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TRIPLE Open Science Training Series

EOSC: State of the Art and Perspectives

June 29th 2021

The project is funded by the European Commission, under Grant Agreement No. 863420

TRIPLE Open Science Training Series

Some info on today's webinar

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Q&A session at the end. Questions are very welcome: please send them in the chat during the webinar

I'll take care on collecting and presenting them to our speakers.

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TRIPLE Open Science Training Series

EOSC: State of the art and perspectives

Suzanne Dumouchel

Member of the Board of Directors of the EOSC Association.; Head of European Cooperation at Huma-Num (Paris)

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- How the EOSC governance is changing?
- What are the next steps for the EOSC implementation?

moderated by Erzsébet Tóth-Czifra (DARIAH-EU)

https://hu.linkedin.com/in/erzs%C3%A9bet-t%C3%B3th-czifra-1537086b - @etothczifra

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EOSC: State of the art and perspectives

A little warm-up:

Got to menti.com and use the code: **4216 8053**

Our first question is: **What do you think the EOSC is primarily about?**

EOSC: State of the art and perspectives

Which of the following topics are you especially interested in?

1) Organisation of the EOSC
2) How to contribute to EOSC
3) EOSC Actors
4) Other? What?

Do you prefer to start with a generic presentation of EOSC or do you prefer to discuss the specific topics right away?

EOSC: state of the art and perspectives

Suzanne Dumouchel | **CNRS** | June, 29 |

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Transforming Research Through Innovative Practices for Linked Interdisciplinary Exploration

TRIPLE was launched in October 2019.
It will be one of the dedicated services of OPERAS, the Research Infrastructure supporting open scholarly communication in the social sciences and humanities (SSH) in the European Research Area.

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Outline

- EOSC ecosystem: a complex organisation
  - EOSC actors
  - EOSC Partnership
  - EOSC Association governance
  - EOSC projects (H2020 and HE programs)
- Contributing to the EOSC and making it operational:
  - EOSC Association Task Forces
  - ESFRI and Science clusters
  - Towards a successful implementation
- EOSC Future in this landscape

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EOSC ecosystem: a complex organisation

EOSC Actors
EOSC Partnership
EOSC Association governance
EOSC projects (H2020 and HE programs)

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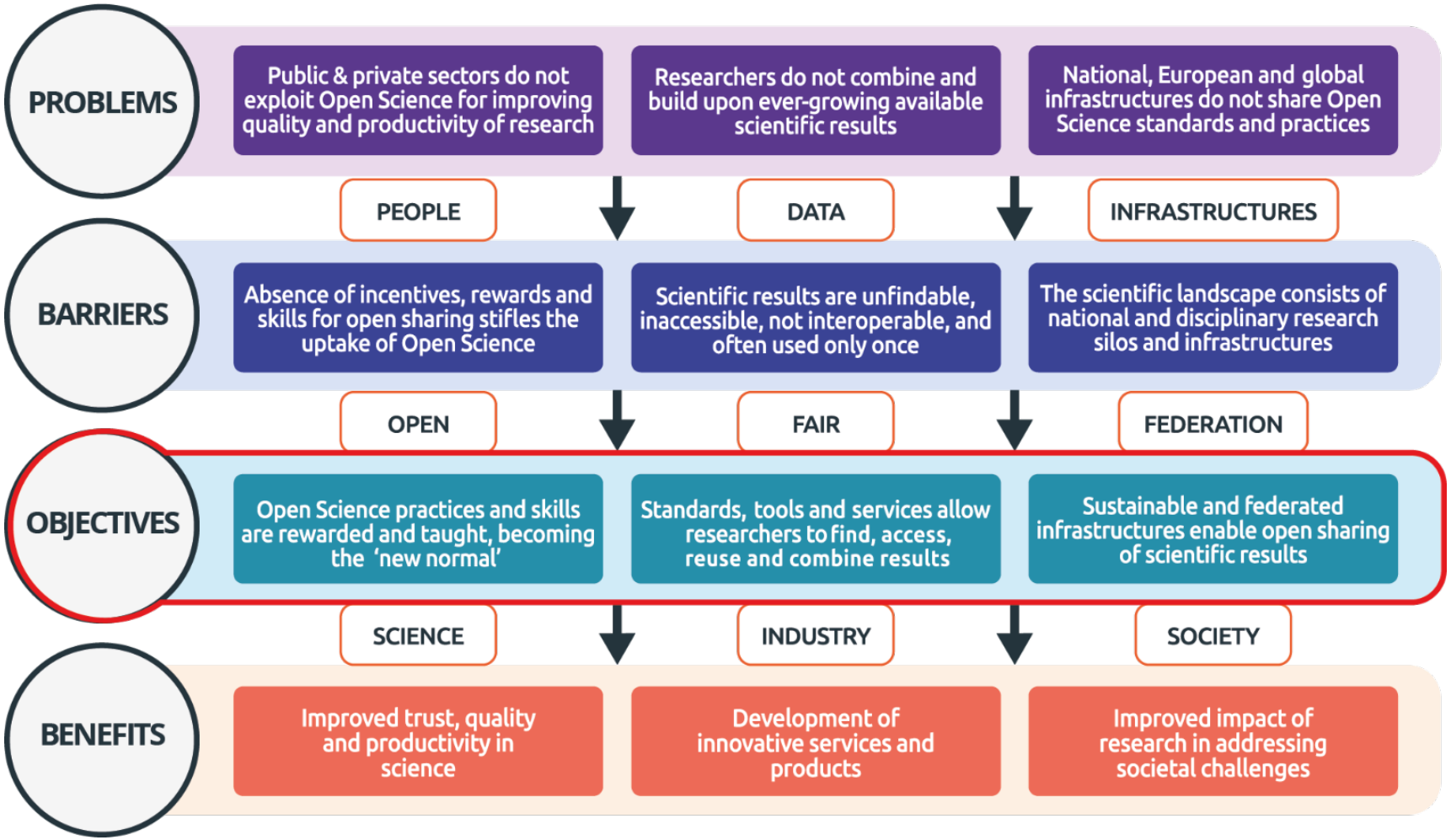
European Open Science Cloud Objectives Tree



(EOSC Strategic Research Implementation Agenda v1.0)

Where do we come from?

- The shared vision between the EC, MS&AC and a large community
- The decision of the governing bodies to institute a Co-programmed Partnership as the best instrument to collectively achieve this vision

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EOSC Actors

- European and national levels
- Generic and domain-specific
- Strategic, political
- Private
- Types (…ies, research infrastr…es, network, projects, etc.

Every aspect adds another layer of complexity
Incredible amount of time to build consensus and move forward

Need to coordinate and federate at each level in each perspective to reach a common goal

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EOSC Governance Model 2021-2027

The new governance model agreed with EU countries for the next EOSC implementation phase after 2020 will be tripartite including:

- The EU represented by the **Commission**
- The European research community represented by the **EOSC Association**
- EU countries and countries associated with Horizon Europe represented through a **Steering Board** to be set up in 2021 outside of the EOSC Association

EOSC Partnership

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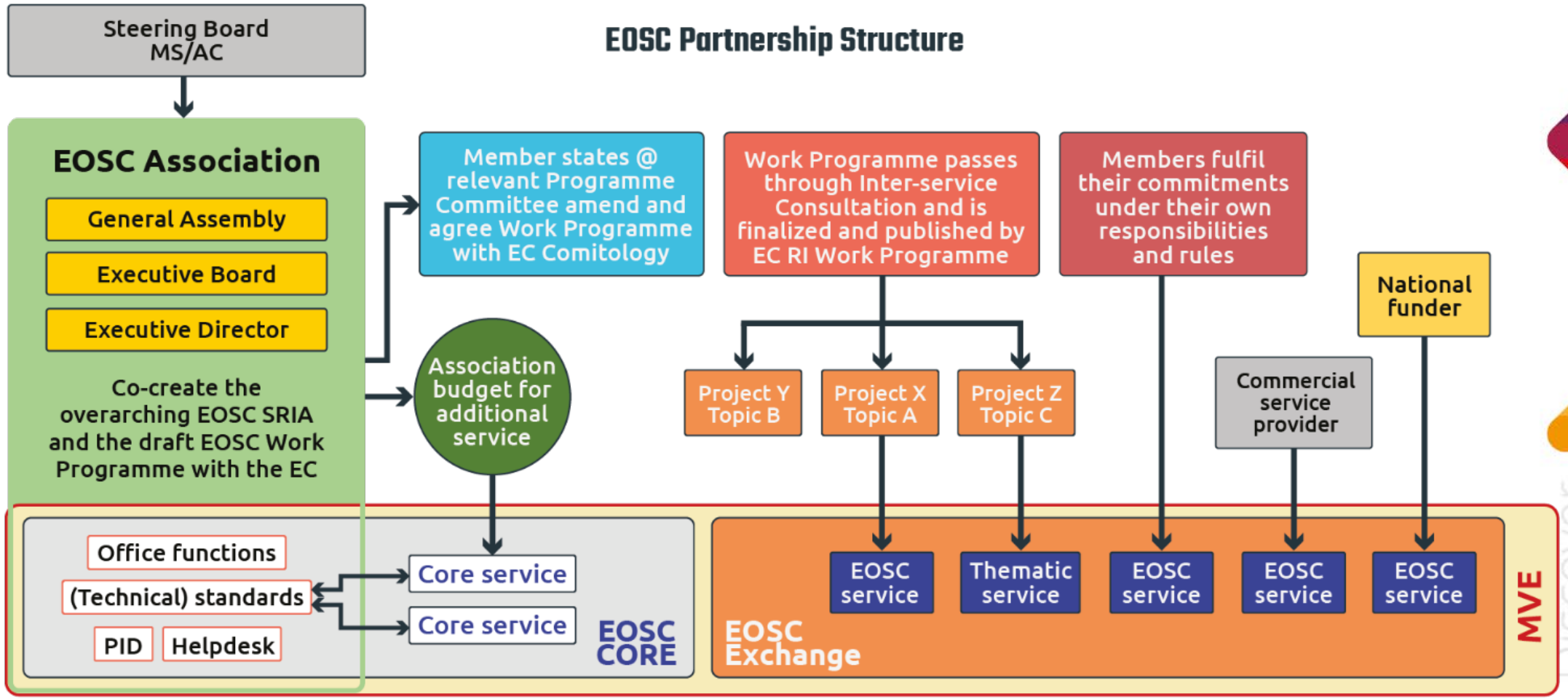
EOSC Partnership Structure



EOSC Partnership – MoU (I)

- A Memorandum of Understanding (MoU) established between the Partners
  - ✔ The EU represented by the Commission
  - ✔ The EOSC Association ("Partners other than the Union"), including its constituent entities (members)
- This MoU is a contractual arrangement, not legally binding
- Scope & objectives of the MoU
  - ✔ Activities and commitments of the Commission (mainly through Horizon Europe actions)
  - ✔ Activities and commitments of the EOSC Association (mainly through additional activities)
- Governance: Partnership Board
  - ✔ Composition: Representatives appointed by the Partners other than the Union, Commission officials and Representatives of the Steering Board
  - ✔ Rules of Procedure of the Partnership Board to be drafted based on a proposal by the Commission
- Duration: from signature date until 31.12.2030

EOSC Partnership – MoU (II)

- Activities and commitments of the Commission
  - ✔ Take into account the input and advice from the EOSC Association when identifying & defining call topics for R&I activities to be included in the Work Programmes
  - ✔ Contribute through the Work Programmes
- Activities and commitments of the EOSC Association
  - ✔ Provide input and advice to the Commission
  - ✔ In-kind contributions in Horizon Europe actions
  - ✔ In-kind contributions in additional activities
  - ✔ Investments in operational activities
- Openness and Transparency, Dissemination, Coordination
- Monitoring and reporting
  - ✔ The partners will set up and implement an effective reporting and monitoring system, using
  - ✔ A list of Key Performance Indicators

EOSC Partnership General Objectives

General objectives

- GO1: Ensure that Open Science practices and skills are rewarded and taught, becoming the ‘new normal’;
- GO2: Enable the definition of standards, and the development of tools and services, to allow researchers to find, access, reuse and combine results;
- GO3: Establish a sustainable and federated infrastructure enabling open sharing of scientific results.

EOSC Partnership Specific Objectives

Specific objectives (1)

SO1: Increase in the number of relevant research results that are made available as open as possible by researchers performing publicly funded research;

SO2: Professional data stewards are increasingly available in research performing organisations in Europe to support Open Science;

SO3: Development and adoption of incentives for researchers to perform Open Science;

SO4: Increasing amounts of research data produced by publicly funded research in Europe are FAIR by design;

SO5: The EOSC Interoperability Framework supports an increasing range and quantity of FAIR digital objects including data, software and other research artefacts;

EOSC Partnership Specific Objectives

Specific objectives (2)

SO6: Provide an increased number of services and resources to ensure that European research is discovered and reused within and across disciplines to extract new knowledge;

SO7: EOSC is operationalised and provides a stable and valuable infrastructure supporting researchers addressing societal challenges;

SO8: Essential additional functionalities for end users from the public and private sectors are implemented in EOSC (these developments are complementary to those of other European data spaces);

SO9: EOSC increasingly establishes ties with related initiatives from regions around the world and becomes a partner in global cooperation frameworks for Open Science;

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EOSC Partnership KPI's (examples)

SRIA Objective	KPI	Target	Direct (D) / Survey (S)
Ensure that Open Science practices and skills are rewarded and taught, becoming the 'new normal'	Percentage of publications from EOSC Association research-performing members that become immediate open access	70% by 2023	D
	Number of national education systems that recognise European curricula for data stewardship	5 by 2025	S
	Percentage of RPOs that are EOSC Association members that have data stewards to support their research	50% by 2025	S
	Percentage of EOSC Association members that recognise Open Science activities in research career assessments	50% by 2025	S
	Percentage of research-funding members of the EOSC Association that require data sharing and incentivise reuse	70% by 2025	S

Signature of the EOSC Partnership the 23rd of June at the RIDays

EOSC Association's signature marked the launch of the #EOSC Partnership which aims to deploy and consolidate an open, trusted virtual environment to enable European researchers to store, share and reuse #researchdata across borders and disciplines by 2030.

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EOSC Association

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EOSC Association: Mission

Advancing the European Open Science Cloud to accelerate the creation of new knowledge, inspire education, spur innovation and promote accessibility and transparency

- To provide a single voice for advocacy and representation for the broader EOSC stakeholder community in Europe
- To promote the alignment of European Union research policy and priorities with activities coordinated by the Association (SRIA)
- To ultimately enable seamless access to data through interoperable services that address the entire research data life cycle, from discovery to storage, management, analysis and re-use across borders and scientific disciplines

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EOSC Association: Milestones

- Four founding members (CESAER, GÉANT, GARR, CSIC)
- Was incorporated as AISBL on Wednesday 29th July 2020
- Obtained Royal Decree on Friday 11th September 2020
- First General Assembly on 17-12-2020 elected President and Board
- Research Performing; Research Funding and Service Providing organisations
- Now ~ 150 members and ~ 60 observers (62% - 8% - 30%) (May 2021)
- Joining the EOSC Association = Joining the EOSC Partnership!

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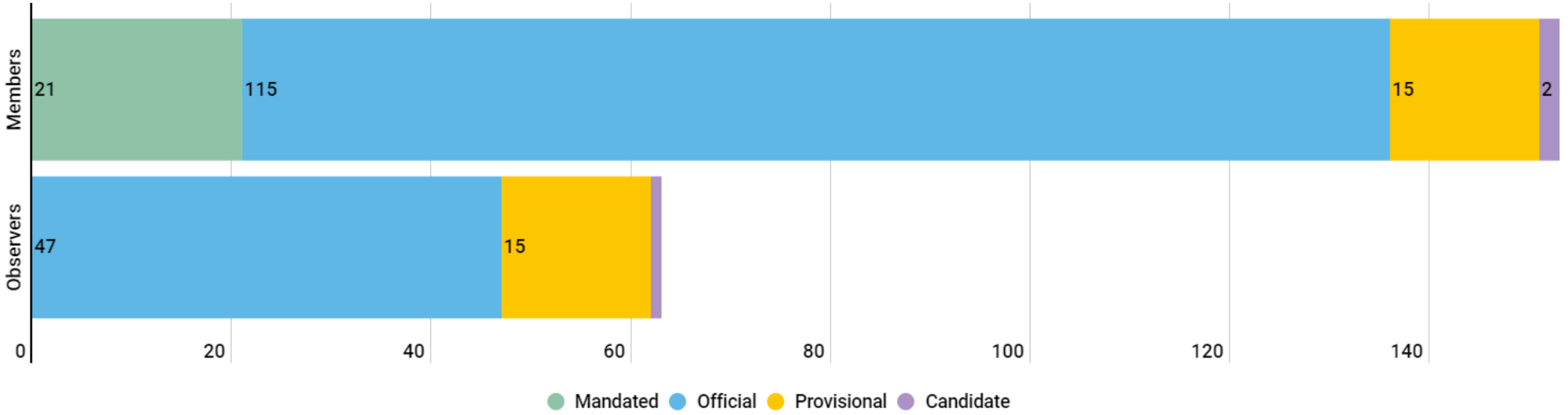
EOSC membership by status



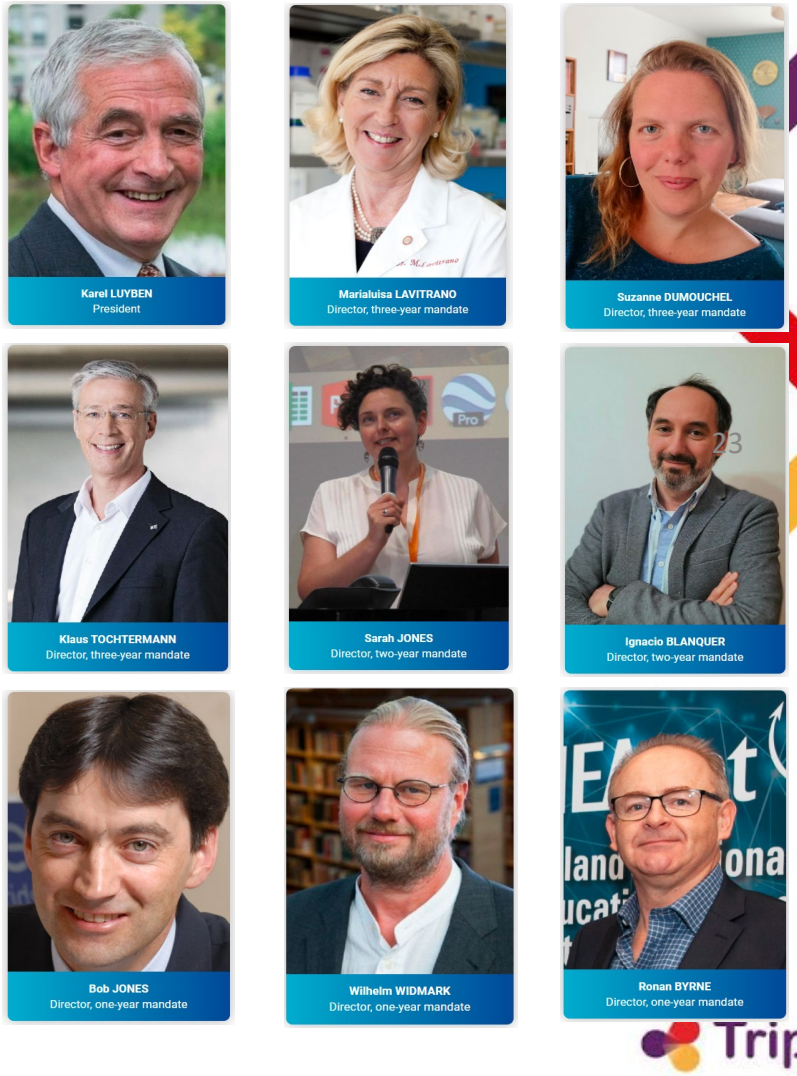
As of the end of April 2021

Members: 153

Observers: 63

Board of Directors

- Karel Luyben, CESAER & President
- Klaus Tochtermann, ZBW & Director 3-year mandate
- Marialuisa Lavitrano, University Milano – Bicocca & Director 3-year mandate
- Suzanne Dumouchel, CNRS & Director 3-year mandate
- Sarah Jones, GÉANT & Director 2-year mandate
- Ignacio Blanquer, UPV & Director 2-year mandate
- Ronan Byrne, HEAnet & Director 1-year mandate
- Bob Jones, CERN & Director 1-year mandate
- Wilhelm Widmark, University of Stockholm & Director 1-year mandate



EOSC projects

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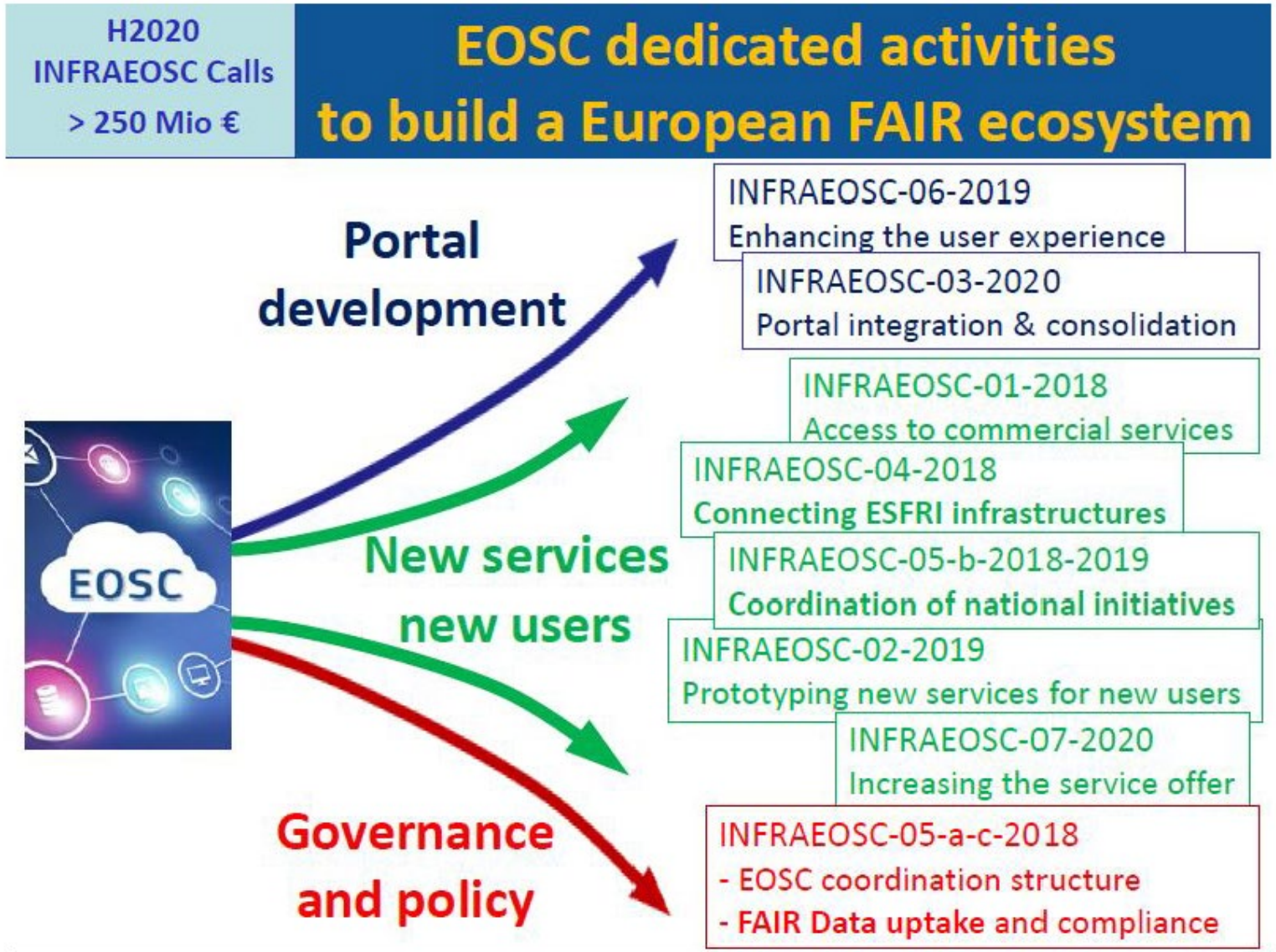
EOSC related projects - Under H2020 program



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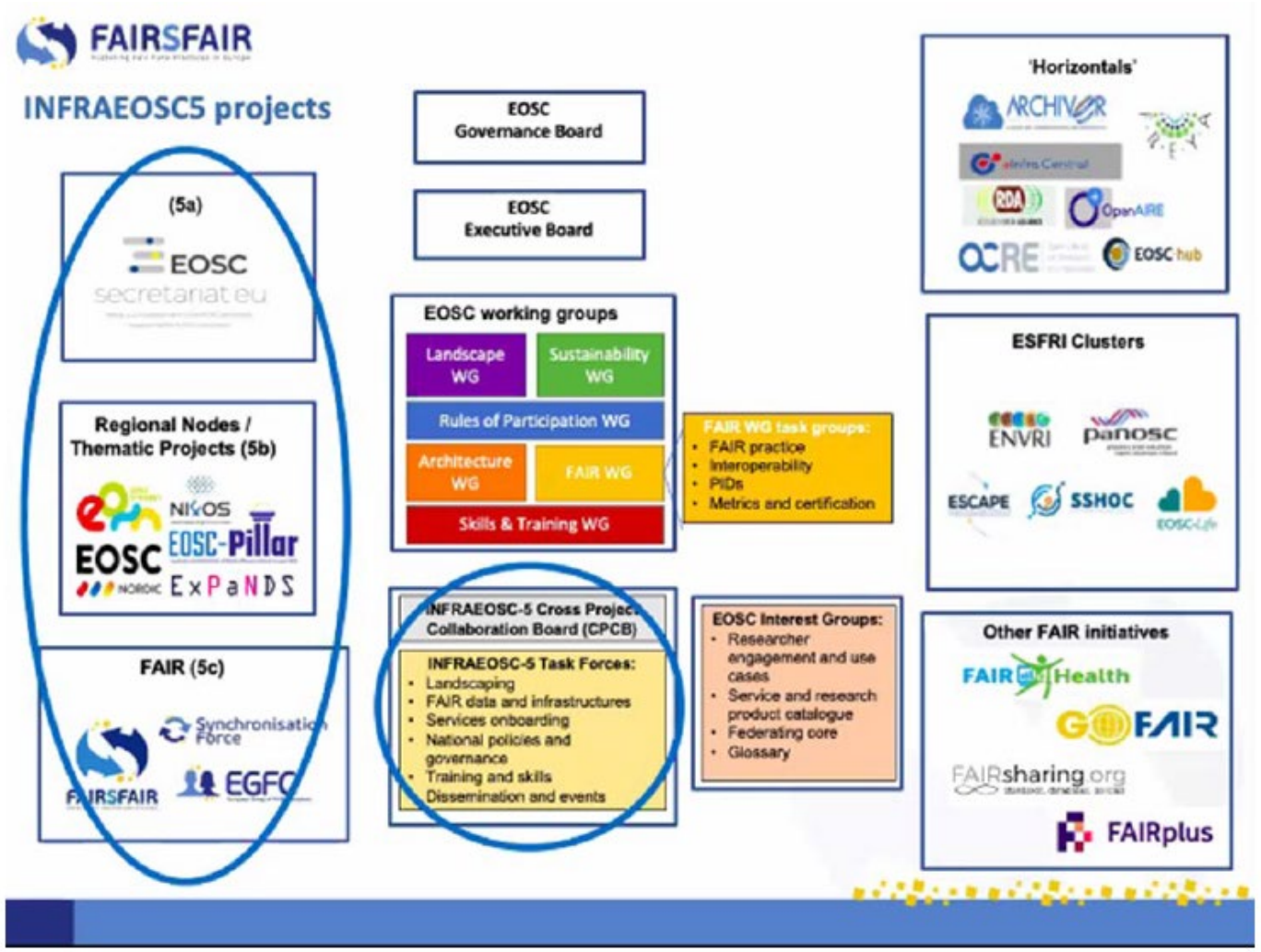
EOSC related projects - HE program



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EOSC related projects - HE program

	Research Infrastructures Work Programme
2021	**Destination #2: INFRAEOSC***
2021	- EOSC-ready digitally skilled workforce
2021	- Supporting the EOSC Partnership: engagement, strategic agenda
2021	- Deploying EOSC-Core components for FAIR
2021	- Innovative and customisable services for EOSC
2021	- Enabling discovery and interoperability of federated research artefacts across communities
2021	- FAIR & open data in support of cancer research
2022	- Services and tools to underpin a research assessment system that incentivises OS practices
2022	- Improving & coordinating technical infrastructure for institutional OA publishing
2022	- FAIR & open data in support of healthy oceans, seas, costal and inland waters
2022	- Support for initiatives helping to generate global standards, specifications and recommendations for open sharing of FAIR research data, publications and SW
2022	- Other actions: Delivering the EOSC core infrastructures and services (public procurement)

Slide from the EC

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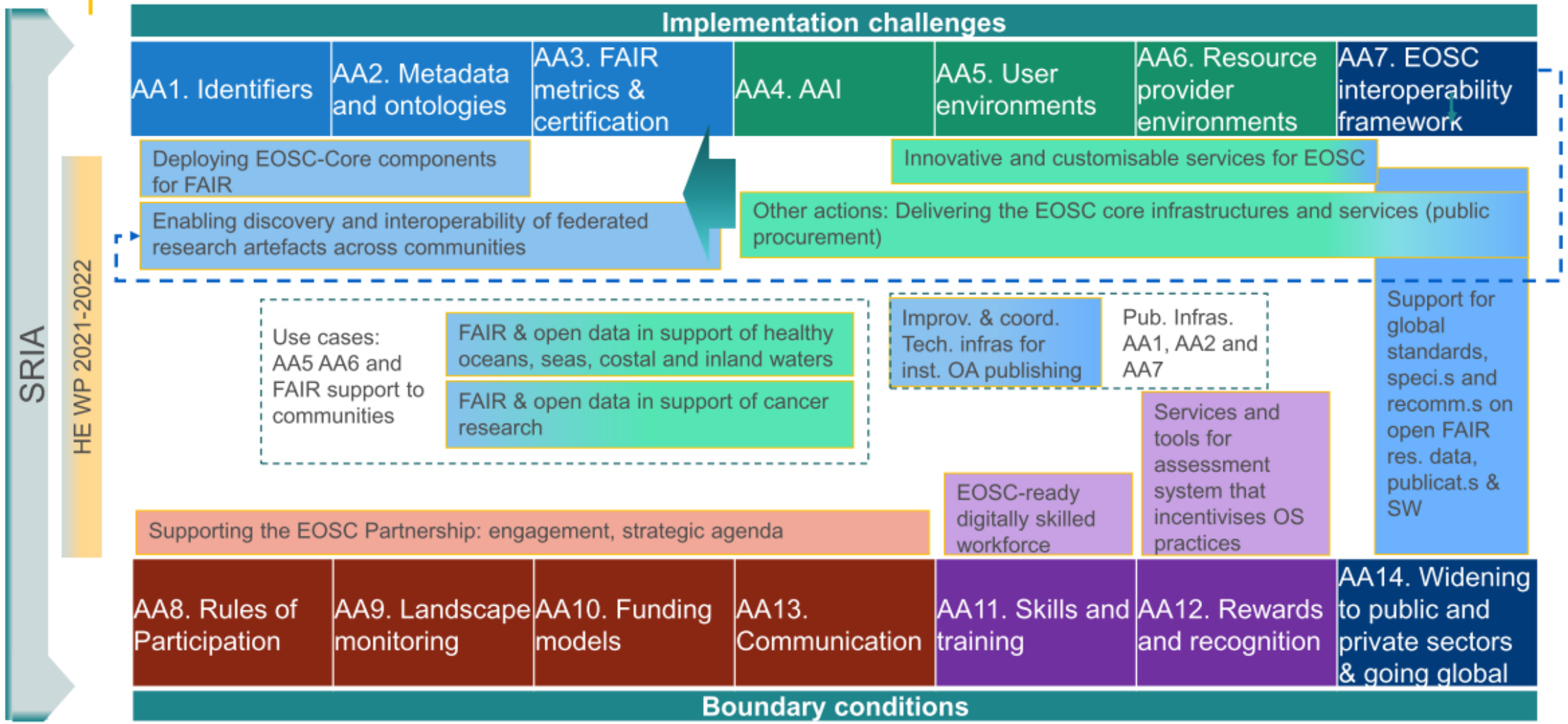
SRIA – HE RI Destination INFRAEOSC* WP 2021-22



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Contributing to the EOSC and making it operational

- EOSC Association Task Forces
- ESFRI and Science clusters

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EOSC Task Forces (TFs)

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What are the EOSC Advisory Groups / Task Forces?

- A structure to allow Association members and others to help steer the implementation of EOSC
- Groups should liaise with EOSC projects and offer feedback and advice
- Identify strategic gaps and areas for investment to input to SRIA
- EOSC Association members can propose and lead groups. Externals can also be members
- Task Forces are groups within the AGs who undertake activities to implement certain aspects of EOSC according to their topic

Board directors as liaisons at AG level

- Implementation of EOSC – Suzanne Dumouchel
- Technical challenges on EOSC – Ignacio Blanquer
- Metadata and data quality – Sarah Jones
- Research careers and curricula – Wilhelm Widmark
- Sustaining EOSC – Bob Jones

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Working principles for Advisory Groups

- Research community representatives should be part of all Advisory Groups (AG) to ensure the EOSC infrastructure and services meet their needs
- EOSC Association members & observers should be the primary members of AGs
- Representatives of the key implementation projects should be members of relevant AGs to present work in progress and receive advice and steers from the community
- The ideas and priorities of the EOSC Association Advisory Groups should feed into the Descriptions of Work of the upcoming Horizon Europe projects
- Activities of the AGs should be visible to the wider community via blogs, webinars, email updates, recommendations and outputs

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Task Force topics

Implementation of EOSC

- Rules of Participation compliance monitoring
- PID policy and implementation
- Researcher engagement and adoption

Technical challenges on EOSC

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

Metadata and data quality

- Semantic interoperability
- FAIR metrics and data quality

Research careers and curricula

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

Sustaining EOSC

- Defining funding models for EOSC
- Long-term data preservation

Implementation of EOSC AG

The Task Forces within this Advisory Group focus on rolling out EOSC recommendations and testing their applicability with research communities and service providers. They also seek to promote broader adoption of EOSC, specifically amongst the research community.

- **Rules of Participation compliance monitoring:** This TF should focus on collecting feedback on implementing the Rules of Participation to ensure they meet EOSC user and service provider needs, iterating where necessary.
- **PID policy and implementation:** This TF should monitor and provide community feedback on the implementation of the PID policy (https://doi.org/ 10.2777/926037) and Architecture (https://doi.org/ 10.2777/525581).
- **Researcher engagement and adoption:** This TF will focus on engaging research communities to increase their participation in EOSC.

Technical challenges on EOSC AG

The Task Forces within this Advisory Group focus on implementing the technical architecture and interoperability in EOSC. They also provide a steer on strategic areas of future work, such as infrastructure for sharing research software.

- **Technical interoperability of data and services:** This TF should take the EOSC Interoperability Framework recommendations around technical architecture (https://doi.org/10.2777/620649) to help develop the EOSC Core and Exchange.
- **Infrastructure for quality research software:** This TF should take the recommendations of the Scholarly Infrastructure for Research Software report (https://doi.org/10.2777/28598) and progress them further.
- **AAI implementation:** This TF should monitor and provide community feedback on the implementation of the AAI Architecture (https://doi.org/10.2777/8702).

Metadata and data quality AG

The Task Forces within this Advisory Group focus on implementing the FAIR agenda. There is a particular focus on addressing semantic interoperability to ensure data can be discovered and reused, as well as aspects of data quality and metrics to promote high-quality resources in EOSC.

- **Semantic interoperability:** This TF should take the EOSC Interoperability Framework recommendations around metadata and semantics (https://doi.org/10.2777/620649), in particular advancing work and building consensus on a minimum metadata framework for EOSC.
- **FAIR metrics and data quality:** This TF should oversee the implementation of the FAIR metrics for EOSC (https://doi.org/10.2777/70791), testing them with research communities to ensure they are fit for purpose.

Research careers and curricula AG

The Task Forces within this Advisory Group focus on the training and skills agenda. Multiple stakeholder groups are addressed, specifically research communities, data stewards and national bodies.

- **Data stewardship curricula and career paths:** This TF should build on activities to define data stewardship curricula to ensure these are recognised and aligned across Europe. Attention should also be paid to career paths to ensure appropriate recognition and rewards for data management activities.
- **Research careers, recognition and credit:** In parallel with the data stewardship TF, this group should address incentives for researchers to manage and share their data, code and other research outputs.
- **Upskilling countries to engage in EOSC:** This TF recognizes the significant developments in Open Science education being addressed at Member State level within research performing organisations and disciplinary groups. It will assist in aligning skills initiatives and supporting the onboarding of these into EOSC.

Sustaining EOSC AG

The Task Forces within this Advisory Group focus on sustaining EOSC by developing appropriate funding models and promoting long-term preservation so data and services remain available.

- **Defining funding models for EOSC:** A clear funding model has not yet emerged to address the challenges of costing and delivering services across national and community borders. This TF should progress recommendations from the FAIR Lady report (https://doi.org/10.2777/870770) to help develop and test workable models.
- **Long-term preservation:** This TF should address long-term access to the resources available within EOSC by exploring a network of trusted and sustainable digital repositories.

Engaging with the association activities

Drafts charters published:

[Draft Charters of EOSC-A Task Forces Published]

Call to join the EOSC TFs:

https://www.eosc.eu/news/call-members-eosc-association-task-forces

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ESFRIs and Science Clusters in the EOSC

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The role of ESFRIs and science clusters in EOSC

- Bring their experience of users onboarding (and contacting, managing, etc.)
- The EOSC roadmap (SRIA version 1) foresees contributions from the science clusters that stretch beyond the lifetime of the current science cluster projects
- They combine in the same time that they are service providers and users AND data producers and consumers.

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ESFRIs and Science Clusters contributions to EOSC objectives

- Engage with researchers and promote the adoption of open science practices by research communities
- Participate in the definition of standards, and the development of tools and services that allow researchers to find, access, reuse and combine results
- Establish a sustainable and federated infrastructure enabling open sharing of scientific results

Role of the EOSC-A towards ESFRIs and science clusters

- Support their work and highlight their inputs for the sake of the EOSC
- Build from their knowledge the communication towards the communities AND the services offer.
- Offer the right framework to increase interdisciplinarity

While the clouds form the technology, the technical foundation that makes EOSC possible, the ESFRIs and science clusters are the guarantors of the science part of EOSC and together form the overall framework in which EOSC evolves.

What makes EOSC unique today is not necessarily its cloud but rather its ability to bring together all researchers and research communities.

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EOSC Future in this landscape

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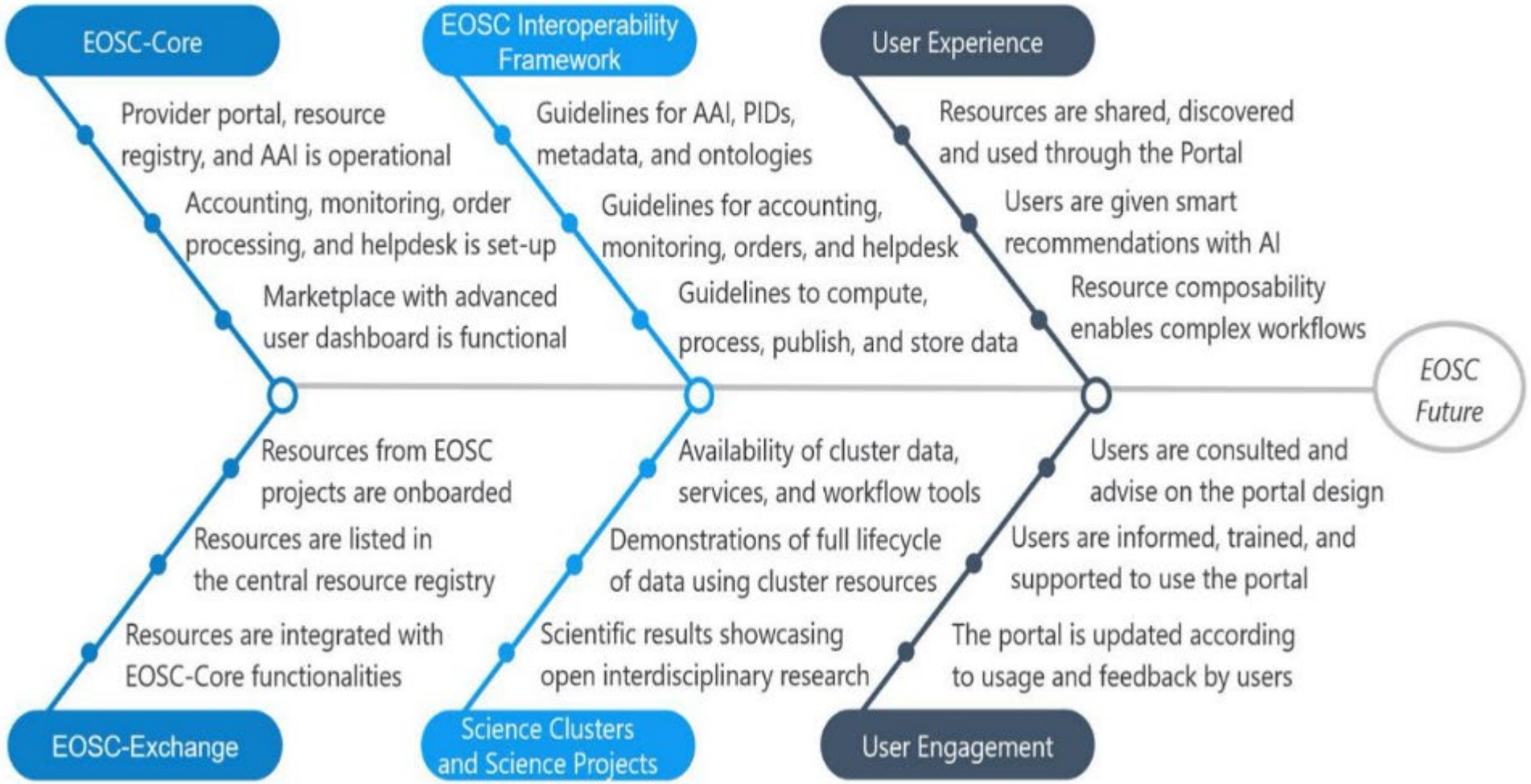
Key dimensions of the project



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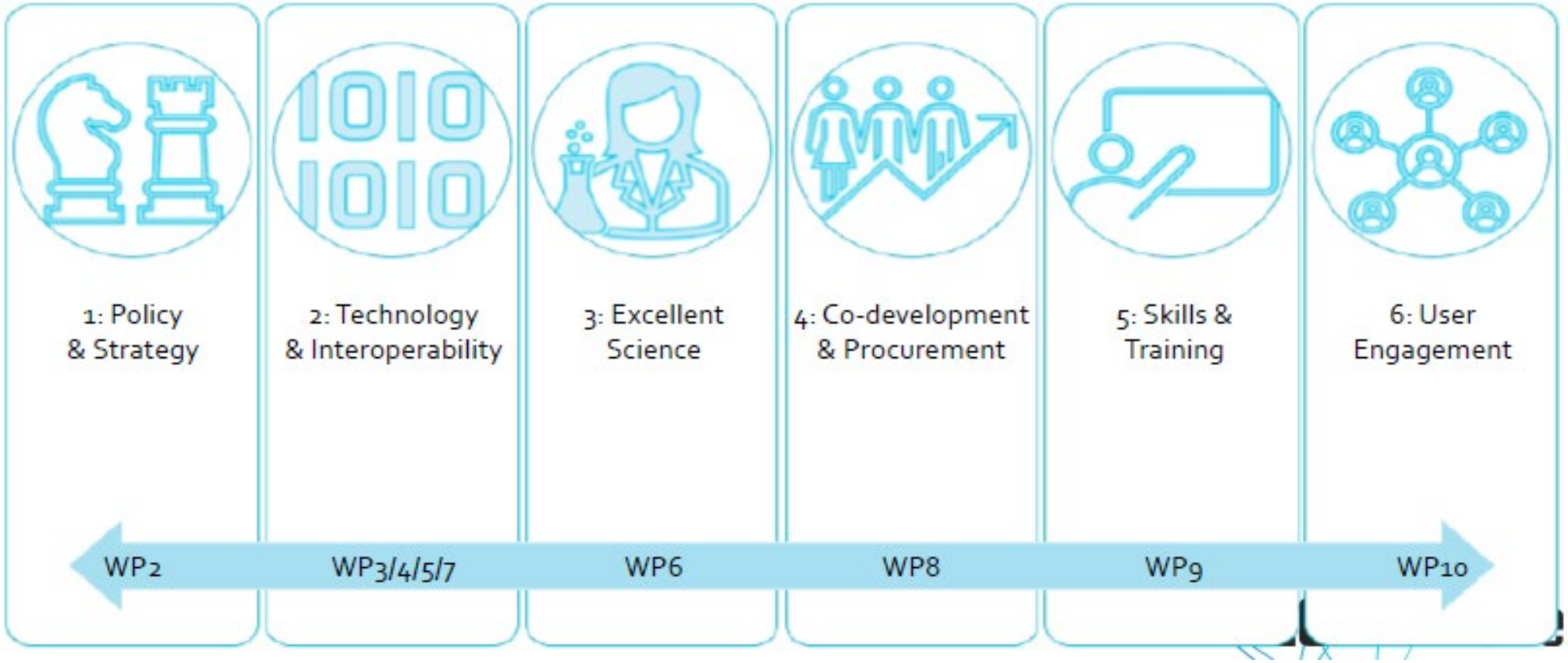
Strategy of EOSC Future



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EOSC Future and research communities

ESFRI RIs

- Joint development and harmonization
- Supporting interdisciplinarity, harmonization
- Create potential for new user communities
- Direct technical support

EOSC

- Connection to wide user communities
- Disciplinary best practices and standards
- Creating RI services from generic services
- Demonstrators and documentation

Science

- Platforms for discovery and interdisciplinary workflows
- Harmonization of interfaces and access across RIs
- More advanced RI services across ERA

Society

- Resilience and adaptation services
- Commercial and societal use of RI services
- Operationalization of key services
- Societal engagement

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What EOSC Future provides: Open data and…

- Find the data and metadata in our Catalogues of Services.
- Freely access, use and share large datasets of different types and sources.
- Work with interoperable data, thanks to our standards, thesauri and ontologies.
- Reuse and combine data for different research questions, generating new services and meet community standards.
- Cluster data repositories are minting identifiers for the community.

- Continuous, trusted working environments and networking opportunities to the research community.
- Long-term open data archives with high performance storage and computing services, to enable sustainable use of data.
- Open data and a virtual research space for open science where scientists can create content and collaborate.

Connect Collaborate

eoscfuture.eu

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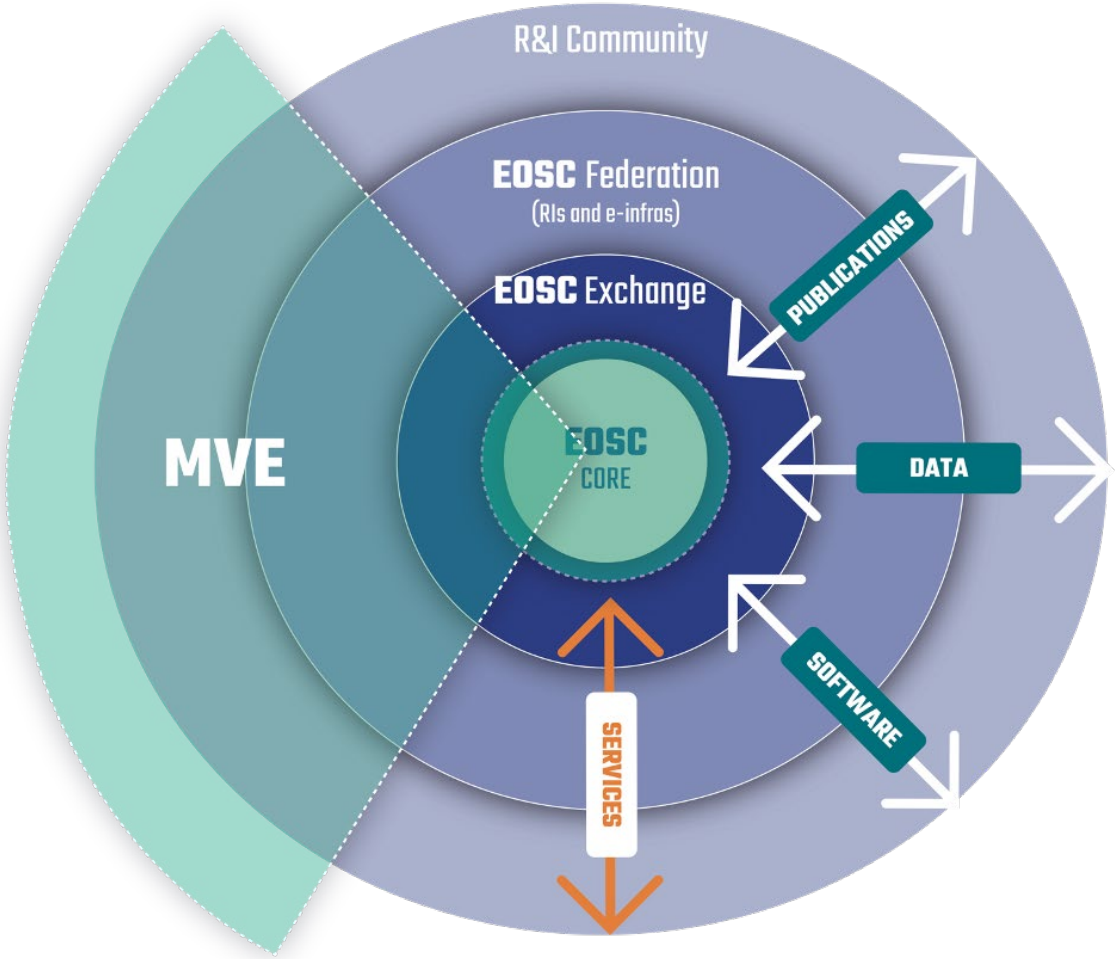
Minimal Viable EOSC



MVE includes:

- EOSC Core and subsets of EOSC Exchange, Federation
- EOSC resources (services, research products) required to “market” the EOSC
- Subset of the R&I community (showcases, e.g., COVID-19)

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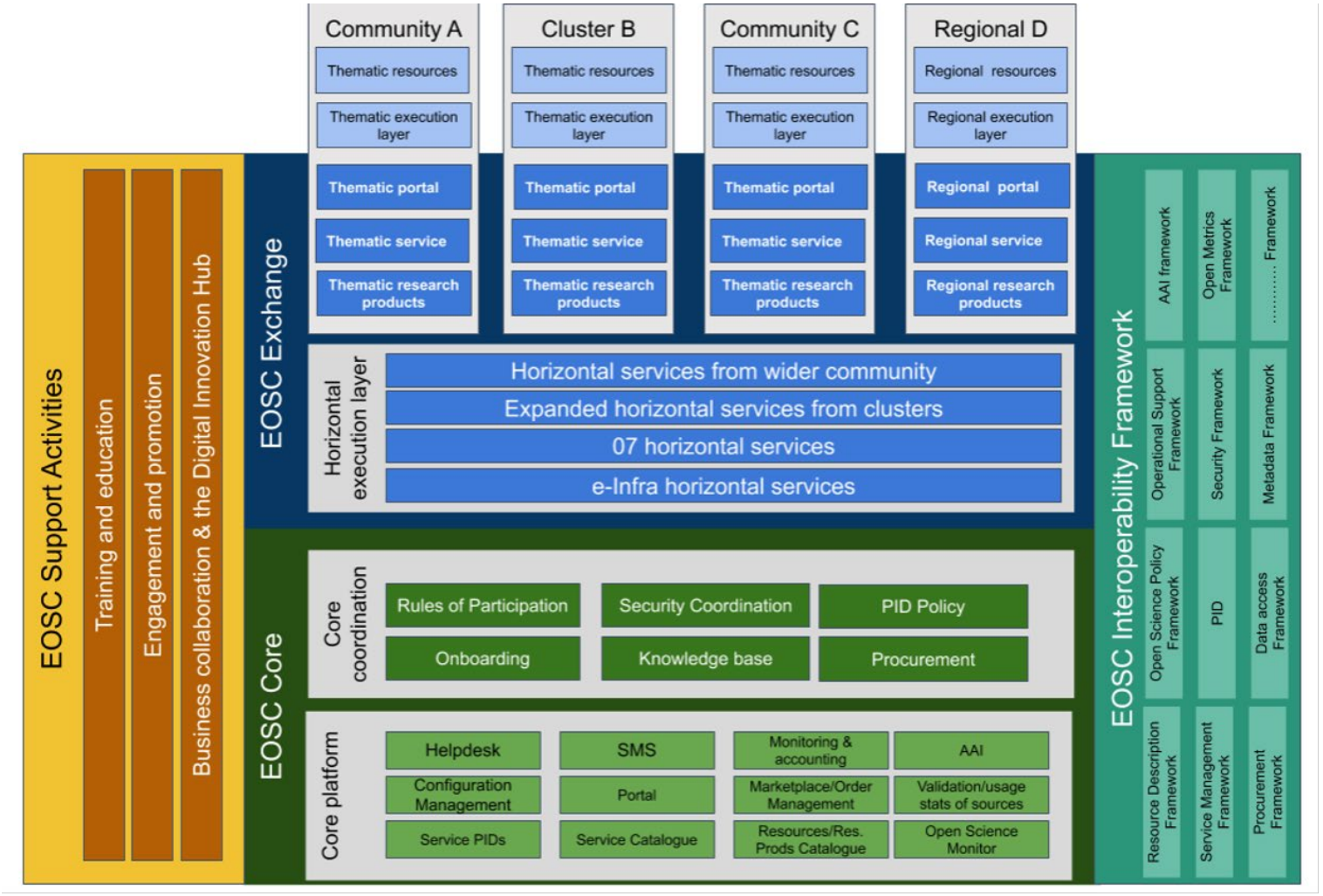
EOSC Architecture



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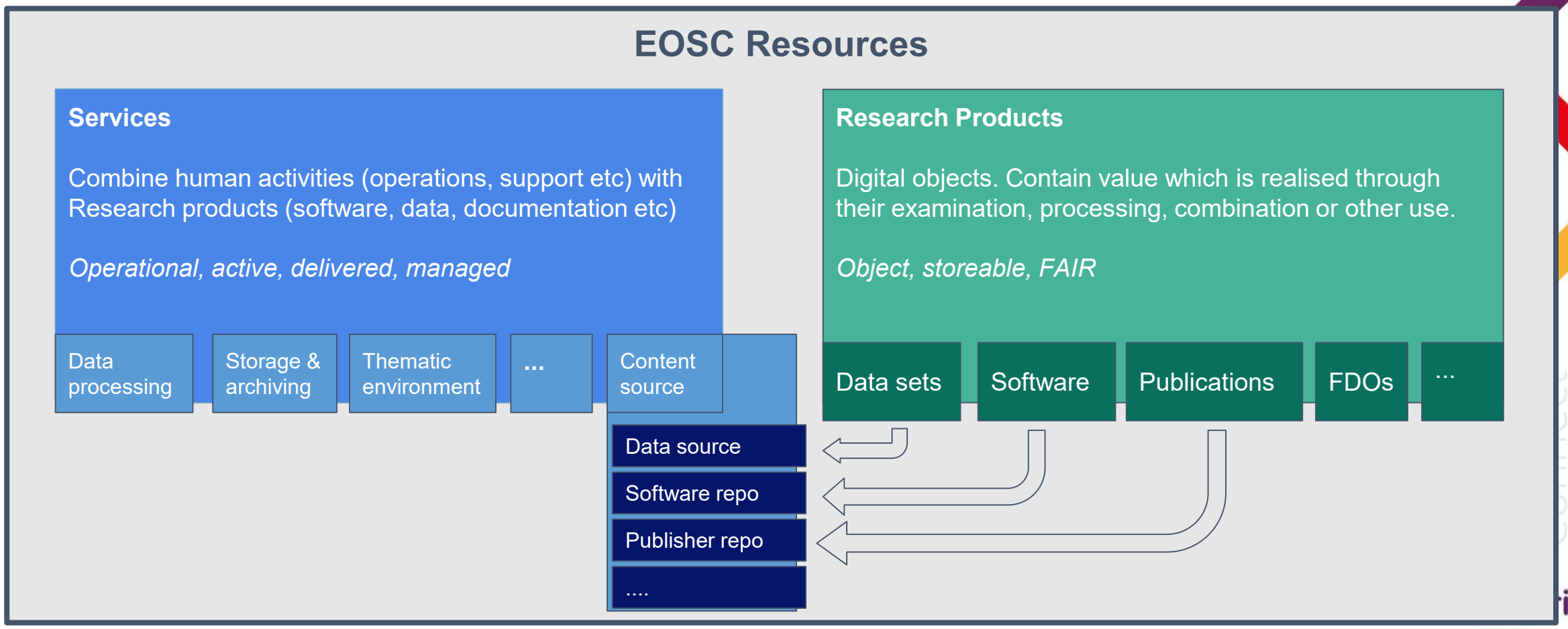
EOSC Resources



Provider view: The old idea

Research

EOSC

Researcher / Research Group / Research Performing Organisation

Portal = EOSC

EOSC is not just a listing of services on a website

EOSC Portal

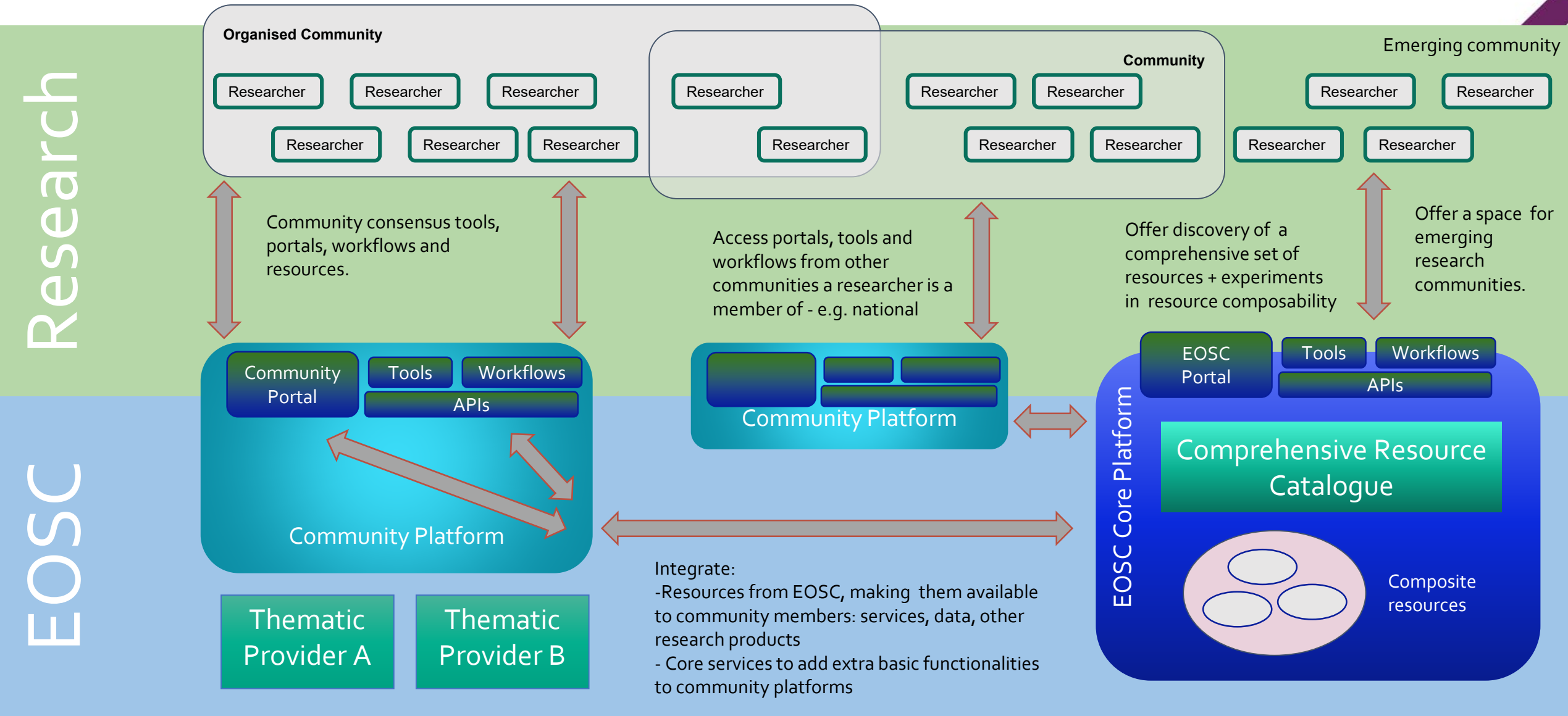
Resource

Resource

Resource

Resource

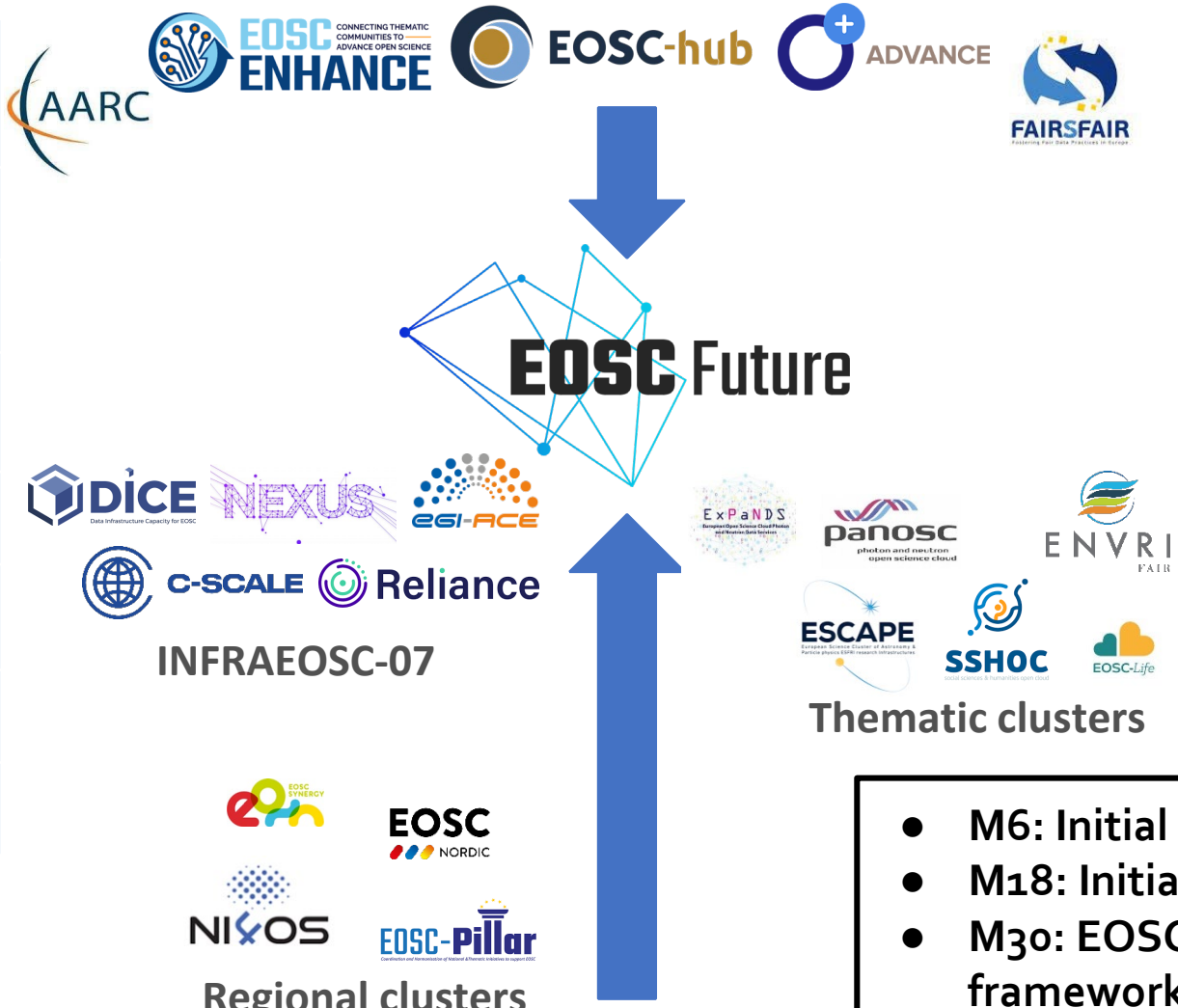
Researcher view: different benefits



EOSC Interoperability Framework

Interoperability frameworks to enable the integration/composability of EOSC resources

- Resource Description Framework
- Identifiers
- AAI
- Metadata and Ontologies
- Accounting
- Monitoring
- Order management
- Helpdesk



- Data Platforms for Processing
- Data Publishing and Open Data
- Cloud Compute Containerisation and Orchestration
- HTC-HPC Compute
- Machine Learning

- M6: Initial guidelines per technical area
- M18: Initial interoperability frameworks
- M30: EOSC-endorsed interoperability frameworks

As a conclusion… how to reach a successful implementation?

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Priorities for EOSC implementation Stage 1 2021-2022

- 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

About EOSC implementation

_ Implementation is the basic level of the EOSC: moving from theory to practice and from recommendations to implementations.
_ Crucial role of the EOSC-related projects

- **Diversity must be the guiding principle against uniformisation:**

1. Role of the science clusters and ESFRIs
2. Taking into account the different stakeholders (RoP): public and private, types of organisations, etc.

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Towards a successful implementation

- **From recommendations to adoption/implementation:**

1. Define a time to agree on the suggestions/recommendations in order to avoid re-discussing them too many times (doesn't mean they will never change).
2. Being realistic rather than holistic

- **Bottom-up approach BUT limited consultation process :**
  1. Understand that to be efficient, general framework must be adopted that doesn't prevent adaptation to specific communities/needs, etc.
  2. Efficiency implies consensus but not a complete one.

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Towards a successful implementation

- **Playing the game**
  1. Projects are not expected to reinvent the wheel but to fix and implement the results of the TFs/WGs, etc.
  2. Implementation of EOSC for the scientific community cannot be a success if we don't accept the constraints linked to it (in terms of time, communities, etc.)

Let's be progressive but efficient, ambitious but patient !

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We are the EOSC!

Feedback expected: How to implement a new communication strategy for the EOSC association?

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Thank you!

Questions?

Slides come from:

_ EOSC Association for the partnerships and EOSC-A related

_ EOSC Future project (presented at the EOSC Symposium)

_ European Commission for EOSC projects (H2020 and HE programs)

_ Myself

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