-open-science-cloud-eosc_en

Who is EOSC for?

EOSC is for European research and thus the European researchers will be the main beneficiaries of EOSC

Who is EOSC for?

EOSC aims to support all European researchers

How?

- **Enhancing scientific research** by providing access to a weath of data and research outputs from various fields and institutions

- **Fostering innovation** by making it easier for researchers to share, collaborate and build on each other´s work

- **Improving transparency and reproducibility** of research by making data and methods more open and accessible

- **Reducing data silos and duplication of efforts** by promoting data sharing and reuse

- **Facilitating interdisciplinarity research and cross-sectoral collaboration** by making data and resources from different domains more easily available
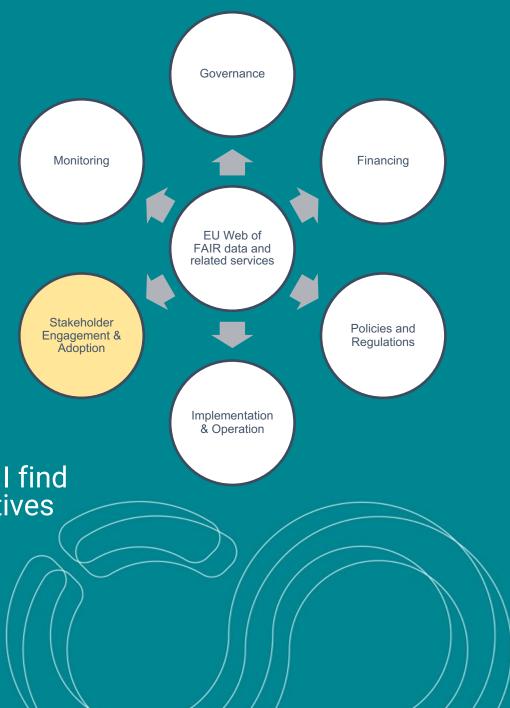

Individual researchers will benefits from EOSC through their existing channels (e.g. universities, research institutes, research infrastructures, associations, science clusters, etc.) that will act as intermediaries.

Multiple stakeholders, multiple roles

There is no "one-size-fits-all" formula for engagement in EOSC. It depends on your starting point (e.g. your type of work, your type of organisation, your mission and priorities, your level of maturity in terms of FAIR and OS implementation) and on what you want to achieve. Several options are possible

	User	Intermediary to engage the users	Co-developer	Data / Service Provider	Federation enabler	Policy maker	Funder	Supporter*
Researchers	x		x	x				x
RPOs (e.g. Universities, Research Institutes, HEIs, Libraries)	x	x	x	x	x			x
National, Regional, EU RFOs (e.g. EC, Ministries for Research, etc)	x	x	x	x		x	x	x
National, Regional, EU Research Infrastructures	x	x	x	x	x			x
National, Regional, EU e-Infrastructures	x	x	x	x	x			x
National, Regional, EU Data Infrastructures	x	x	x	x	x			x
Commercial entities	x		x	x	x			x
H2020 / HE projects	x		x	x	x			x
….								

* Trainers, Experts, Research Support Staff, Dissemination and Outreach managers, etc.

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Different reasons to be engaged

Depending on what is your main interest (EOSC development, operation, governance) the reasons and the way to be engaged in EOSC can change significantly

- Some concrete examples of why to engage in EOSC

EOSC development	EOSC operation	EOSC governance
Researcher perspective: Test the MVE; provide feedback and requirements; co-develop solutions that will enrich EOSC in the future; influence the direction of some developments;	**Researcher perspective:** Access the resources made available via the EOSC federation	**Researcher perspective:** Ensure that the user perspective is taken into account
Provider perspective: Test the MVE; provide feedback and requirements; contribute to and test the federation; expose data/services; influence the direction of some developments; co-develop solutions that will enrich EOSC in the future	**Provider perspective:** Provide services / resources; Operate an EOSC node; Increase the offering for the customers; promote services in EOSC	**Provider perspective:** Ensure the provider perspective is taken in into account

Intermediaries as channels towards the users

Research intermediaries will be essential for the success of EOSC

- Intermediaries will be fundamental to:
  - reach out to researchers
  - drive the cultural change stimulated by EOSC
  - promote the adoption of the Web of FAIR data and related services
  - educate and support researchers in the transition to EOSC
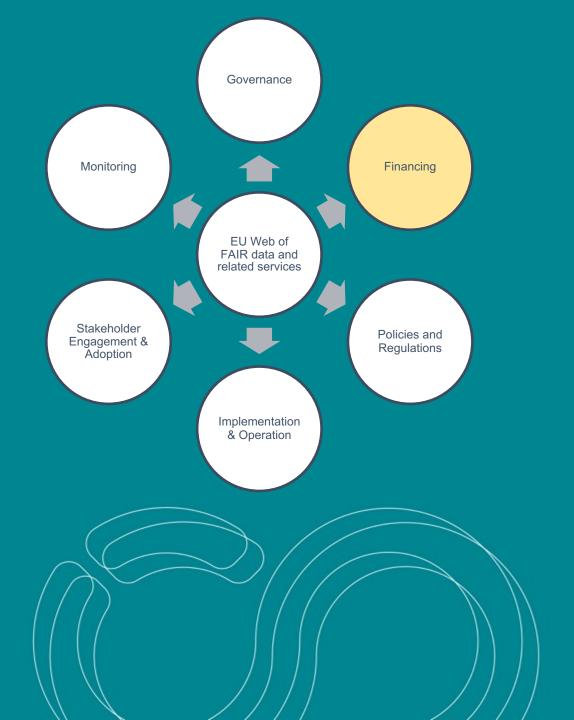 - communicate about the EOSC benefits

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Core funding for the EOSC development (2018-2027)

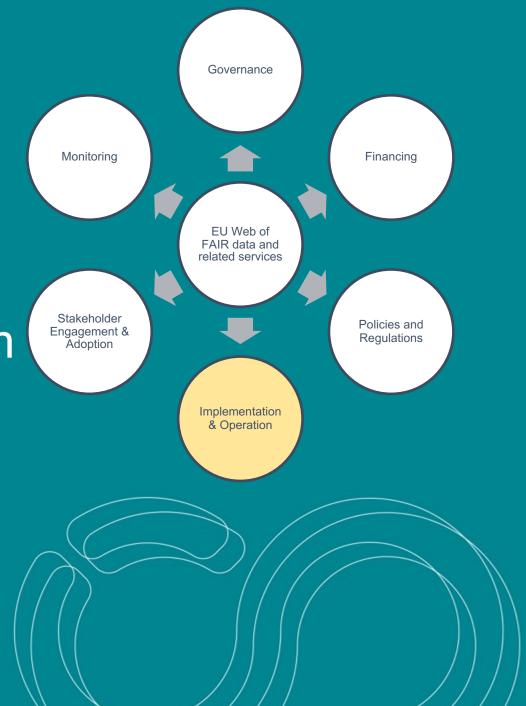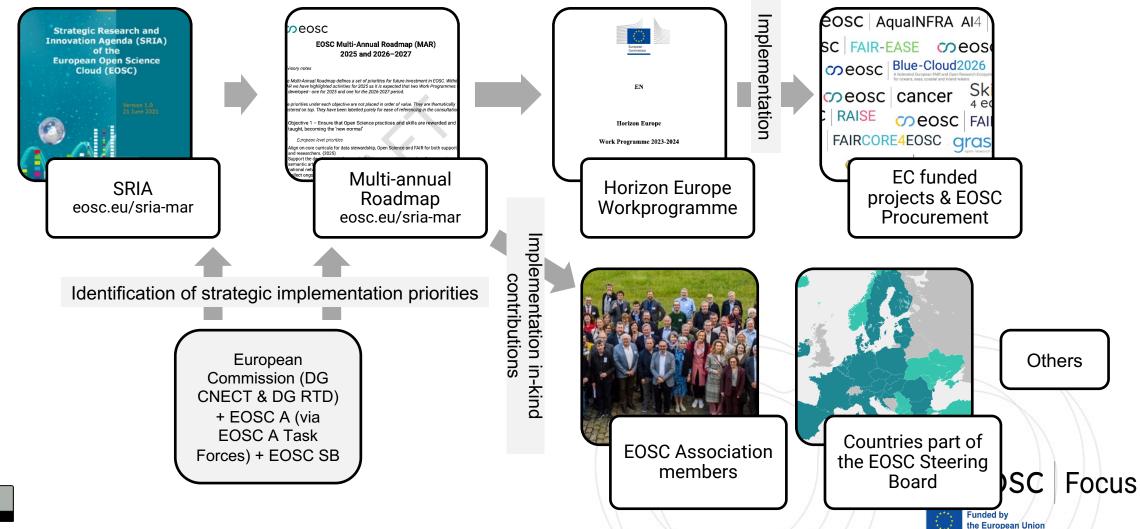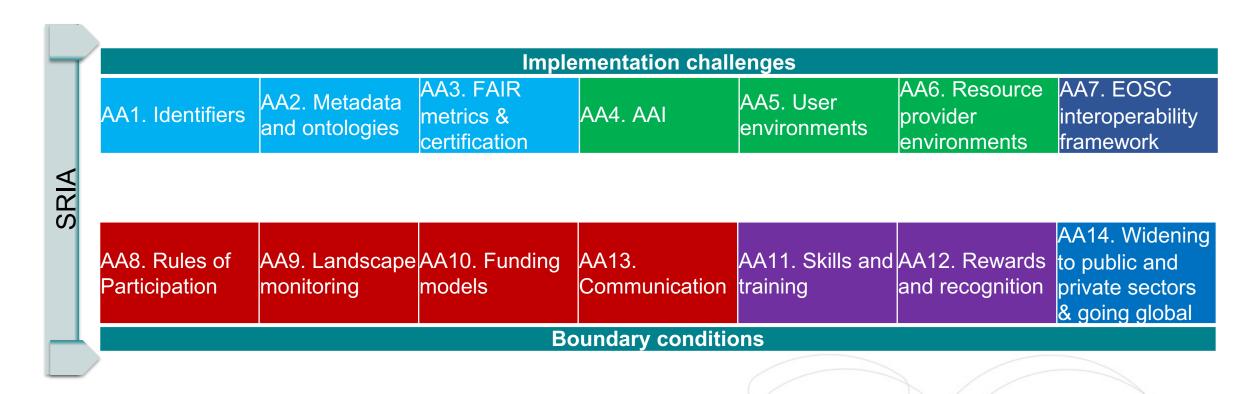| EOSC phase 1: preparatory **2018 - 2020**	EOSC phase 2: convergence **2021 - 2027**	EOSC phase 3: operation **Post-2027**
Funding instruments: H2020 calls/grants approach	**Funding instruments:** HE INFRAEOSC calls / grants approach EOSC Procurement In kind contributions from the EOSC Association members	**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**

How EOSC is implemented

At least until 2028, the EOSC implementation will happen via EC funded projects, the EOSC procurements and in-kind contributions (from the members of the EOSC Association, the countries part of the EOSC Steering Board and others)

Main implementation areas

The SRIA identifies 14 action areas considered key to deploy the EOSC ecosystem

The MVE

The MVE shall deliver on the core SRIA objectives and provide fucntional support for Open Science in Europe. The MVE is composed by four components:

EOSC-Exchange

EOSC Interoperability

Data Federation

EOSC Core

EOSC-Core

The prerequisite *service component enabling* the large-scale brokering of research data and services between the participants in the *EOSC Federation*

Data Federation

FAIR Data need to be federated in such a way that *metadata on research outputs is harvested into a cross-search to enable* greater *discovery and reuse* of data residing in multiple institutional, domain-specific and national repositories across Europe

EOSC Interoperability Framework

Set of standards and guidelines to support interoperability and composability of resources across borders and disciplines while respecting privacy and security

EOSC-Exchange

The Exchange is the *pan-European marketplace for the EOSC federated resources.* It enables the *brokering of community services between federation participants and* gives *access to procurement contracts.*

The building elements of the MVE are progressively delivered through the EC funded projects. From September 2023, the MVE prototypying phase will be moved to operation via the "Managed Services for the EOSC Platform" Procurement

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Funded by the European Union
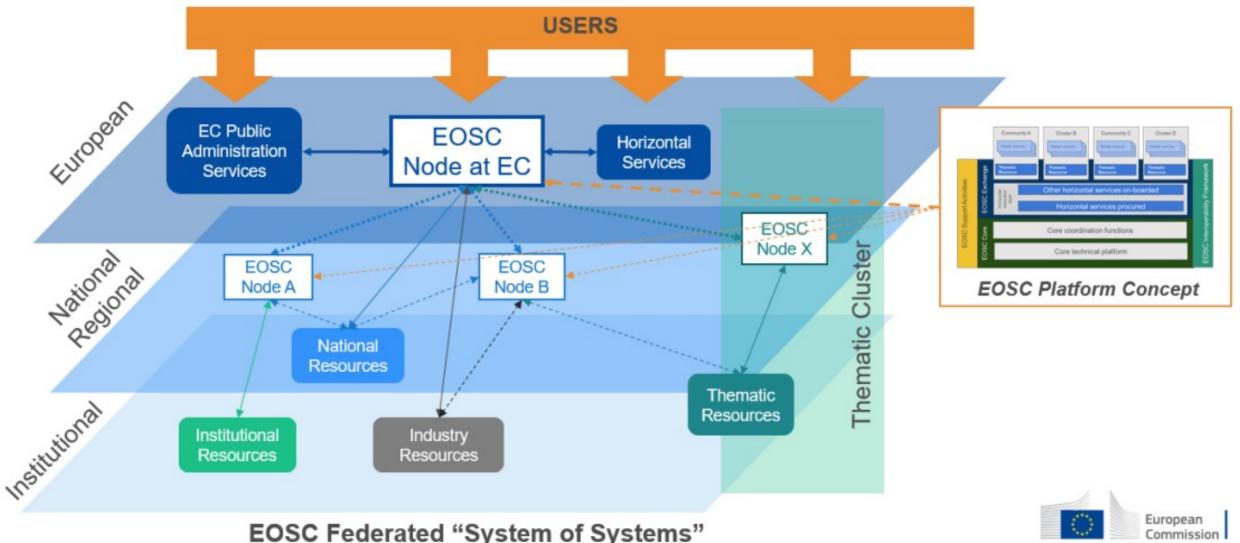
MVE vs EOSC EU node

The EOSC EU node is the federating element of the MVE

- The "[Managed Services for the EOSC Platform](#)" Procurement refers to an "EOSC European node"

- The "EOSC European node or EOSC EU node" can be considered *the European centrally financed instance of the MVE*

- The *EOSC EU node will enable the federation of existing data, research and e-infrastructures nodes* operating at institutional, national, regional, pan-European and thematic level

- The *EOSC EU node will be operational by the end of 2023* and *will include the minimum set of MVE components necessary to enable the EOSC federation*

- In the future, R&D projects will be conducted to develop and prototype new elements supporting the evolution of the tools enabling the federation
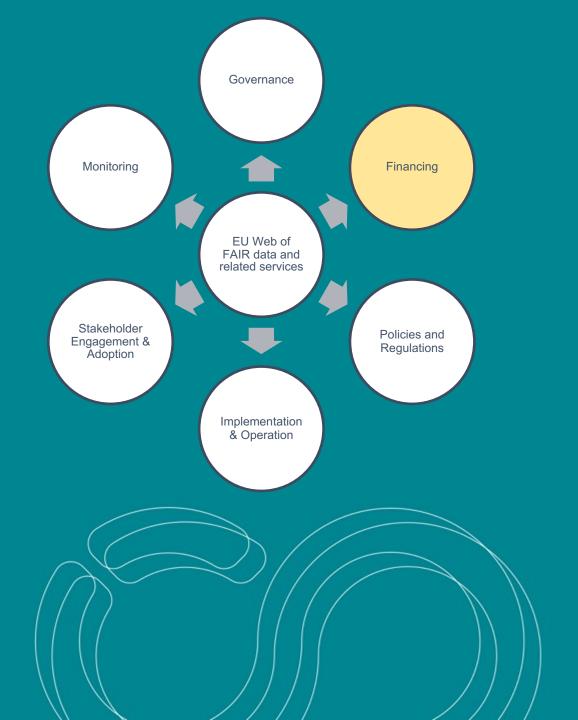
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EOSC Federation at a glance (EC schema)

EOSC Federated "System of Systems"

Different hypotheses

Horizon Europe expires in 2027. Until then, the development, operation and further development of the EOSC will be defined as a co-programmed European partnership, i.e. a partnership between the European Commission and the EOSC-A.

Model 1 - Indirect Governance: This is a model that entrusts tasks to an entity other than the Commission and its Executive Agencies. Such an entity could be the EOSC-Association. An example for this model is GÉANT, which as a private law body is entrusted with a public service mission (i.e. the provision of a European National Research and Education Network).

Model 2 – Direct Governance: This model requires the strong leadership and commitment of at least three Member States/Associated Countries An example is an ERIC (European Research Infrastructure Consortium). However, the lead-time for ERIC implementation is, on average, too great to accommodate the timeframe in question. However, it might be suggested to maintain consideration for a later stage in the development of EOSC.

Model 3 – Shared Governance: Co-programmed European partnership or Co-funded European partnership. Continue as before, with all advantages and disadvantages (e.g. development of EOSC by projects which are not obliged to cooperate and which have no reporting obligation to the EOSC-A).

Model 4 – Indirect and shared Governance

(Combination of Model 1 and 3)

Tasks	Governance
Deploying and operating the EOSC EU node	Indirect governance – EOSC-A?
Maintaining and updating the EOSC EU node and expanding the EOSC federation	
Enabling a 'web of FAIR data and services' for science	Shared governance (partnership)
Develop, prototype and test new elements supporting the evolution of the EOSC Core and Exchange and the tools enabling the federation	
Enabling Open Science policies and the uptake of Open Science practices	

Keep it open to facilitate innovation and co-building

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What´s next?

Upcoming EOSC milestones

Upcoming EOSC milestones

- Funding
  - INFRAEOSC calls 2024 (deadline March 2024)
  - INFRAEOSC calls 2025
  - INFRAEOSC calls 2026-2027

- Technical implementation
  - Implementation priorities 2025 --> MAR 2025 (June 2023)
  - INFRAEOSC 07 results --> June 2023
  - EOSC Future results / EOSC Procurement operational –> September 2023
  - Implementation priorities 2026 – 2027 --> MAR 2026-2027 (TBD)
  - Results of INFRAEOSC 2021-2022-2023 – continuous
  - SRIA V2.0 (December 2024)

- Governance
  - Identification of EOSC governance model post 2027 --> December 2023
  - Set up of governance post 2027 --> January 2024 – December 2027

- Events
  - EOSC symposium 2023, 20-22 September 2023 (symposium23.eoscfuture.eu/)
  - National tripartite events & other events (eosc.eu/events)

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Thank you!

Questions?

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