ESFRI

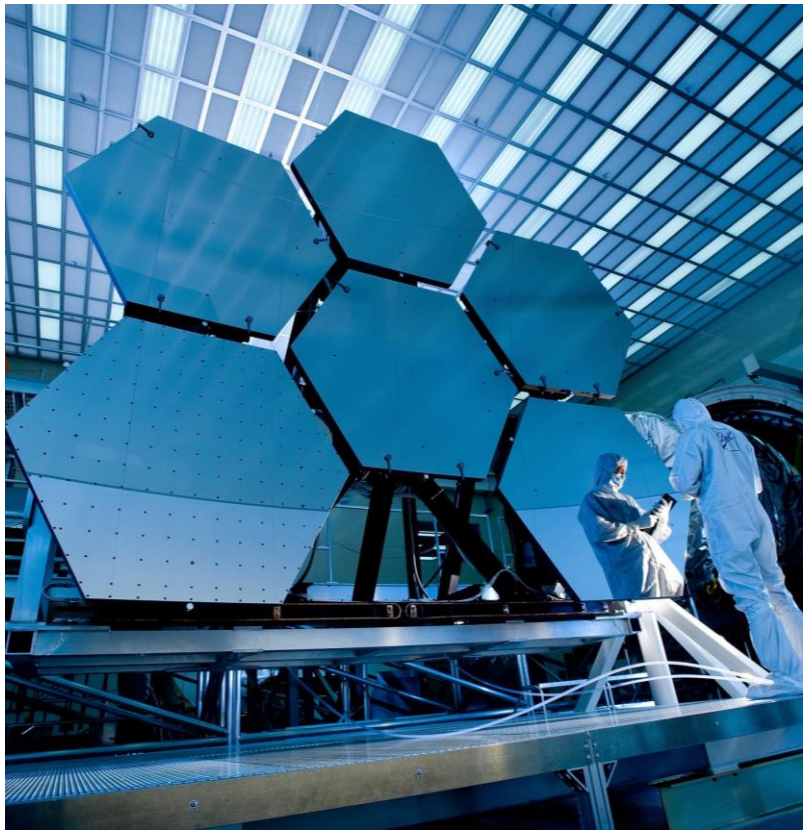
European Strategy Forum
on Research Infrastructures

Looking to the future of the Research Infrastructures

IV RICH – 2 Symposium „Research Is as engines for maximizing impact of HE

12th November 2020

Jan Hrušák



ESFRI VISION

Equipping Europe with infrastructures for ground-breaking research

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ESFRI White Paper 2020

Already in the autumn of 2018, ESFRI had launched an **internal reflection process on the future of research infrastructures** in the European Research Area (ERA). The reflection process has been continued throughout 2019.

In late April, **ESFRI presented its policy vision** for a fully consolidated European ecosystem of Research Infrastructures that will allow scientists to pursue the greatest of scientific challenges and create maximum impact. For broader dissemination **ESFRI created a dedicated webpage.**

The **"European Research Infrastructures for a smarter future"** Conference was held on **May 15th 2020**, and was fully digital with almost **30 speakers from the European Research and the Research Infrastructures areas**.

The event was **open to all participants**, and was **hosted by the Croatian Presidency** of the Council of the EU. The conference was composed of four sessions and concluded with a high-level policy panel identifying directions for the future of European research infrastructures' policy.

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MAKING SCIENCE HAPPEN

A new ambition for Research Infrastructures in the European Research Area

ESFRI WHITE PAPER
2020

TO WHOM IS IT DEDICATED?

HEALTHY, INTERCONNECTED RI ECO-SYSTEM
EXCELLENT RESEARCH WITH IMPACT

WHITE PAPER SCOPE

The White Paper is ESFRI´s response to the new challenges lying ahead for Europe. It shows how Research Infrastructures contribute to the main priorities of the renewed European Research Area such as increasing Europe’s competitiveness and identifying significant solutions to global challenges.

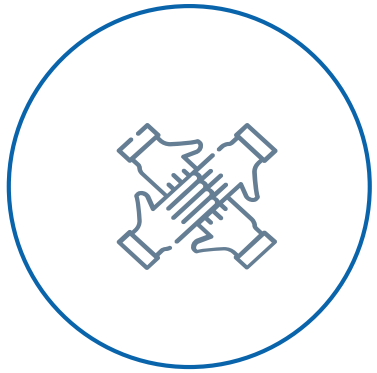
ESFRI White Paper Structure

Strategic orientations for the renewed ERA

Recognise the importance of investments into research and innovation to address the new challenges

Implementing a healthy RI ecosystem in Europe

An environment, where interconnected services and data are accessible to researchers across scientific domains, is essential for timely respond to any crisis



Future ESFRI activities and organization

Roadmapping, more strategic Landscape Analysis of European RIs and development of a new robust Monitoring Approach

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Main Message in the White Paper

RIs an essential pillar of the ERA	RIs as strategic investments	RIs as knowledge and Innovation hubs
Ecosystem striving for scientific excellence, transnational services, education and skills	Research with impact that addresses complex societal challenges	Basis of European competitiveness, with regional impact and global outreach
Coherence between European, national and regional priorities	**Infrastructures as major promoters of Open Science Research**	**ESFRI´s contribution to RIs policy**
Research Infrastructures for sustainable development and funding	Interconnected services providing FAIR and quality certified Open Data	Ensure appropriate capacity

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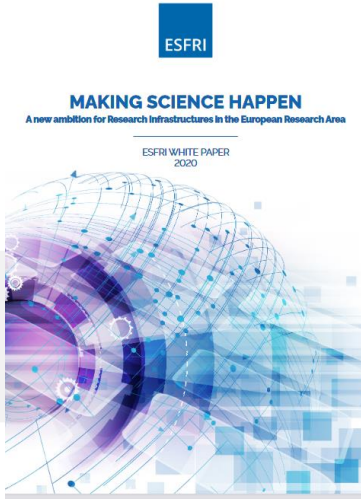
ESFRI White Paper



An innovative European research infrastructure vision for post-2020
A new ambitions of RIs and ESFRI contribution to the ERA discussion

- **The aim: a fully consolidated European ecosystem of RIs underpinning the ERA**
  - offering cross-disciplinary and integrated and harmonized R&D and innovation services
  - encouraging users to pursue the scientific challenges and generate new knowledge
  - emphasizes the importance of RIs
  - RIs support the competitiveness of European industries and addressing the socioeconomic challenges => **IMPACT ON THE DAILY LIVES OF EUROPEAN CITIZENS**

- **Maximization the impacts of the global societal challenges** thanks to the RIs
  - Preconditions: coordinated actions plan
  - Targets: research, innovation, education, policies, data

RIs as knowledge hubs and pillars of competitiveness

RIs are fundamental for the development of excellent science in the EU

- Strategic work of MS, AC and EC within a framework of ESFRI and ESFRI Roadmap foster mutual **collaboration and networking among scientists and innovators**
  - **50 European RIs** => reinforcing Europe's strong research performance
  - mobilizing **investments of approx. €20 billion** across the whole EU
  - enabling user communities to conduct **top-class fundamental and applied research**
  - development of the **advanced technologies and introduce breakthrough innovations**

Contribution of RIs to European policy objectives

The new ERA vision strongly support the EU's wider policy objectives with a special focus on research and innovation

The aim: Increasing of Europe's competitiveness and identifying solutions to societal challenges

New emphasis on the socioeconomic goals:

- digitization of European industry
- preservation of biodiversity
- securing water supply and healthy food production
- development of innovative medicines and treatments against infectious diseases
- ensuring of energy security
- mitigation of climate change
- facing aging or societal inequalities

Precondition to achieve these goals:

- Joint strategic efforts of the European research infrastructures
- A culture change in the entire research infrastructure domain

ESFRI will support the RIs ecosystem in optimizing its alignment with the European strategic agendas, across borders of sectoral domains

Reinforcing the socioeconomic benefits and impacts of RIs

Research

- Supporting **RIs capabilities**
- Increasing **the attractiveness of the ERA** for researchers, industrial users and international partners

Innovation

- Accelerate the exploitation of European RIs as **knowledge and innovation hubs**
- Boosting RIs role as **drivers of economic growth**, social and environmental transitions, and place-based innovation

Education

- Engage RIs and higher **education institutions in specialized training** of students, young academics and industrial scientists on next-generation technologies, inter-disciplinary methodologies and data management skills

Policies

- Increase coherence between European, national and regional priorities and policies for RIs development and funding
- Effective synergies with other European policies and funding instruments

Data

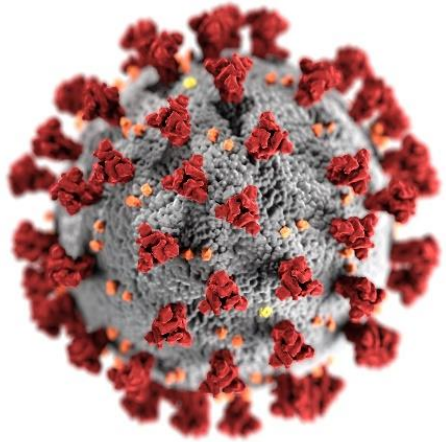
- Exploit the data science and data engineering expertise of RIs for the development of the EOSC

RESEARCH INFRASTRUCTURES FACING COVID-19

Research infrastructures have become very prominent in COVID-19 crisis

They enhance our ability to react on any crisis, accelerate the post-crisis recovery, and are the basis for sustainable competitivness and social welfare

- **Readiness -** fast and targeted respond to the crisis facilitating
- **Interoperability -** by immediately setting up specific and cross-disciplinary services, sharing resources and data
- **Direct impact -** research on diagnostics, treatments and vaccines, provision of first test kits, support for developing new diagnostic methods
- Focused ESFRI webpage was created at www.esfri.eu/covid-19



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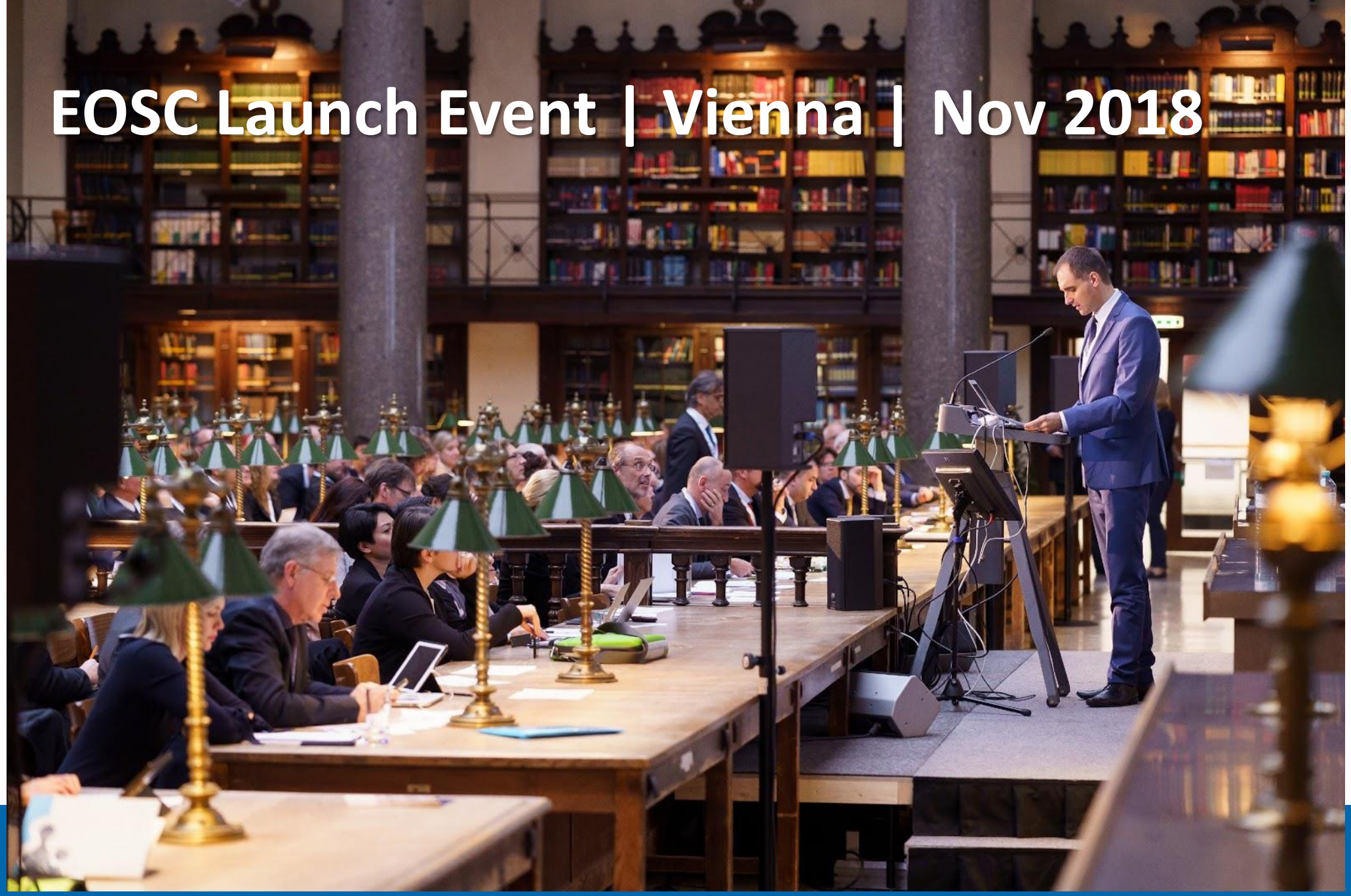
EOSC Launch Event | Vienna | Nov 2018



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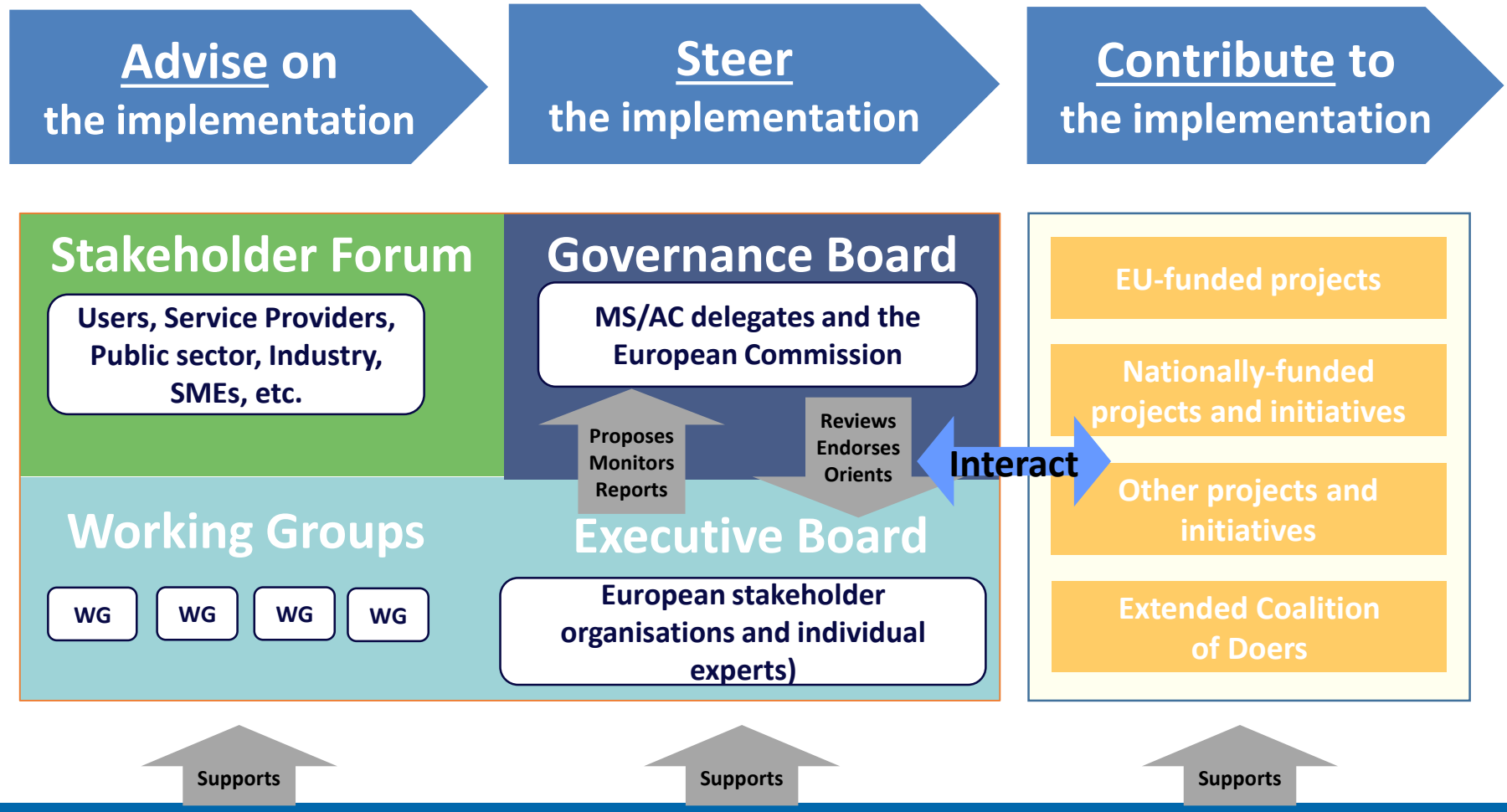
EOSC Governance structure



EOSC governance

Staged approach to setting governance:

1st phase > 2020 - **development of the EOSC primarily by MS and EC**

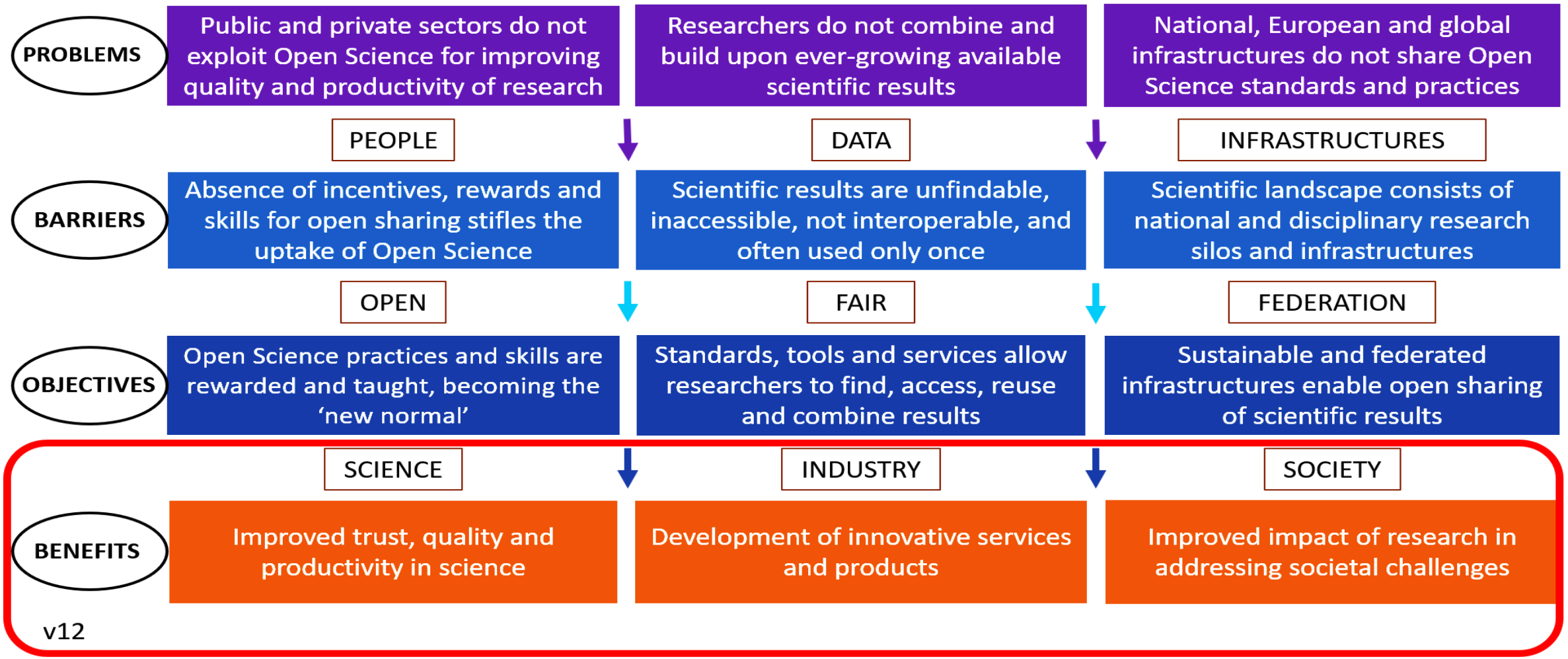
2nd phase < 2020 the preparation and further **development of the EOSC, largely stakeholder-driven with MS/EC keeping a high-level oversight role**

- **EOSC Governance Board**
  - representatives from the MC, AC and EC to ensure effective supervision of the EOSC implementation
- **EOSC Executive Board** => WGs: Landscape, RoP, Architecture, FAIR, Sustainability, Skills & Training
  - representatives from the research and e-infrastructures communities, appointed by the EC
- **EOSC Stakeholder Forum =>** organizations, projects and initiatives
  - the community actively contributing and participating to the EOSC

EOSC Executive Board

Karel Luyben & Cathrin Stover as Co-Chairs
8 representatives of stakeholder groups
3 independent experts

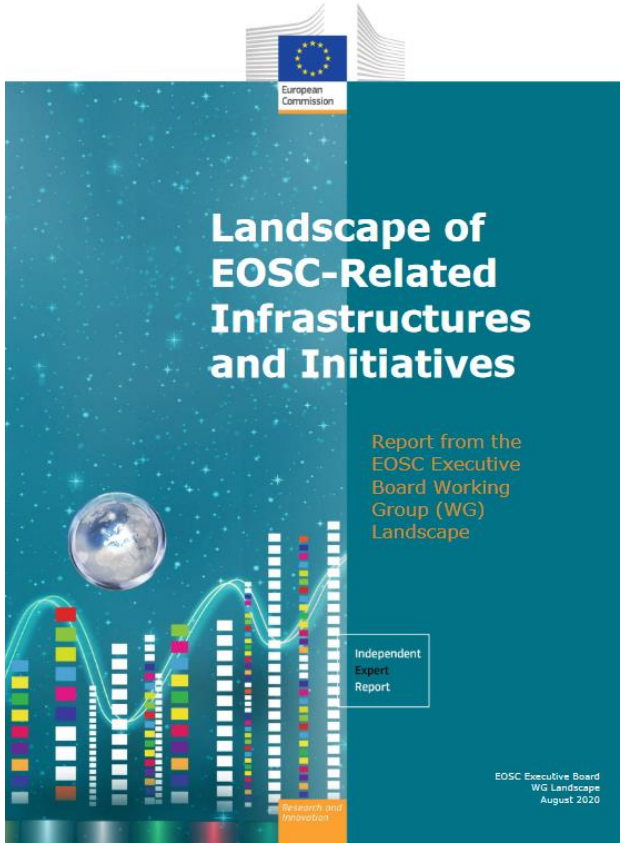
European Open Science Cloud Objectives Tree



Realized reports

Landscape Report

- **A snapshot on the EOSC Landscape**
- **Information on countries** (MS 27; 18 AC, other 4)
- **Information on current policy on open and FAIR science and infrastructure landscape** (e-Infra and RIs)
- **Living document** - links and reference to follow the development
- **The updated version will be published soon at the eoscecretariat.eu**

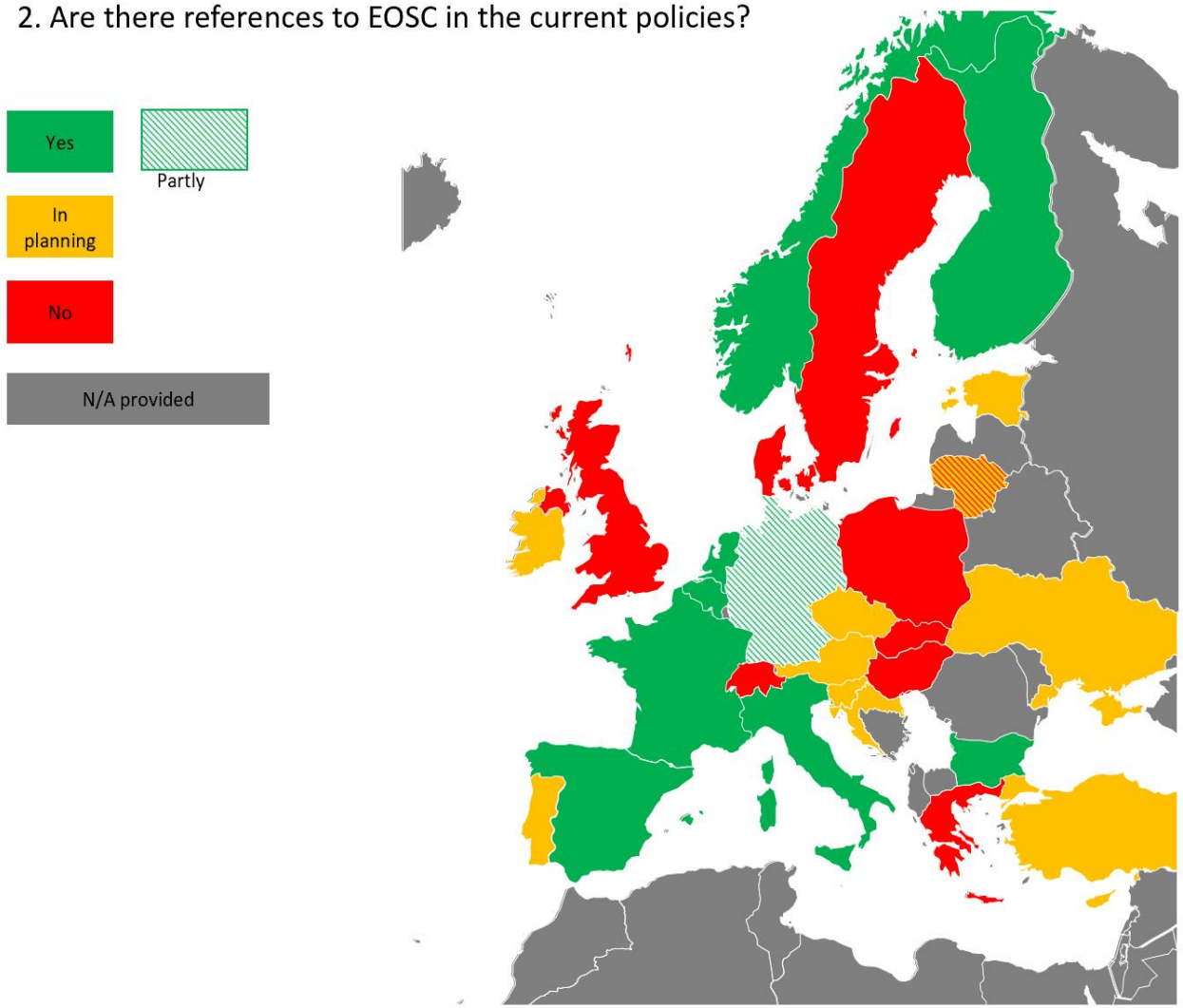


Landscape Analysis

- **National approaches to EOSC** (MS/AC inputs, 5b Projects)
- **The preparedness of EU - MS and AC for EOSC implementation**
- **To be published by the publication Office of the European Union**

National policy and legislation strategies

- ***References to EOSC in current policies***
- **47% of responding countries declared having a respective policy in place**
- 13% not have a current policy in place or
- 40% have planned policy
- 50% of the responding countries declared having an open science and FAIR data policy in place indicated having references to EOSC



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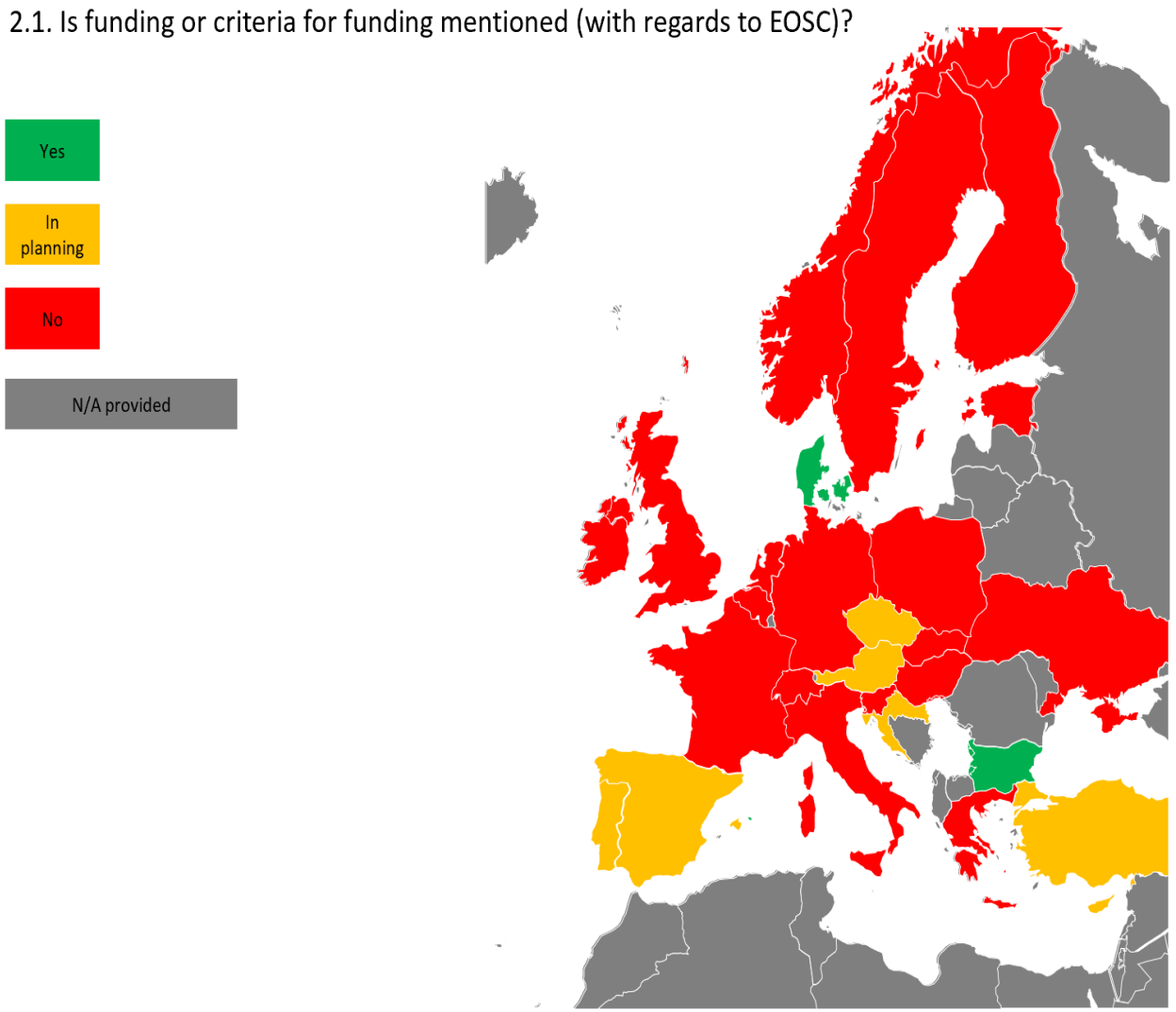
National policy and legislation strategies (5)

- ***Funding or criteria for funding mentioned with regards to EOSC***
- **63% of the responding countries do not have any funding nor criteria for funding mentioned with regards to EOSC**
- 8 responding countries (Austria, Cyprus, Czechia, Croatia, Montenegro, Portugal, Spain and Turkey) are planning to include funding or criteria for funding with regards to EOSC.



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Infrastructures as key success factor for EOSC

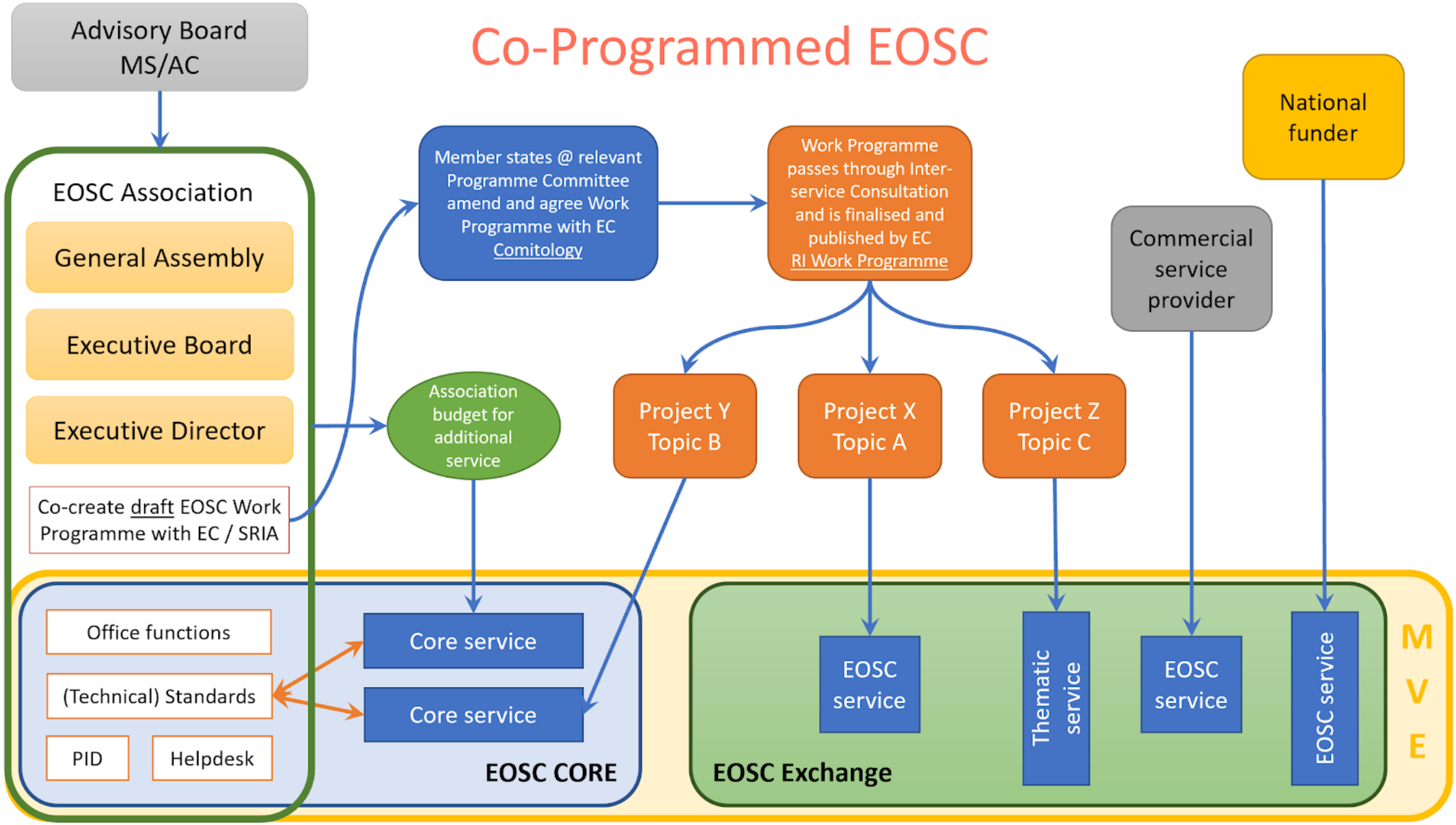
- **Infrastructures (IS) – data, e-infras, computing, networking, and RIs** (institutional, regional, national, global) serve as major promoters of Open Science, and are as an integrated system at equal lelvel **fundamental for the creation of EOSC**.
- IS form **part of a coherent research ecosystem** capable of addressing the major, interdisciplinary challenges (e.g. COVID-19 data platform / dedicated ESFRI WEB pages lists over 100 RI *anti*-COVID-actions / see **ESFRI`s White paper "Making science happen"**)
- Though the IS ecosystem faces huge diversity across the disciplines and countries, it is **horizontally (cross-disciplinary) and vertically interlinked**. Community standards
- The **bulk of the EOSC funding** (ISs, the data and users) will come from nationally supported funders rather than the EC – **dependency on national strategies**
- **Changing National priorities** have a significant impact on e-Is and RIs – coordination in policies and financial support. Diversification of IS portfolio to minimize impact on EOSC federation.

RIs as pivotal for EOSC – link to users

Role of RIs in EOSC

- producers of huge amount **of high-quality data** - Key factor for EOSC early stage success, inclusiveness, small new communities, long tail of science …
- keeping **multidisciplinary community aligned** - Building an Open science community, developing collaborative and co-creation culture
- stimulating **interoperability and collaboration** across domains – Developing and respecting disciplinary standards
- **readiness and early response to current crises and challenges** – developing cross-disciplinary understanding, metadata framework
- **different service layers are not well defined** – e-services, services directly supporting data driven sciences, software and software archives, but **also science driven services**, and many others.
- definition of a **minimum viable national infrastructure** will help to ensure that all the relevant IS and components are included

Co-Programmed EOSC



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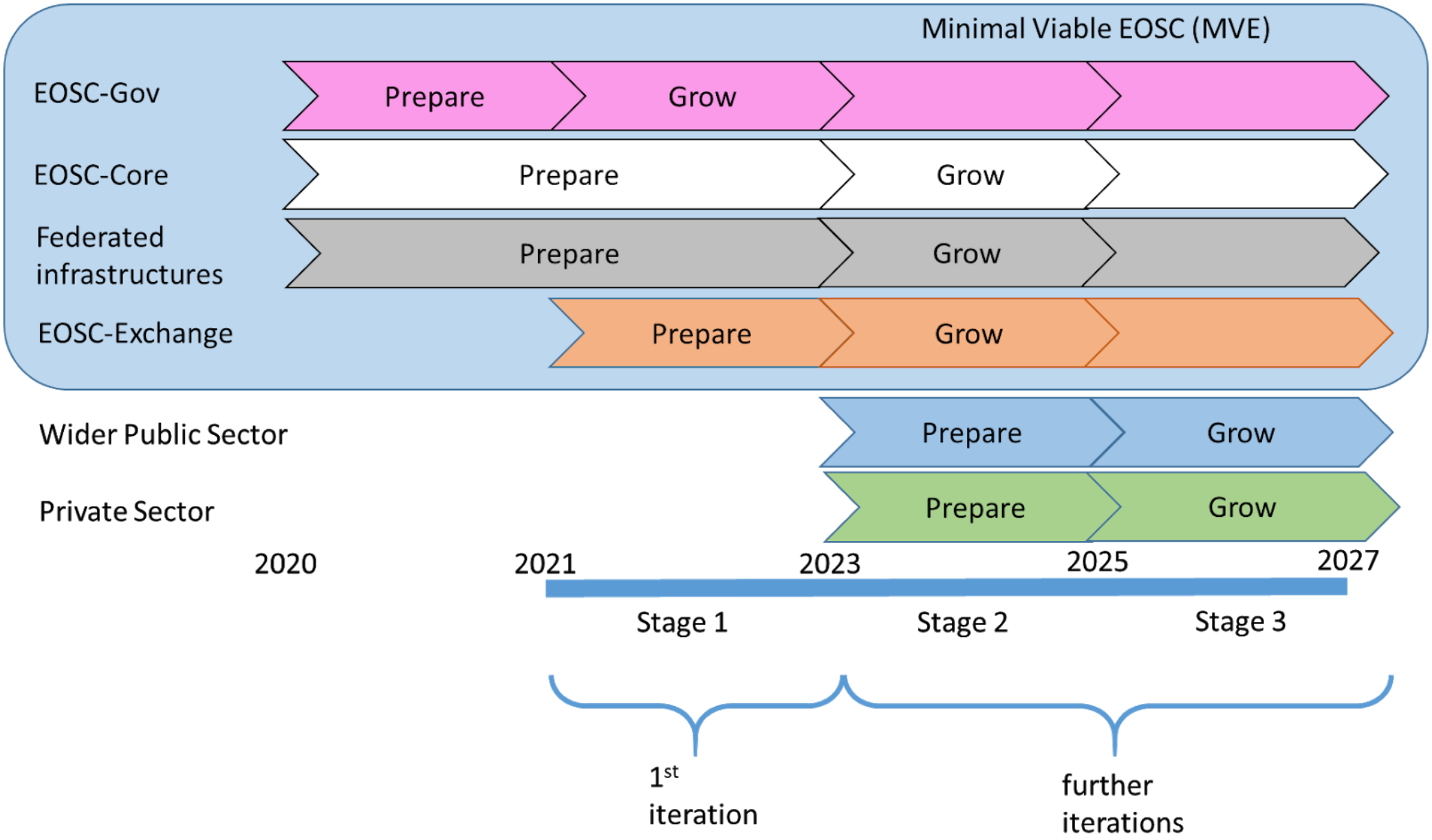
EOSC by the end of 2020

- Interim EOSC governance (EB + WG, GB) approaching the end
- **Partnership proposal** finalize, **SRIA** drafted
- **EOSC Association** created (AISBL) – 1 GA 17.12. 2020
- Agreed and tested **Rules of Participation**
- **Analysis of the existing national infrastructures and policies**
- **Financing model, legal entity** & **post 2020 governance structure**
- Functioning **federated core**
- Initial set of **EOSC data and services**
- **EOSC Interoperability Framework**
- Persistent **Identifier policy**
- **Metrics for FAIR data and certified services**


Minimal Viable EOSC (MVE)
EOSC-Gov
Prepare
Grow
EOSC-Core
Prepare
Grow
Federated infrastructures
Prepare
Grow
EOSC-Exchange
Prepare
Grow
Wider Public Sector
Prepare
Grow
Private Sector
Prepare
Grow
2020
2021
2023
2025
2027
Stage 1
Stage 2
Stage 3
1st iteration
further iterations

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Thank you for you attention.