



EOSC as part of the European Union's open science policy

Slovak EOSC national tripartite event
31 May 2023

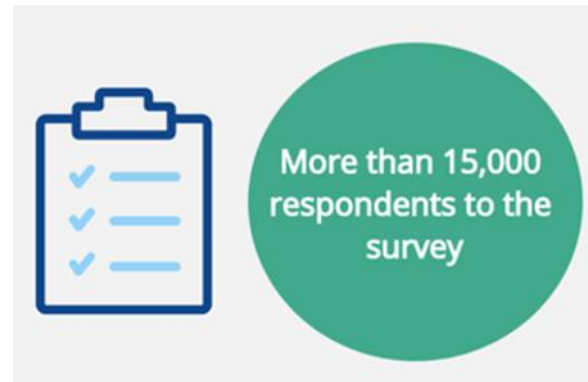
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European Research Data Landscape

EC-funded study 'European Research Data Landscape'

Undertaken from June 2021 to July 2022

- Research data depositing
 - **40% of researchers occasionally store data in research data repositories;** 22% respondents did that during the current/latest research activity
 - Researchers usually (60%) store data in personal physical data storage or institutional local data storage
- FAIR aligned practices
 - >2/3s develop DMPs but other **FAIR-aligned practices are less common**
 - Allocating PIDs to data is the least common practice
- Barriers to sharing research data
 - **Time, effort & financial costs** required for RDM and data sharing
 - **Data protection and legal restrictions**
 - **Lack of recognition**



- Geographical coverage: EU Member States, Horizon 2020 Associated Countries, and the UK
- All fields of science

Embracing open science as the *modus operandi* of research

Improving *the practice*

- **Providing full and immediate open access** to scientific publications, research data, models, algorithms, software, protocols, notebooks, workflows, and all other research outputs
- **Research output management** - publications, data, and other outputs - **in line with FAIR principles**
- **Early and open sharing** of research, e.g.
 - Pre-registration, registered reports, data deposition in shared repositories, pre-prints
 - Ensuring verifiability and reproducibility of research outputs
 - Open collaboration within science and with other knowledge producers/users, incl. citizens, civil society and end users

Developing *the enablers*

- **Open research infrastructures and skills** e.g.
 - **European Open Science Cloud (EOSC)** virtual research environment
 - Open Research Europe (ORE) open access publishing service
 - Support for skills and education for practicing open science & data-intensive research
- **Incentives and rewards** to adopt open science practices, e.g. initiative for **Reforming Research Assessment**
- **Legislative and regulatory framework** for practicing open science
 - An EU data, copyright and digital legislative framework fit for research
 - Horizon Europe provisions on Open Access and Open Science practices

European Commission support to EOSC

- Keeping the **policy momentum**
 - ‘Open Science including EOSC’ fully embedded in the *ERA Policy Agenda*
 - EOSC as a sectoral data space of the *European Strategy for Data*
- Support through **Horizon Europe**
 - Implementation of *Research Infrastructure Calls*: direct EU investment in EOSC developments of up to €490 million
 - Including *procurement of EOSC managed services* by the EC
 - *Studies* commissioned by the EC, e.g. the European Research Data Landscape study
- Continued support to:
 - The *EOSC governance*: EOSC Steering Board, EOSC Partnership Board
 - EOSC engagement and *coordination with ESFRI and eIRG*
 - *EOSC thematic demonstrators*, e.g. the European Covid-19 Data Platform, the Blue Cloud, the ‘science clusters’
 - The *monitoring* of the uptake of Open Science and ‘EOSC readiness’

Open science: a political priority of the EU

- 2021 Council Recommendation on a [Pact for Research & Innovation in Europe](#)
- 2021 Council Conclusions on the [Future Governance of the ERA](#) (& [Policy Agenda 2022-2024](#))
- 2022 Council Conclusions on [Research Assessment and Implementation of Open Science](#)
- 2022 Council Conclusions on [Research Infrastructures](#)
- 23 May 2023 Council Conclusions on [High-quality, transparent, open, trustworthy and equitable scholarly publishing](#)
- “[...] *immediate and unrestricted open access should be the norm in publishing research involving public funds [...]*”
 - *equity, publishing models, peer review, monitoring, predatory publishing, ...*

Open science and EOSC in the ERA Policy Agenda



ERA Policy Action 1: *“Enable the open sharing of knowledge and the re-use of research outputs, including through the development of the EOSC”*

- **Deploy Open Science principles and identify Open Science best practices**
 - Mainstreaming OS across national programmes, catalogue of OS practices, tools and services, data scientists and data stewards, national EOSC tripartite events ...

- **Deploy the core components and services of EOSC and federate existing data infrastructures in Europe, working towards the interoperability of research data**
 - Horizon Europe support to EOSC Partnership, connection of national/regional research infrastructures to EOSC federation, community frameworks for interoperability & quality control ...

- **Establish a monitoring mechanism to collect data on investments, policies, digital research outputs, open science skills and infrastructure capacities related to EOSC**
 - Co-development of EOSC national surveys, roll-out of key layers of monitoring mechanism ...

INFRAEOSC 2021-2022 calls

2021 / 6 topics / 59 M€

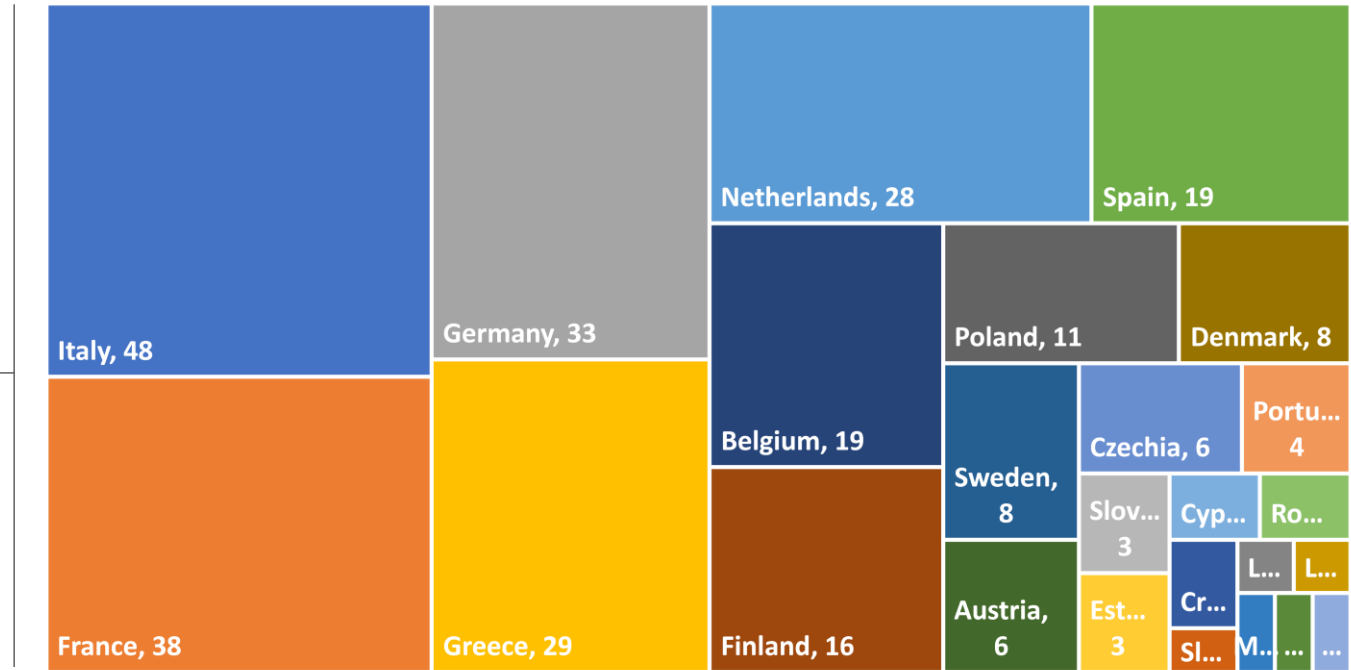
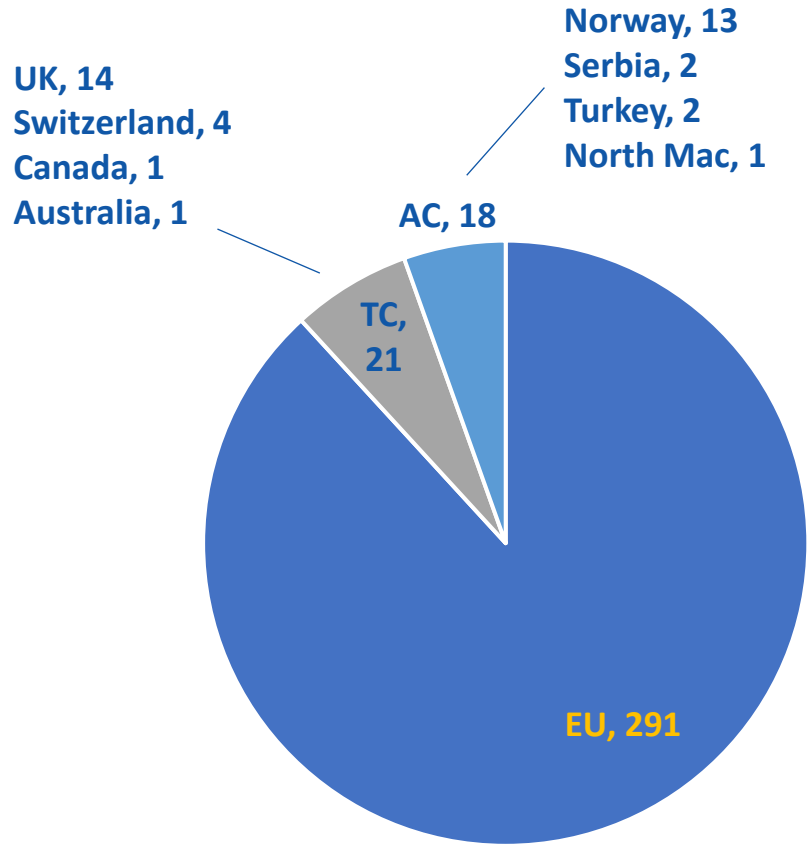
- 1: Supporting an EOSC-ready **digitally skilled workforce**
- 2: Supporting the development and coordination of activities of the **EOSC Partnership**
- 3: Deploying **EOSC-Core** components for FAIR
- 4: Innovative and customizable **services** for EOSC
- 5: Enabling **discovery & interoperability** of federated research objects across sc. communities
- 6: FAIR and open data sharing in support of **cancer research**

2022 / 4 topics + 1 public procurement / 65 M€

- 1: Services & tools to underpin a **research assessment** system that incentivises OS practices
- 2: Improving & coordinating technical infrastructure for institutional OS **publishing** across Europe
- 3: FAIR and open data sharing in support of healthy **oceans, seas, coastal and inland waters**
- 4: Support for initiatives helping to generate global **standards**, specifications & recommendations for open sharing of FAIR research data, publications and software
 - Public procurement on **EOSC Core & services**

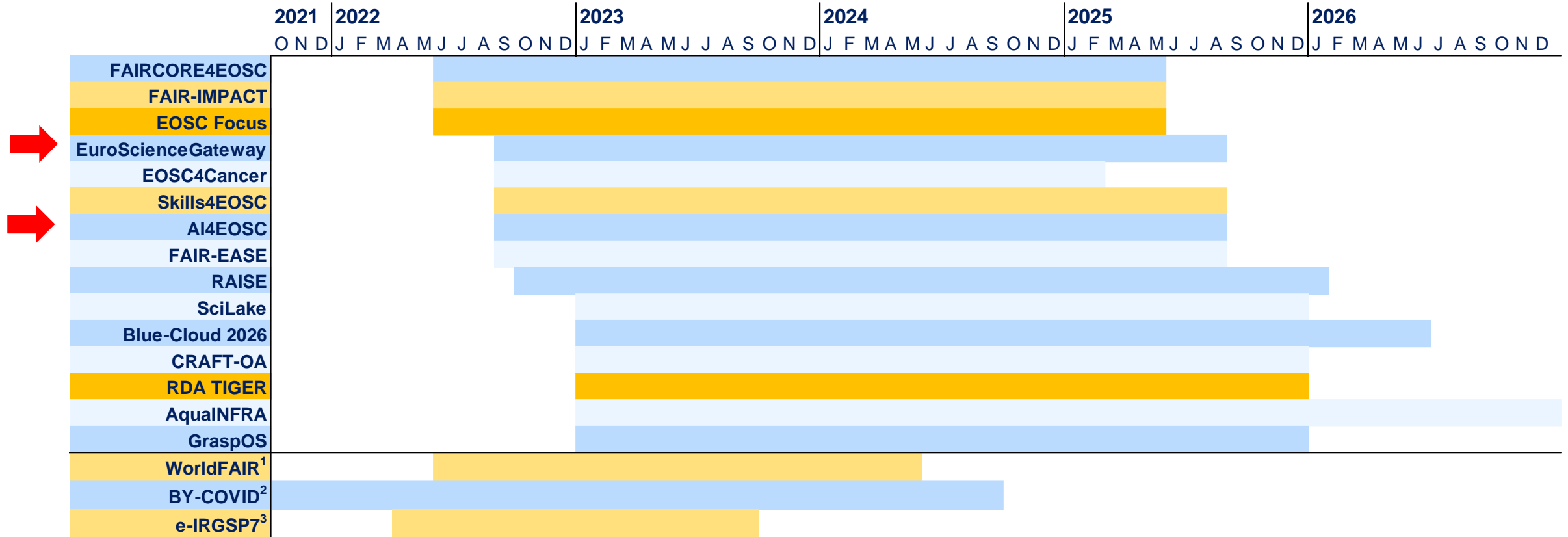
Running WP21-22 INFRAEOSC projects

15 projects / 87 M€ / 221 unique participants / 330 participations



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15 projects / 87 M€ / 221 unique participants / 330 participations



¹2021-ERA-01-41; 1.9 M€; 19 participants

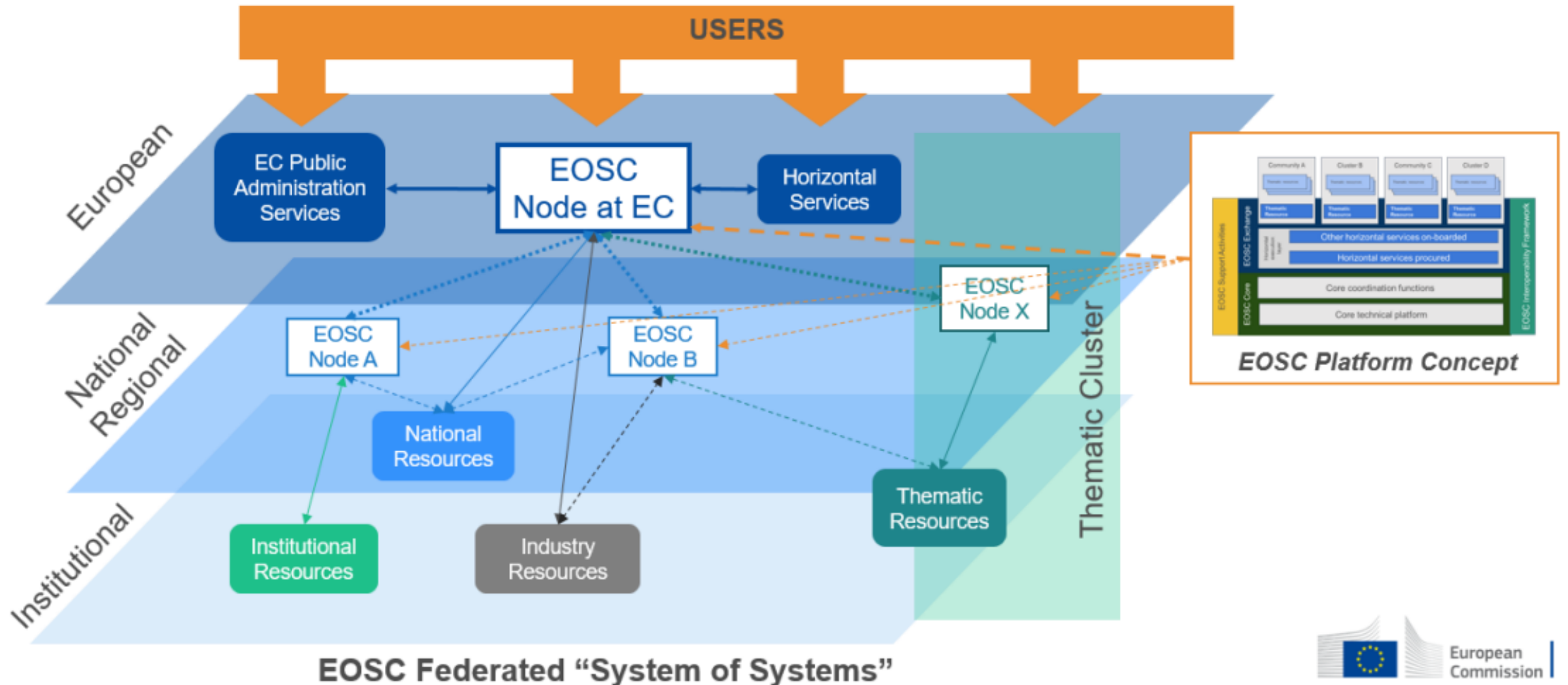
²2021-EMERGENCY-01; 12 M€; 53 participants

³2021-DEV-01-05; 0.3 M€; 4 participants

RIA CSA

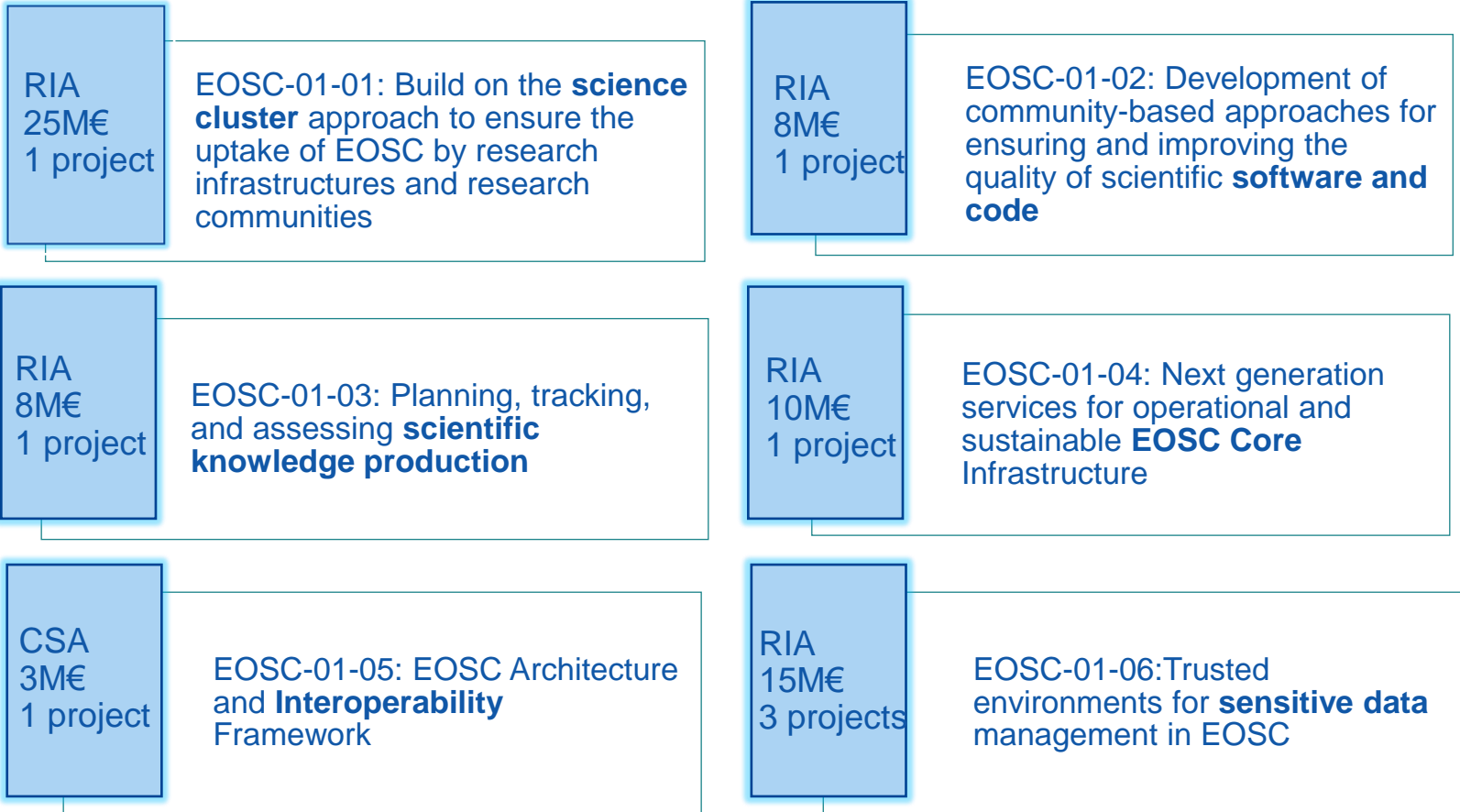
EOSC infrastructure node at the European level

- Ongoing procurement process by the EC
- ‘EOSC Core and Exchange’ enabling the EOSC federation



INFRAEOSC – 2023 Call

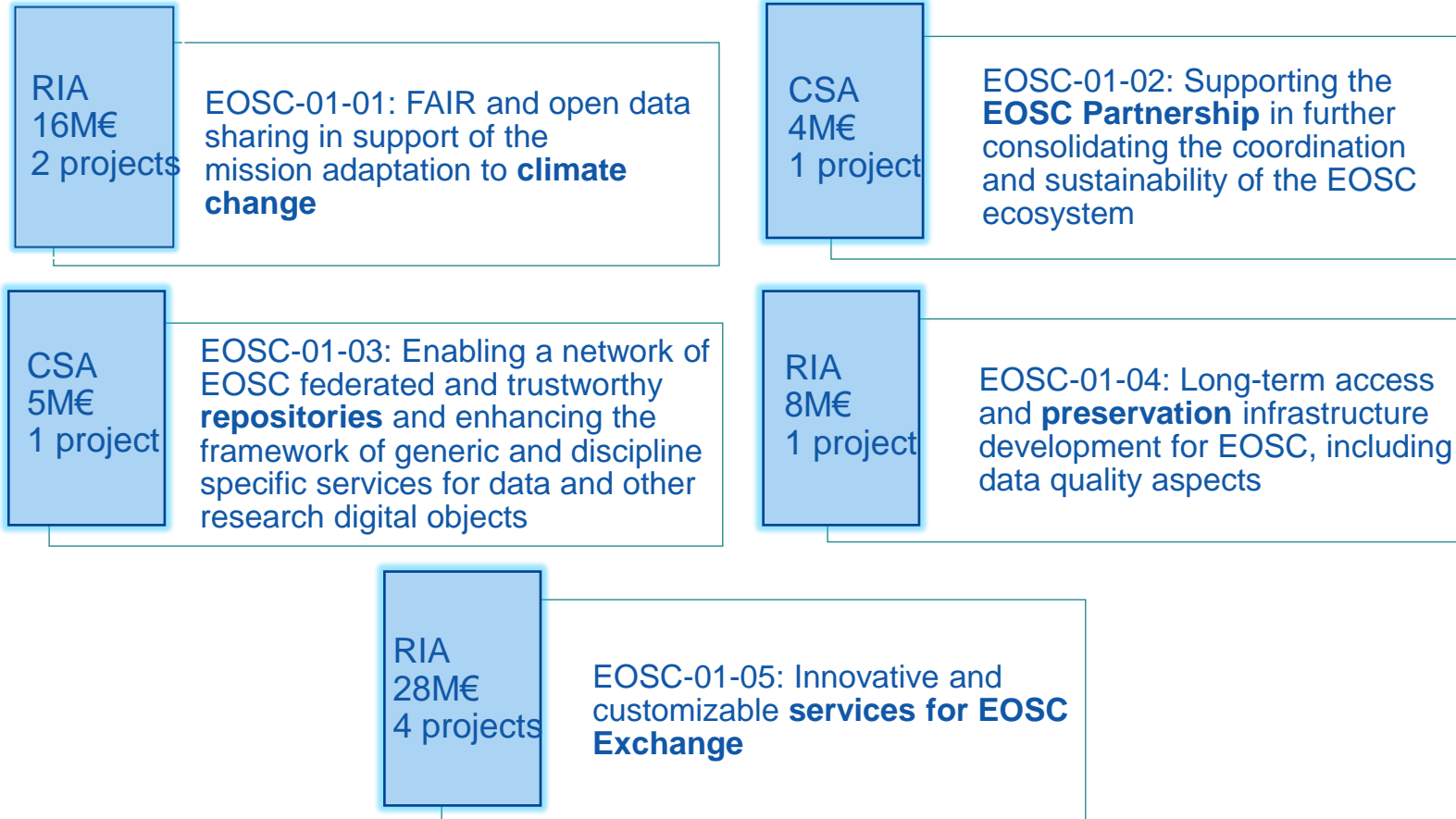
6 topics / 69 M€ / closed on 9 March 2023



+ 0.4 M€ GIB HE repository + 0.6 M€ GIB EOSC monitor

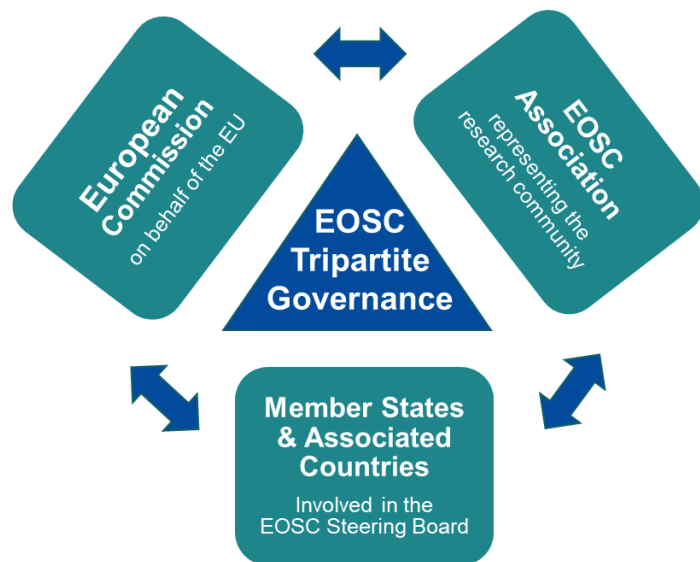
INFRAEOSC – 2024 Call

5 topics / 61 M€ / opening on 6 December 2023 / deadline: 12 March 2024



Enabling open science through EOSC

- **A community-driven process** (commitments by EU Member States, Associated Countries, research stakeholders)
- **Gradual implementation** based on **mutual alignment** and pooling of resources at European, national and institutional levels. Move **from prototyping to operations**



- **EOSC European Co-programmed Partnership** to pool commitments and resources along priorities set in the EOSC Strategic Research and Innovation Agenda
- **EOSC tripartite governance** to ensure dialogue and strategic coordination between EC, EU Member States and Associated Countries, and EOSC Association



EOSC annual survey #2

- Co-designed by the EOSC Steering Board and the EOSC-Future consortium
- Current focus on 'Policies' and 'Practices' (future focus will also include 'Impact')



	Policies	Practices
Publications	Countries with a National Policy	Countries with National Monitoring
Data		
Software	Countries with a Financial Strategy	Countries with Use Cases
Services		
Infrastructure	Country RPOs with a Policy	Country Investments
Skills/Training		
Assessment	Country RFOs with a Policy	Country Outputs
Engagement		

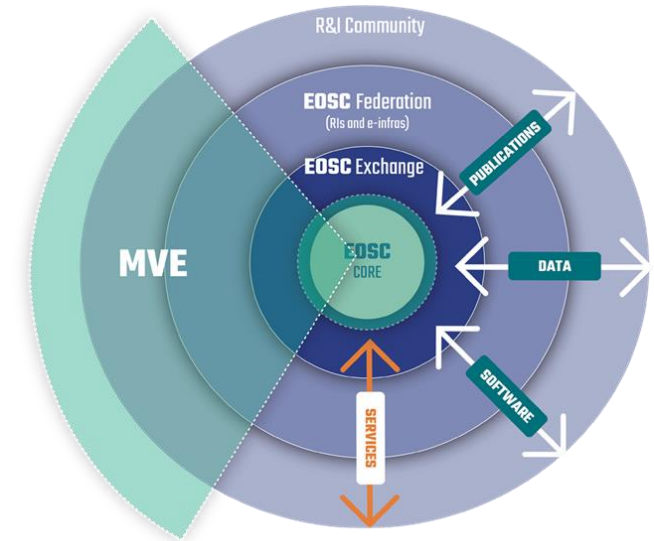
(Source: Monitoring Framework for National Contributions to EOSC | Zenodo)

- Implemented through the new **EOSC Observatory** launched in 2022 as the policy intelligence tool for surveying and monitoring policies, practices, and impacts related to the EOSC. (<https://eoscobservatory.eosc-portal.eu/home>)
- A source of use cases to extend the **EOSC catalogue of best practices** (<https://zenodo.org/record/7574165#.Y9wWC3bMI2w>)

EOSC: where do we plan to be by 2027?

Minimum Viable EOSC operations to serve researchers in Europe are deployed and operated

- Known basic elements being prototyped include:
 - ✓ EOSC Rules of Participation
 - ✓ EOSC Authentication and Authorization Infrastructure
 - ✓ EOSC Policy on Persistent Identifiers and its compliance framework,
 - ✓ EOSC Interoperability Frameworks
 - ✓ EOSC Common search and access engine for FAIR research objects,
 - ✓ EOSC Monitoring and accounting modules
 - ✓ EOSC Security Coordination
- EC procurement for “Managed Services for the EOSC Platform”:
to build and deploy an operational, secure, cloud-based EOSC infrastructure, including a federated EOSC Core platform and EOSC Exchange, offering high quality professional services and superior user experience, for a large number of users, with functionalities available 24/7



EOSC is progressively connected to the wider public sector and the commercial sector through various data spaces

EOSC: where do we plan to be by 2027?

Open science is increasingly becoming the ‘normal’ at European, national and institutional levels

- Open science policies and investments are better **aligned** at European and national levels with demonstrated impact
- Open science **best practices, use cases** and activities are catalogued and disseminated;
- A common open science **monitoring** mechanism is deployed, operated and feeds into the ERA Monitoring Mechanism; baselines and trends on investments, policies, digital research outputs, open science skills and infrastructure capacities related to EOSC are available

EOSC progressively enables a ‘web of FAIR data and services for science’

- Policies are in place which require FAIR to be implemented including through **Data Management Plans**; DMPs are standardized across disciplines and can link to interconnected graph of science events
- **‘FAIRification’** toolkits and quality description frameworks are available for further uptake by the research community
- A network of EOSC-federated, trustworthy **FAIR-enabling repositories** is available

Thank you



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