



# EOOSC and the EOOSC Association

**Karel Luyben**

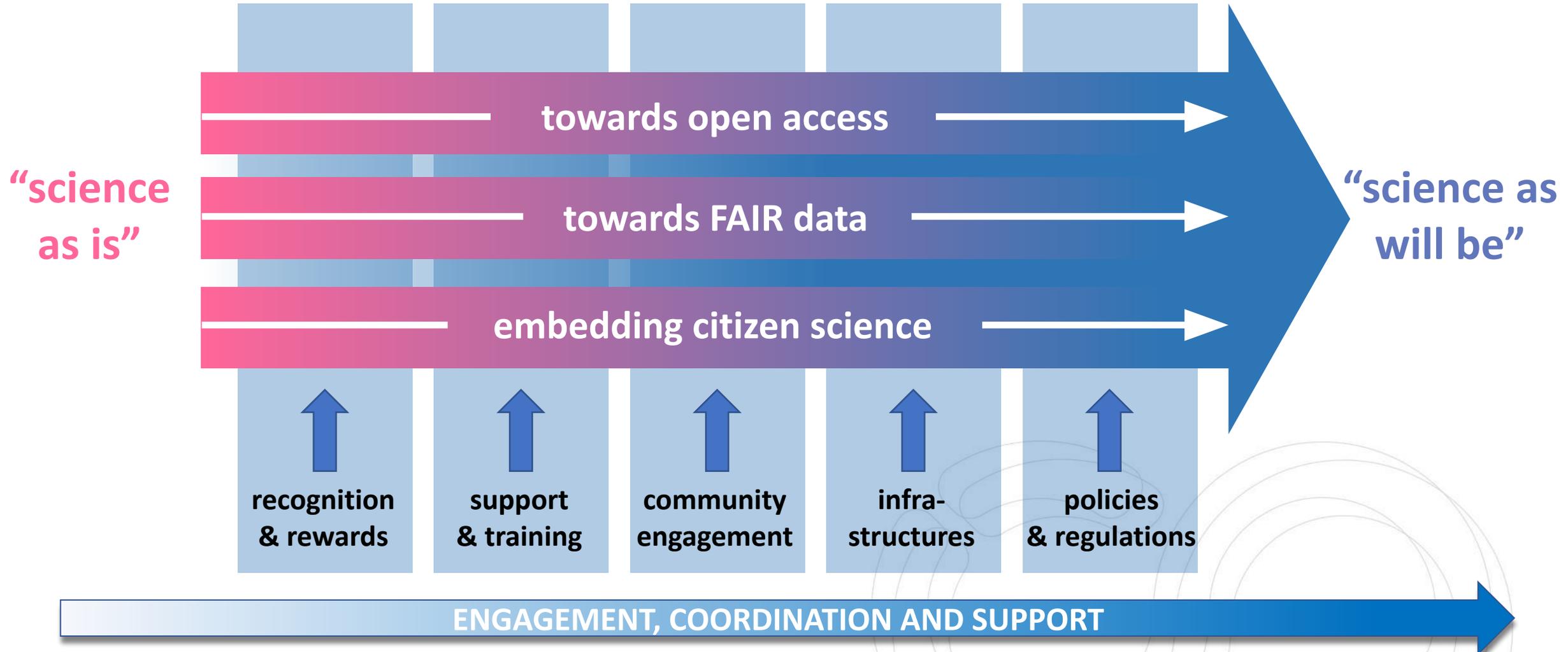
President EOOSC Association

**Spanish National Tripartite Event**

**19 September 2023, Madrid**

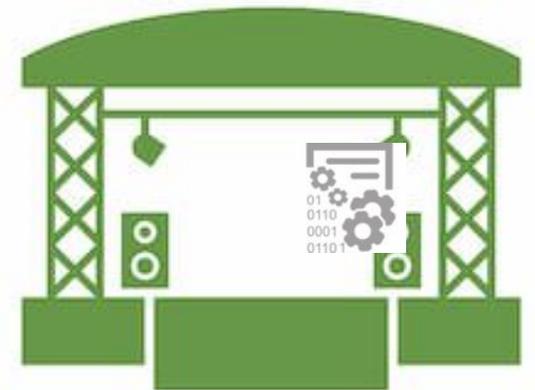


# Open Science



# “A web of scientific insight”

- **Web of FAIR Data and related Services**
- **Federation of relevant existing and future data sources**
- **Virtual space where science producers and consume**
- **An open-ended range of content and services**
- **Based on the FAIR principles**
- **Meeting all European data requirements**
- **In interaction with other regions of the world**



 **EOSC - additionality to the web of FAIR data**

**EUROPEAN OPEN SCIENCE CLOUD**

**WORLD WIDE WEB**

**INTERNET**

**NETWORKS**

**COMPUTERS**

Modelled after: World Wide Web - Wikipedia

# **EOSC** **Twinning EOSC and the e-infrastructures**

**EOSC is to be an infrastructure and could be seen as a twin sister (or brother) of the European e-infrastructure organisations.**

**The last offering the store, compute and connect services used by EOSC to offer the servicing of data and creating interoperability.**

**The combination forms the EOSC-ecosystem (yin / yang).**



# **Ten things EOSC is not ...**

**... a cloud infrastructure**

**... synonymous to Open Science**

**... the EOSC Portal**

**... the EOSC Association**

**... a new research data repository or data management system**

**... owning the data it will help to provide access to**

**... a new pan-European e-infrastructure**

**... substitution of any existing data- or (e-)infrastructures**

**... directly for individual researchers, but it is for research**

**... in competition with anything or anybody**

# Guiding principles for EOSC

The **overarching** principle for developing EOSC is that research has to be at the centre of the EOSC initiative.

- **Multi-stakeholderism**

EOSC will succeed if and only if it follows a multi-stakeholder approach;

- **Openness**

EOSC will ensure research artefacts be 'as open as possible, as restricted as necessary';

- **FAIR principles**

EOSC research artefacts need to be findable, accessible, interoperable and reusable;

- **Federation of infrastructures**

EOSC will federate existing and upcoming data- and e-infrastructure;

- **Machine-actionable**

EOSC will ensure that machines can find, access and interoperate on data helping people in servicing the needs of European scientists.

## Important requirements for EOSC to deliver

- Relevant data
- Sufficiently rich metadata
- Search mechanism
- Software (often self made)
- Compute power (usually available)
- Storage (usually available)
- Access
- Automatic referencing
- .....



# eosc Where do we stand?

- After an initial period of many projects without much convergence (2015-2020) we have to see that we get our aims sufficiently developed in the present period of convergence (2021-2026).
- For this it is essential that we get a Minimal Viable EOSC (MVE / EOSC-EU-node) operational asap and as good as possible aligned with work done by all the relevant communities (European, National and Institutional).



# Position of EOSC according to the European Commission

*Taken from EC slides*

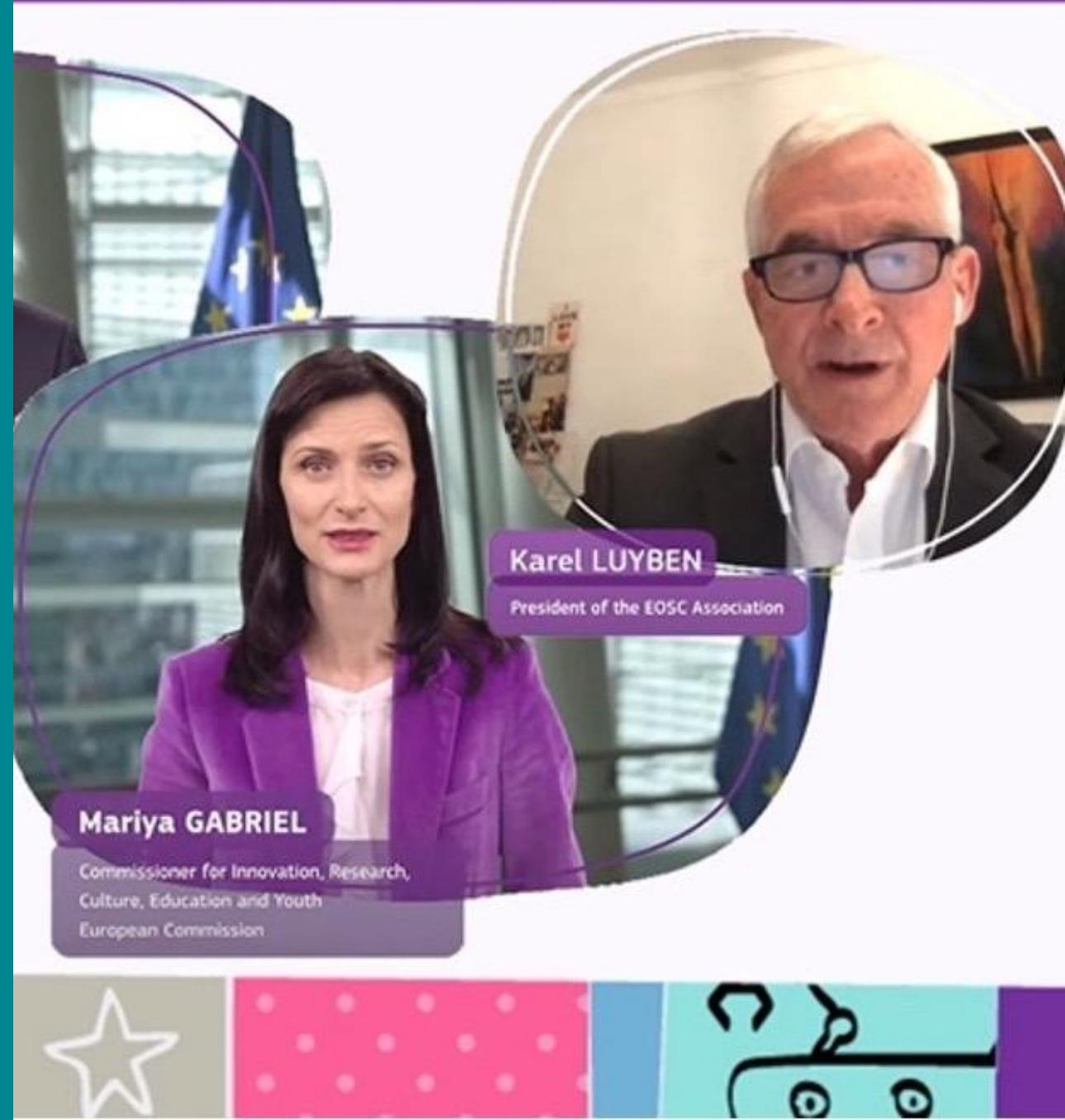


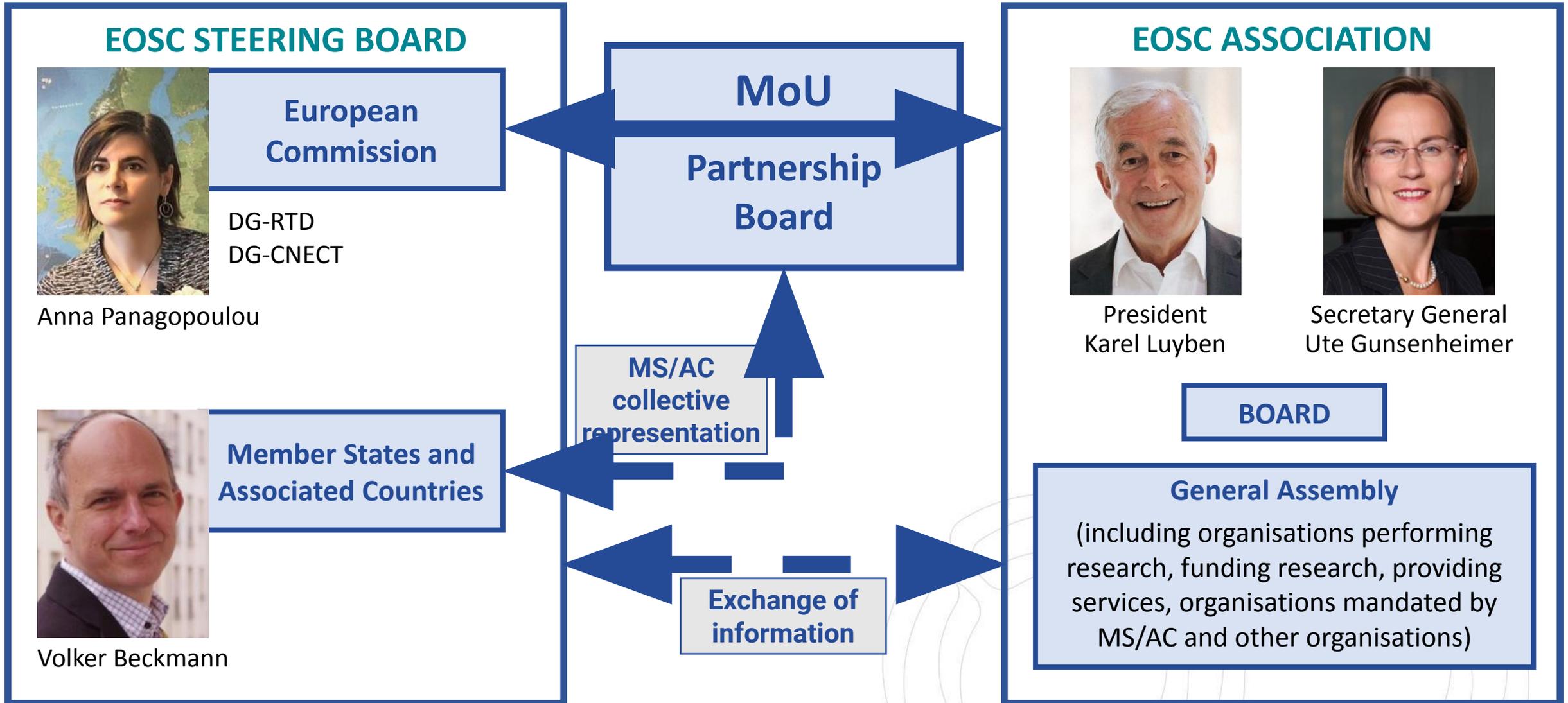
“EOSC is the basis for a science, research and innovation data space that will bring together data resulting from research and deployment programmes and will be connected and articulated with the sectoral data spaces”

*(European Data Strategy, COM(2020) 66 final)*

# Horizon Europe co-programmed EOSC Partnership

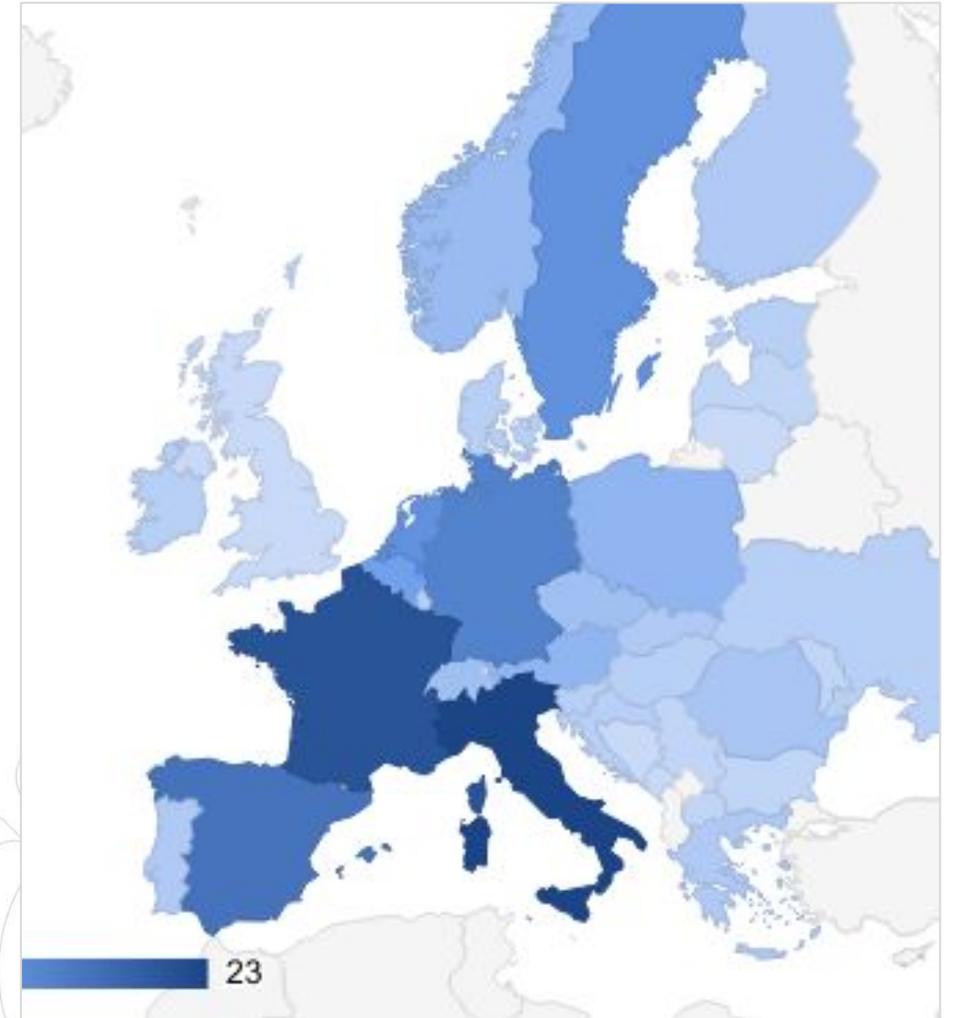
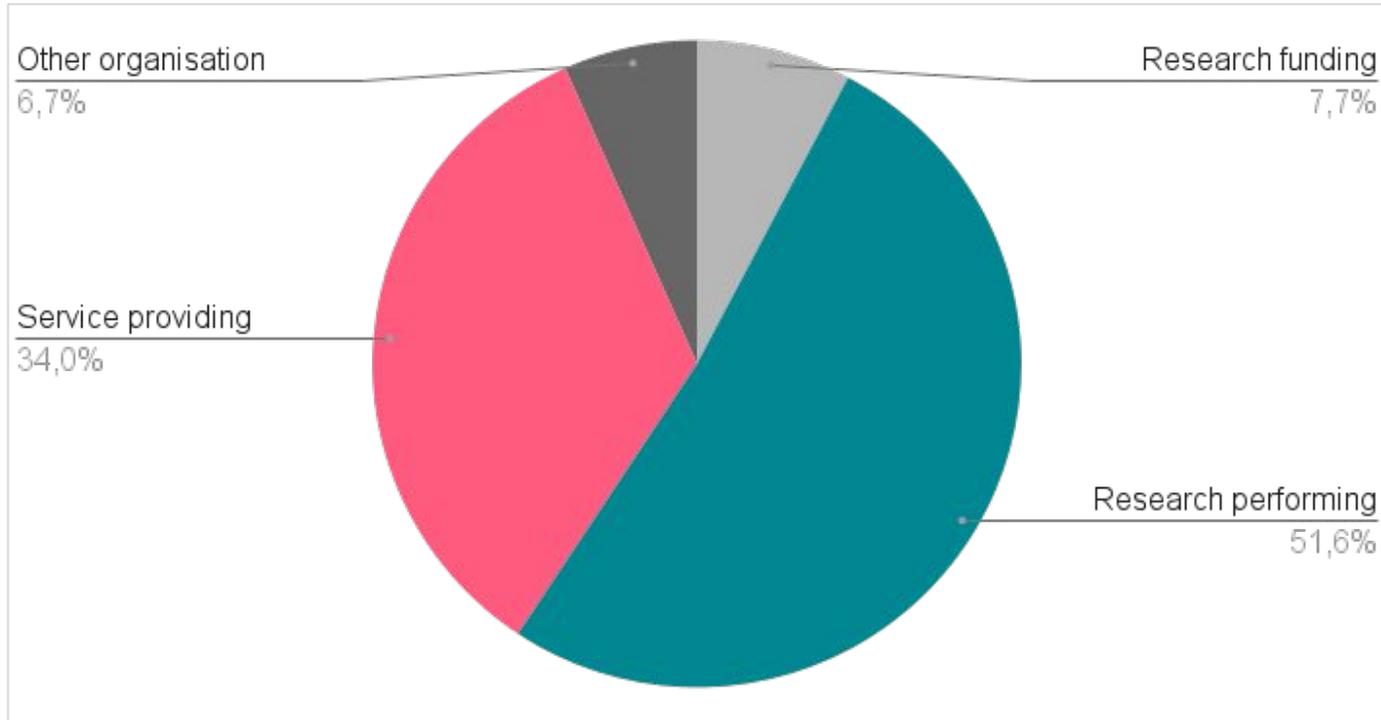
- Launched June 2021
- One billion euros commitment by the European Union and the EOSC Association





# eosc 171 Members and 85 Observers

A strong memberbase



# Division of Task Forces over the advisory groups

## Technical challenges on EOSC

- Technical interoperability of data and services
- Infrastructure for quality research software
- AAI Architecture
- Long-term data preservation



## Metadata and data quality

- Semantic interoperability
- FAIR metrics and data quality
- PID policy and implementation



## Research careers and curricula

- Data stewardship curricula and career paths
- Research careers, recognition and credit
- Upskilling countries to engage in EOSC
- Researcher engagement and adoption



## Sustaining EOSC

- Financial sustainability
- Rules of Participation compliance monitoring



# eosc ESFRI RI Working Group

## Evolving Collaboration

1. Coordinated contribution to MAR 2025 – 2027 consultation
2. Ongoing discussion regarding participating with nodes

**The ESFRI Research Infrastructures have addressed similar questions in the preparation and deployment of their infrastructures and can bring valuable experience to the cross-discipline and transnational generalisation that the EOSC platform represents.**

EOSC-A member RI name	RI Domain
EBRAINS	DIGIT
PRACE	DIGIT
LifeWatch ERIC	ENV
BBMRI ERIC	H&F
EATRIS ERIC	H&F
ELIXIR	H&F
ERINHA	H&F
Euro-BioImaging ERIC	H&F
INSTRUCT ERIC	H&F
ELI ERIC	PHYS
ESRF EBS	PHYS
European Spallation Source ERIC	PHYS
European XFEL	PHYS
FAIR	PHYS
HL-LHC	PHYS
ILL	PHYS
CESSDA ERIC	SCI
CLARIN ERIC	SCI
DARIAH ERIC	SCI
ESS ERIC	SCI
OPERAS	SCI

# eosc Steering Coordination to Leverage the Ecosystem

## Stakeholder Engagement

Policy makers

Research funders

Research performers

Service providers

Projects

Researchers

Etc.



Awareness

Policies

FAIR Data

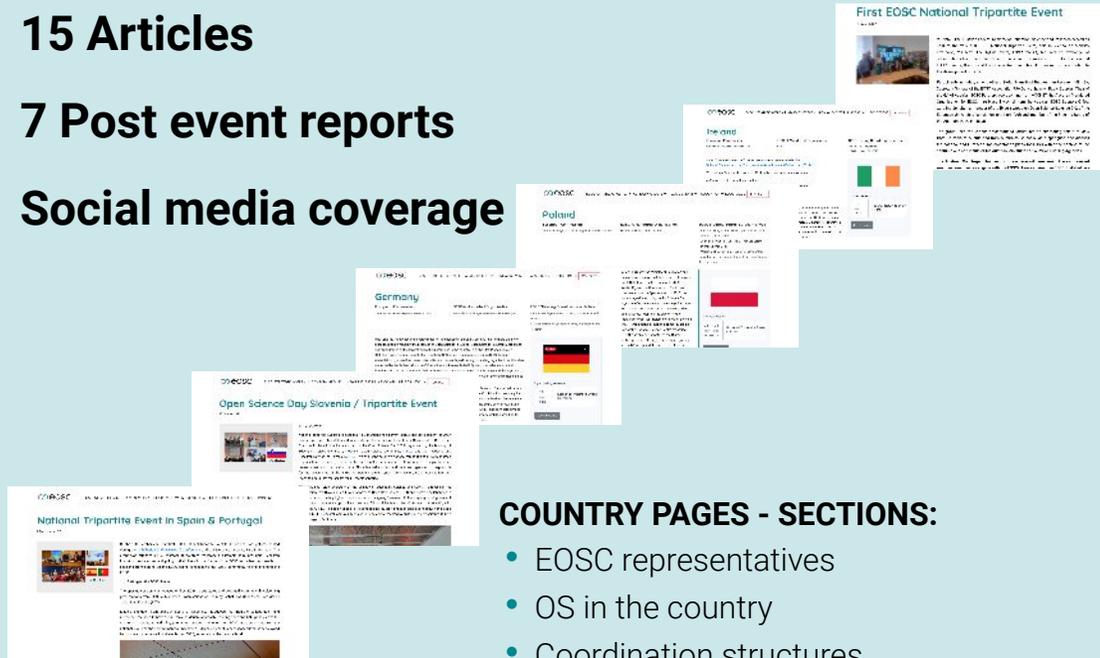
Infrastructure

Services

Results

# National Tripartite Events

- 24 countries targeted in NTE
- 2101 participants in National and NTE
- + 35 preparatory meetings
- 31 country pages
- 15 Articles
- 7 Post event reports
- Social media coverage



### COUNTRY PAGES - SECTIONS:

- EOSC representatives
- OS in the country
- Coordination structures
- Policies
- Practices & Use Cases

2022



1293

Participants

177

Speakers & moderators

16

Countries targeted

March – June 5<sup>th</sup> 2023



808  
Participants

8  
Countries targeted

## TRIPARTITE EVENTS (June - September 2023)



## Strategic Research and Innovation Agenda



Open Science practices and skills are rewarded and taught, becoming the 'new normal'

Standards, tools and services allow researchers to find, access, reuse and combine results

Sustainable and federated infrastructures enable open sharing of scientific results

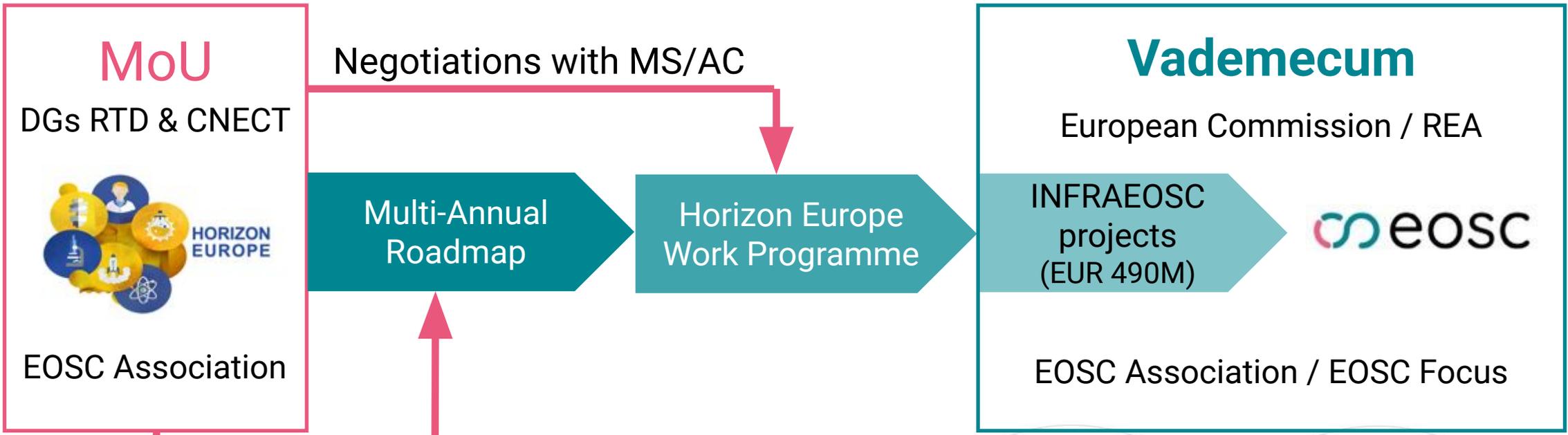
Multi-annual roadmap sets priority activities and outcomes grouped by three implementation levels – European, National, Institutional

### Three phases of MAR

- 2021-2022: development towards a functional federation of infrastructure
- 2023-2024: expansion to production that generates added value
- **2025-2027: expansion to develop impact from Open Science**

# eosc Delivering EOSC – the Process

The critical role of the INFRAEOSC Projects



Present action: MAR 2025 - 2027



## Tasks for EOSC Association to see to:

- Outreach to stakeholders
- Manage the 'EOSC' trademark(s)
- Monitor additional activities and KPI
- Contribute to Horizon Europe ERA Actions
- Further develop and govern the EOSC EU node
- Manage the AAI
- Manage PID policies
- Manage an Interoperability Framework
- Manage the compliance framework

# EOSC 'helicopter view'

Slide from M. Schouppe (EC)

EOSC-SB meeting #16, Stockholm, 26 April 2023,  
and 24 May 2023 Tripartite event on EOSC post-2027

## Main EOSC tasks for the future

**Task 1:** Deploying and operating the EOSC EU node  
(Core, Exchange, FAIR Data Federation)

**Task 2:** Maintaining and updating the EOSC EU node and  
expanding the EOSC federation  
(with elements that are close to the 'market')

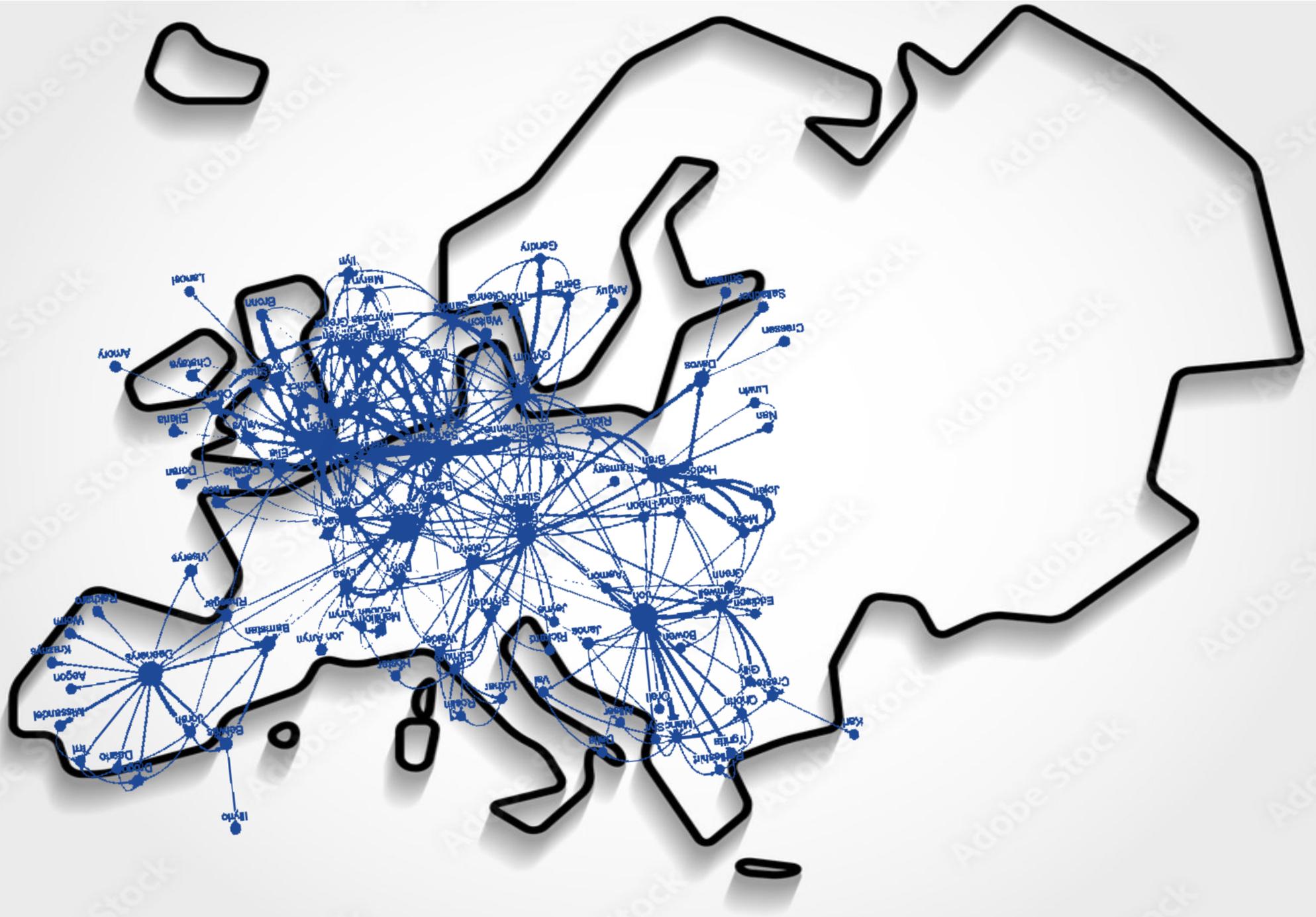
**Task 3:** Enabling a 'web of FAIR data and services' for  
science

**Task 4:** Develop, prototype and test new elements  
supporting the evolution of the EOSC Core and  
Exchange and the tools enabling the federation  
(elements that can be made ready for the 'market')

**Task 5:** Enabling Open Science policies and the uptake of  
Open Science practices

eosc Outlook to the future





# EOSC on a global stage

- **EOSC Association works with other regional initiatives towards common goals for Open Science, driving global convergence on standards in support of the implementation of an open science commons**
- **EOSC Association has involvement in GORC, GOSC and OSCER**
- **Service providers from third countries will be able to participate in EOSC, if they adhere to the EOSC Rules of Participation and applicable legislation**





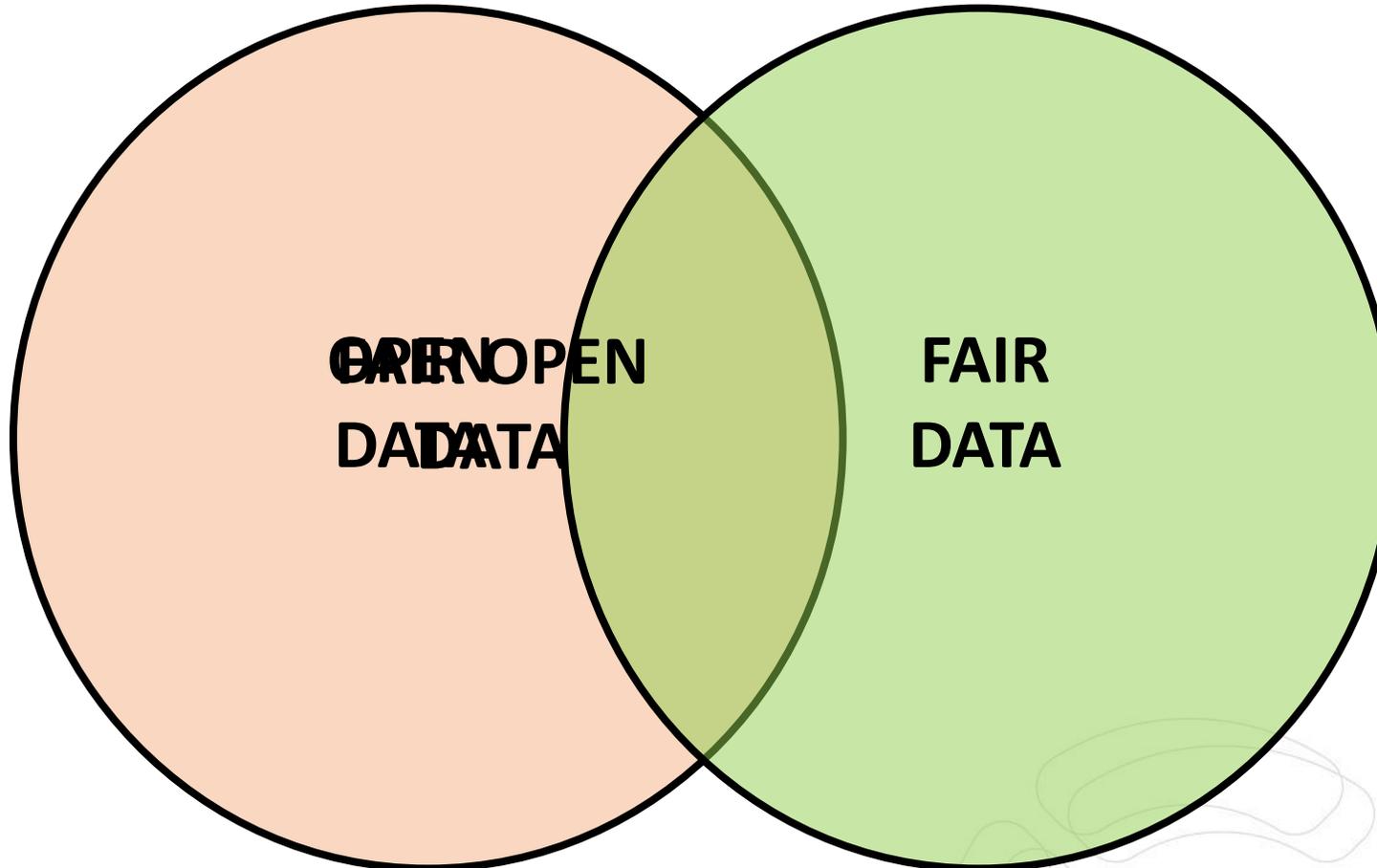
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# **THANKS**



# OPEN DATA and/or FAIR DATA



**FAIR** ≡  
Findable  
Accessible  
Interoperable  
Reusable

Towards “as FAIR as possible” and “as open as possible”

# eosc Horizon Europe Work Programme

From **Sep 2022 DRAFT** “HE Research Infrastructure Work Programme 2023-2024”

INFRA-2023-EOSC-01	Type of Action	New Budget in MEUR	Old Budget in MEUR
● Build on the science cluster approach to ensure the uptake of EOSC by research infrastructures and research communities	RIA	<b>25.00</b>	24.00
● Development of community-based approaches for ensuring and improving the quality of scientific software and code	RIA	<b>8.00</b>	8.00
● Planning, tracking, and assessing scientific knowledge production	RIA	<b>8.00</b>	10.00
● Next generation services for operational and sustainable EOSC Core Infrastructure	RIA	<b>10.00</b>	10.00
● EOSC Architecture and Interoperability Framework	CSA	<b>3.00</b>	4.00
● Trusted environments for sensitive data management in EOSC	RIA	<b>15.00</b>	8.00
<b>Total Budget</b>		<b>69.00</b>	<b>64.00</b>

● = MAR 2023-2024 related

“Old Budget”  
from March 2022

# eosc Horizon Europe Work Programme

From **Sep 2022 DRAFT** “HE Research Infrastructure Work Programme 2023-2024”

INFRA-2024-EOSC-01	Type of Action	New Budget in MEUR	Old Budget in MEUR
 FAIR and open data sharing in support of the mission adaptation to climate change	RIA	<b>16.00</b>	8.00
 Supporting the EOSC Partnership in further consolidating the coordination and sustainability of the EOSC ecosystem	CSA	<b>4.00</b>	3.00
 Enabling a network of EOSC federated and trustworthy repositories and enhancing the framework of generic and discipline specific services for data and other research digital objects	CSA	<b>5.00</b>	5.00
 Long-term access and preservation infrastructure development for EOSC, including data quality aspects	RIA	<b>8.00</b>	8.00
 Innovative and customizable services for EOSC Exchange	RIA	<b>28.00</b>	7.00
<b>Total Budget</b>		<b>61.00</b>	<b>31.00</b>

 = MAR 2023-2024 related

“Old Budget”  
from March 2022

# eosc What do we concretely aim for?

- Research data produced by publicly funded research in Europe is as FAIR as possible, preferably by design;
- Researchers performing publicly funded research to make relevant results available, as openly as possible;
- Professional data stewards to be available in research-performing organisations in Europe to support RDM for Open Science;
- The EOSC Interoperability Framework supporting a wide range of FAIR digital objects including data, software and other research artefacts;
- EOSC (version x) is operational and provides a stable infrastructure, supporting the research process and helping to address societal challenges;
- EOSC Federation to be populated with a valuable corpus of interoperable data;
- The scope of EOSC is widened to serve the public and private sectors;
- EOSC to become a valuable and valued resource to a wide range of users from the research and education, public and private sectors (including for-profit).

# 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

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

**As described in the Strategic Research and Innovation Agenda (SRIA)**

# Tasks on the way to create EOSC

Operational and development tasks in discussion with the EC

1. Deploying and operating the EOSC EU node  
(Core, Exchange, FAIR Data Federation)
2. Maintaining and updating the EOSC EU node and expanding the EOSC federation  
(with elements that are close to the 'market')
3. Enabling a 'web of FAIR data and services' for science
4. Develop, prototype and test new elements supporting the evolution of the EOSC Core and Exchange and the tools enabling the federation  
(focus on elements that can be made ready for the 'market')
5. Enabling Open Science policies and the uptake of Open Science practices



# Getting ahead of the curve and advancing to the next level, means:

- Take advantage of ongoing EU and national policy making
- Understand the evolving objectives of the funders of this transition
- Realise that FAIR is the most important requirement;
- Educate staff and 'train the trainer';
- Create 'Data/Digital Competence Centres';
- Connect to other relevant initiatives at domain-specific levels as well as on the national level
- Join this powerful movement to make