EU policy drives and EC support to the European Open Science Cloud (EOSC)

EOSC tripartite event by eoscFrance 2023
Montpellier, 13 June 2023

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EOSC support by the European Commission

- Keeping the **policy momentum:** **EOSC as a pillar of the digital transition**
  - ‘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 the Horizon Europe programme**
  - Implementation of **Research Infrastructure Calls:**
    - direct EU investment in EOSC developments of up to €490 million
  - Including also **procurement of EOSC managed services** by the EC
  - **Studies** commissioned by the EC, e.g. the European Research Data Landscape study

- **Continued involvement notably in:**
  - The **EOSC governance** (EOSC Steering Board, EOSC Partnership Board)
  - EOSC **coordination with ERA-Forum, ESFRI** and various **MS-driven think tanks**
  - **EOSC thematic demonstrators and good practices**
    (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’
Some figures about Open Science …

- Scientific publications available in open access (aggregated figure over time) [> 65 % in 2021]
- Authors who retain copyright in contracts with largest subscription journals
- Researchers who occasionally store research data in shared repositories
- Researchers who put FAIR principles into practice
- National public funding for pan-European Research Infrastructures

Sources:
1. Open Science observatory by OpenAIRE [https://osobservatory.openaire.eu/home]
3. ESFRI roadmap 2021
Strategic objectives for Open Science in Europe

- Immediate and unrestricted open access to research outputs
- Responsible research output management, in line with FAIR principles
- Early and open sharing of research: methods, data, preprints
- European ecosystem of research infrastructures that is more effective and efficient, open and accessible, and sustainable
- Open collaboration, within science and with broader public and private sector
Key enablers of Open Science practices

- Open Access & legislative environment
- European Open Science Cloud (EOSC)
- Research Infrastructures
- Science & Society
- Coordination of HE WP on RI and OS policy actions

Research assessment, rewards and skills
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 …
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**

With direct support by:

- **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
Monitoring national contributions to EOSC in 2022-2023

- Based on the **Monitoring framework for national contributions to EOSC**
  - Published in December 2022
    [https://doi.org/10.5281/zenodo.7410762](https://doi.org/10.5281/zenodo.7410762)
  - 3 dimensions * 8 categories

<table>
<thead>
<tr>
<th>Categories</th>
<th>Policies</th>
<th>Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Publications</td>
<td>Countries with a National Policy</td>
<td>Countries with National Monitoring</td>
</tr>
<tr>
<td></td>
<td>Countries with a Financial Strategy</td>
<td>Countries with Use Cases</td>
</tr>
<tr>
<td>Data</td>
<td>Country RPOs with a Policy</td>
<td>Country Investments</td>
</tr>
<tr>
<td>Software Services</td>
<td>Country RFOs with a Policy</td>
<td>Country Outputs</td>
</tr>
<tr>
<td>Infrastructure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skills/Training</td>
<td></td>
<td></td>
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<tr>
<td>Assessment</td>
<td></td>
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<td>Engagement</td>
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Implemented through the **EOSC Observatory** (launched in Nov 2022)
- [https://eoscoobservatory.eosc-portal.eu/home](https://eoscoobservatory.eosc-portal.eu/home)
Overview of EU investments…

**Enabling Open Science**
- Supporting an EOSC-ready digitally skilled workforce
  - Horizon-INFRA-2021-EOSC-01-01 SKILLS4EOSC (7 Mio€)
- Services that underpin a research assessment system that incentivises Open Science
  - Horizon-INFRA-2021-EOSC-01-06 GRASPPOS (8 Mio€)
- Supporting institutional open access publishing across Europe
  - Horizon-INFRA-2022-EOSC-01-02 CRAFTOA (5 Mio€)

**FAIR implementation**
- Deploying EOSC-Core components for FAIR
  - Horizon-INFRA-2021-EOSC-01-03 FAIRCORE4EOSC (10 Mio€)
- Enabling discovery and interoperability of research objects across communities
  - Horizon-INFRA-2021-EOSC-01-05 FAIR-IMPACT (10 Mio€)
- Support to international standards and specifications for open sharing of FAIR research digital objects
  - Horizon-INFRA-2022-EOSC-01-04 RDA TIGER (3 Mio€)
- Planning, tracking and assessing scientific knowledge production
  - Horizon-INFRA-2023-EOSC-01-03 (8 Mio€)
- Improving the quality of scientific software and codes
  - Horizon-INFRA-2023-EOSC-01-02 (8 Mio€)

**Uptake – Use cases**
- FAIR and open data sharing in support of the Cancer Mission
  - Horizon-INFRA-2021-EOSC-01-06 EOSC4CANCER (8 Mio€)
- FAIR and open data sharing in support of the Mission on oceans & waters
  - Horizon-INFRA-2022-EOSC-01-03 BLUE CLOUD 2026 AND AQUAINFRA (16 Mio€)
- FAIR and open data sharing in support of the Mission climate adaptation
  - Horizon-INFRA-2024-EOSC-01-01 (16 Mio€)
- Build on the science cluster approach to ensure EOSC uptake
  - Horizon-INFRA-2023-EOSC-01-01 (25 Mio€)

**EOSC partnership**
- Supporting activities of the European EOSC Partnership
  - Horizon-INFRA-2021-EOSC-01-02 (4 Mio€)
- Supporting activities of the European EOSC Partnership
  - Horizon-INFRA-2024-EOSC-01-02 (4 Mio€)

Long term access and preservation infrastructures and data quality
- Horizon-INFRA-2024-EOSC-01-04 (8 Mio€)

Enabling a network of EOSC federated and trustworthy repositories
- Horizon-INFRA-2024-EOSC-01-03 (5 Mio€)
Commission Communication of 20 February 2020: European Strategy for Data

A common European data space, a single market for data

Data can flow within the EU and across sectors

Availability of high quality data to create and innovate

European rules and values are fully respected

Rules for improving access and use of data are fair, practical and clear & clear data governance mechanisms are in place
Common European Data Spaces

• Driven by stakeholders
• Rich pool of data of varying degree of openness
• Sectoral data governance (contracts, licenses, access rights, usage rights)
• Technical tools for data pooling and sharing

"EOSC is the basis for a science, research and innovation data space that will bring together data resulting from research and deployment programmes and will be connected and fully articulated with the sectoral data spaces."

(European Data Strategy, COM(2020) 66 final)
Data Spaces Support Centre

Create a network of stakeholders
- Closely work with CSAs and projects funded under Digital Europe Programme

Identify common requirements:
- Support the work of the European Data Innovation Board (DGA)

Create a platform for knowledge exchange:
- Support the deployment of data spaces

http://dssc.eu
Smart Middleware to support Data Spaces

Smart Middleware (SIMPL) will be a software stack that provides common services and capabilities to Data Spaces on top of what is offered by the operating systems of Edge and Cloud computing infrastructures.

EOSC federated ‘system of systems’
Scope of the EOSC Procurement Action

EOSC Support Activities

EOSC Exchange

Execution Framework

Other horizontal services

Horizontal services

Core coordination functions

Core technical platform

Input from the EOSC Future project public deliverables
https://eoscfuture.eu/library/

Scope of the EOSC Procurement Action
Scope of the EOSC Procurement Action

**EOSC Support Activities**

- EOSC Exchange Thematic/Regional Services
  - EOSC Exchange Thematic Cluster A
  - EOSC Exchange Regional Cluster B
  - Other

- EOSC Interoperability Framework

- EOSC Exchange Horizontal Services
  - APIs and Web Interfaces
  - EOSC Exchange Infrastructure Services
  - EOSC Exchange Application Services
  - EOSC Exchange Value-add Serv.
  - EOSC Exchange eInfra Serv.

**Procurement Lot Structure**

- **Lot 1**: Managed Services for the Development, Integration, Deployment and Operations of the Federated EOSC Core
- **Lot 2**: Managed Container Platform and Virtual Machine Services for the EOSC Exchange (Infrastructure Services)
- **Lot 3**: Managed Collaborative Data Platform, Interactive Data Analytics Platform and Visualization Services for the EOSC Exchange (Application Services)
Looking ahead…

**HORIZON-INFRA-2023-EOSC-01-04**
Innovative and customizable services for EOSC Exchange

**HORIZON-INFRA-2023-EOSC-01-05**
Next generation services for operational and sustainable EOSC Core Infrastructure

**HORIZON-INFRA-2023-EOSC-01-06**
Trusted environments for sensitive data management in EOSC

**HORIZON-INFRA-2022-EOSC-Procurement-IV&V**

**HORIZON-INFRA-2022-EOSC-Procurement**

**HORIZON-INFRA-2024-EOSC-01-05**
Innovative and customizable services for EOSC Exchange

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**H2020-INFRAEOSC-07-2020**
C-SCALE, DICE, EGI-ACE, OPENAIRE Nexus, RELIANCE

**H2020-INFRAEOSC-03-2020**
EOSC Future
Thank you

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