EOSC: A Web of FAIR Data

Karel Luyben

President of the EOSC Association
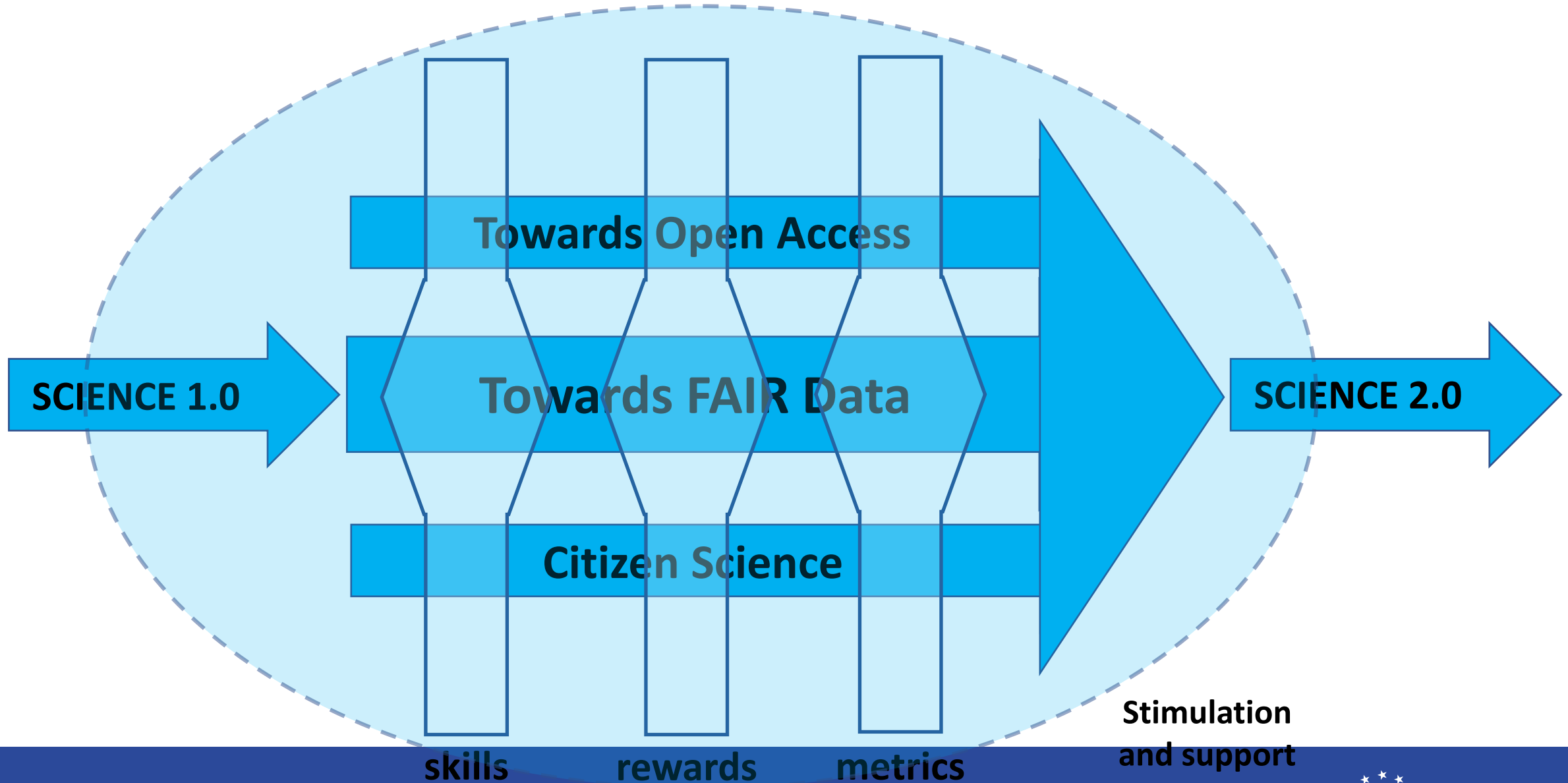
June 9, 2021

BE OPEN project Final Event
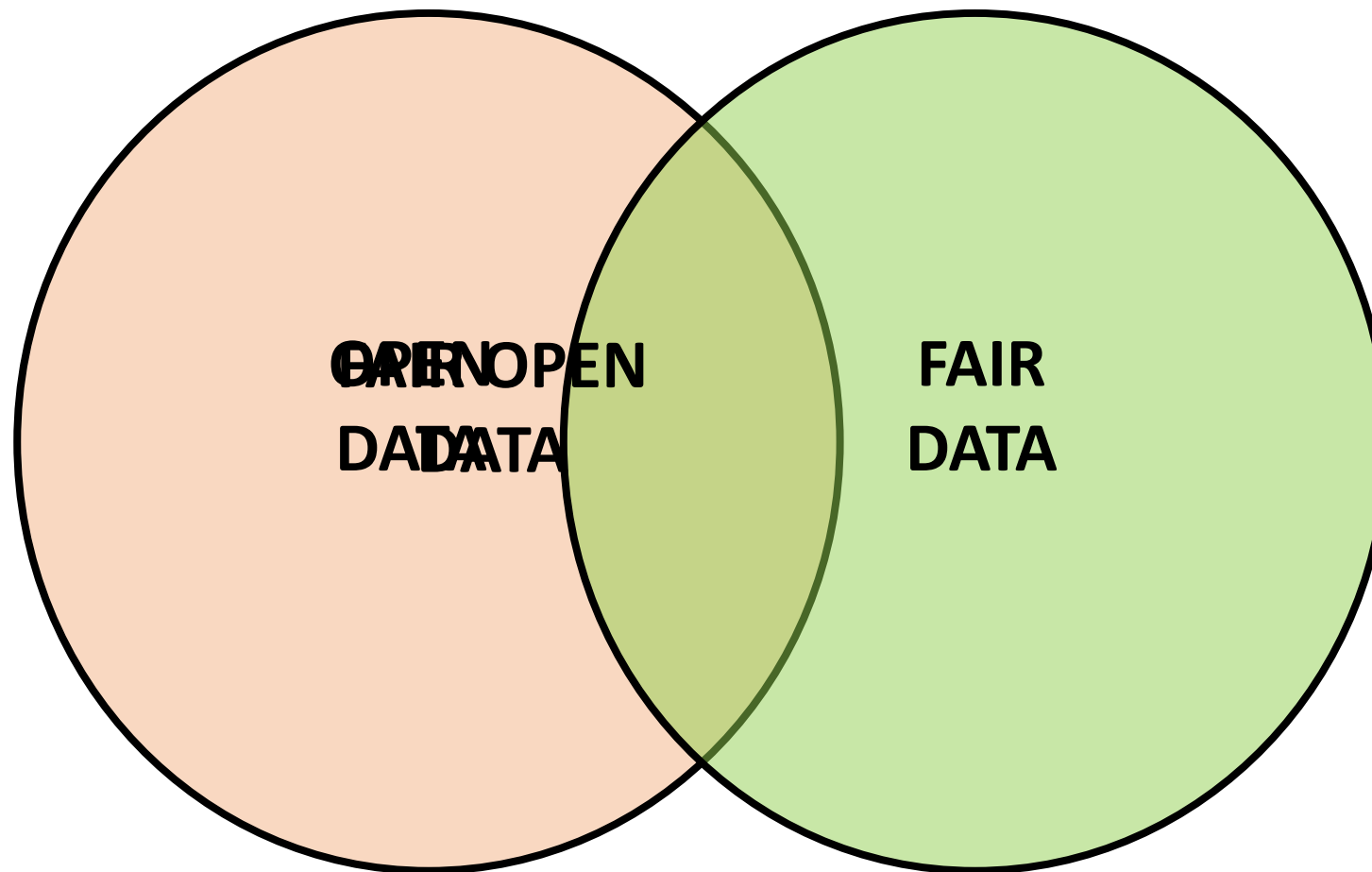
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OPEN SCIENCE

SCIENCE 1.0

Towards Open Access

Towards FAIR Data

Citizen Science

SCIENCE 2.0

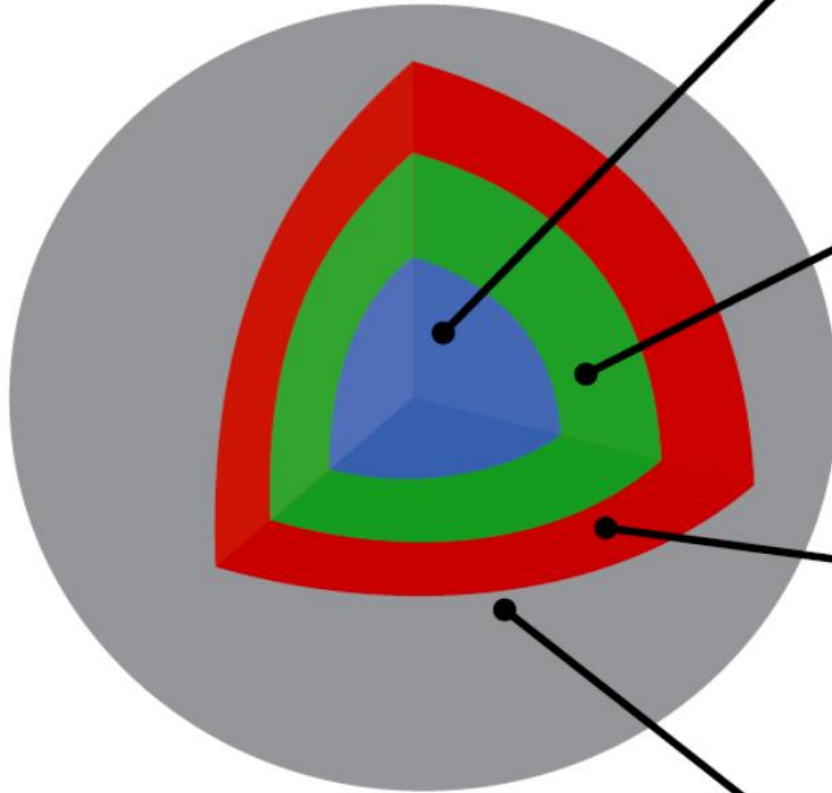skills rewards metrics

Stimulation and support

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OPEN DATA and/or FAIR DATA

FAIR ☰
Findable
Accessible
Interoperable
Reusable

Towards "as FAIR as possible" and "as open as possible"

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DIGITAL OBJECT

Data, code and other research outputs

At its most basic level, data or code is a bitstream or binary sequence. For this to have meaning and to be FAIR, it needs to be represented in standard formats and be accompanied by Persistent Identifiers (PIDs), metadata and documentation. These layers of meaning enrich the object and enable reuse.

IDENTIFIERS

Persistent and unique (PIDs)

Digital Objects should be assigned a unique and persistent identifier such as a DOI or URN. This enables stable links to the object and supports citation and reuse to be tracked. Identifiers should also be applied to other related concepts such as the data authors (ORCIDs), projects (RAIDs), funders and associated research resources (RRIDs).

STANDARDS & CODE

Open, documented formats

Digital Objects should be represented in common and ideally open file formats. This enables others to reuse them as the format is in widespread use and software is available to read the files. Open and well-documented formats are easier to preserve. Data also need to be accompanied by the code use to process and analyse the data.

METADATA

Contextual documentation

In order for Digital Objects to be assessable and reusable, they should be accompanied by sufficient metadata and documentation. Basic metadata will enable data discovery, but much richer information and provenance is required to understand how, why, when and by whom the objects were created. To enable the broadest reuse, they should be accompanied by a plurality of relevant attributes and a clear and accessible usage license.

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The Vision

Building the EOSC ecosystem collaboratively with all stakeholders through the EOSC Partnership

Enable interdisciplinary research to address societal challenges

Support Open Science and contribute to the Digital Single Market

Offer EU researchers the digital resources they need to practise Open Science

Reduce fragmentation by federating existing research infrastructures

Stimulate the emergence of a competitive EU cloud sector

Develop a Web of FAIR Data and Services (including publications and software)

Give Europe a global lead in research data management

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"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 consumers come together**
- **An open-ended range of content and services**
- **Meeting all European data requirements**
- **In interaction with other regions of the world**
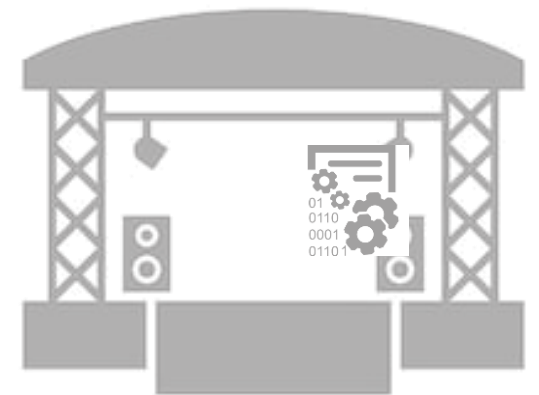
Twinning the data- to the e-infrastructure

EOSC is a data-infrastructure and could be seen as a twin sister (or brother) of the European e-infra-structure organisations (yin/yang). 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
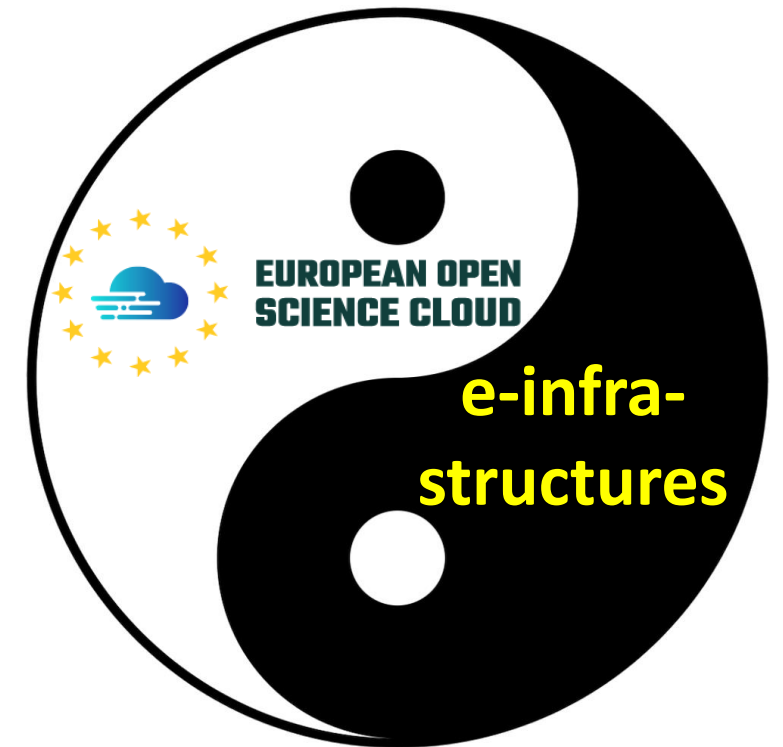
Guiding principles for EOSC

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 closed 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-infrastructures;
- **Machine-actionable**
  EOSC will strike the right balance between machines and people in delivering the services that will serve the needs of European scientists.

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EOSC Association

- **Four founding members (CESAER, GEANT, 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 Proving organisations**
- **Now ~ 150 members and ~ 60 observers (62% - 8% - 30%) (May 2021)**
- **A European Co-programmed Partnership, between the EC and the EOSC Association, MoU to be signed 23 June 2021**
- **Joining the EOSC Association = Joining the EOSC Partnership!**

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Board of Directors

Karel Luyben, CESAER (President)

Klaus Tochtermann, ZBW; 3-year

Marialuisa Lavitrano, University Milano – Bicocca; 3-year

Suzanne Dumouchel, CNRS; 3-year

Sarah Jones, GÉANT; 2-year

Ignacio Blanquer, UPV; 2-year

Ronan Byrne, HEAnet; 1-year

Bob Jones, CERN; 1-year

Wilhelm Widmark, University of Stockholm; 1-year

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Task Force topics within Advisory Groups

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

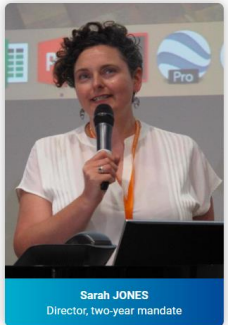## Research careers and curricula

- 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

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Advisory Groups with liaisons from the Board

- **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

Suzanne DUMOUCHEL
Director, three-year mandate

Ignacio BLANQUER
Director, two-year mandate

Sarah JONES
Director, two-year mandate

Wilhelm WIDMARK
Director, one-year mandate

Bob JONES
Director, one-year mandate

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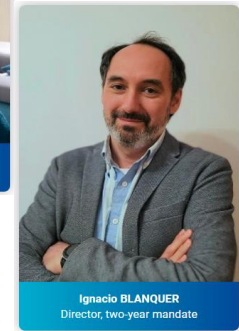
Who will be the Task Force members?

- **To be defined!**
- **Each charter will have a statement on membership noting required skills and suggested group size**
- **If necessary, a selection will be made applying balancing criteria**
- **Second call for members will be out in June. Hope to have membership defined before summerbreak**

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Potential selection criteria

- **Focus on relevant skills for delivering Task Force remit**
- **Prioritise Association Members & Observers**
- **Prioritise people who add value to EOSC**
- **Ensure research community inputs**
- **Include key project representatives responsible for implementation**
- **Ensure diversity and balance in terms of:**
  - **Gender**
  - **Country**
  - **Career stage**
  - **Stakeholder category**
  - **Organisation / member**
  - **…..**

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Who will chair the Task Forces?

- **We will ask each Task Force to make a suggestion on chairs**
- **Any member can volunteer to be chair and be proposed by the group**
- **The Board appoints all members, including the Chairs**
- **Board asks for two chairs: one male and one female**
- **Intend to bring balance across all Task Force chairs in terms of stakeholders and countries represented**

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EOSC on a global stage

- **Service providers from third countries can participate in EOSC but have adhere to EOSC Rules of Participation and applicable legislation**

- **EOSC will work 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**
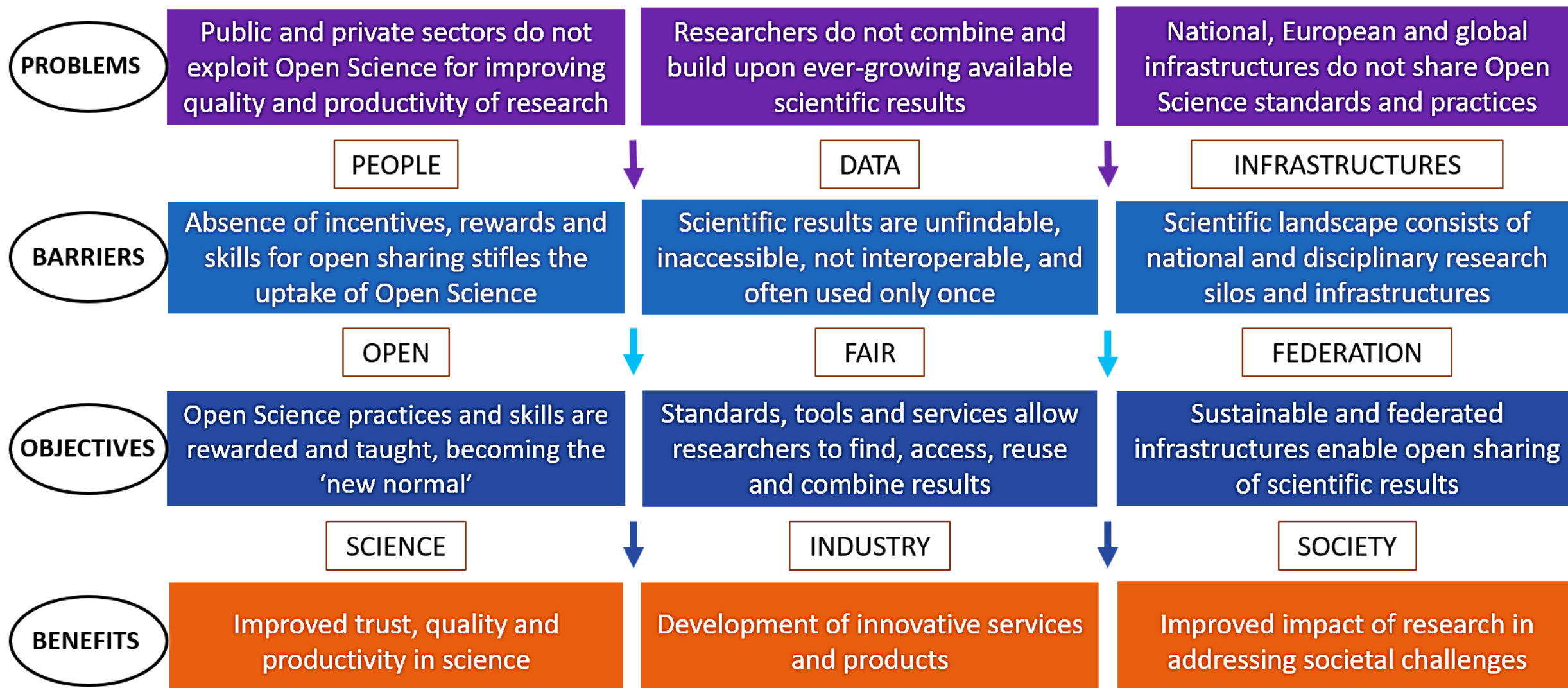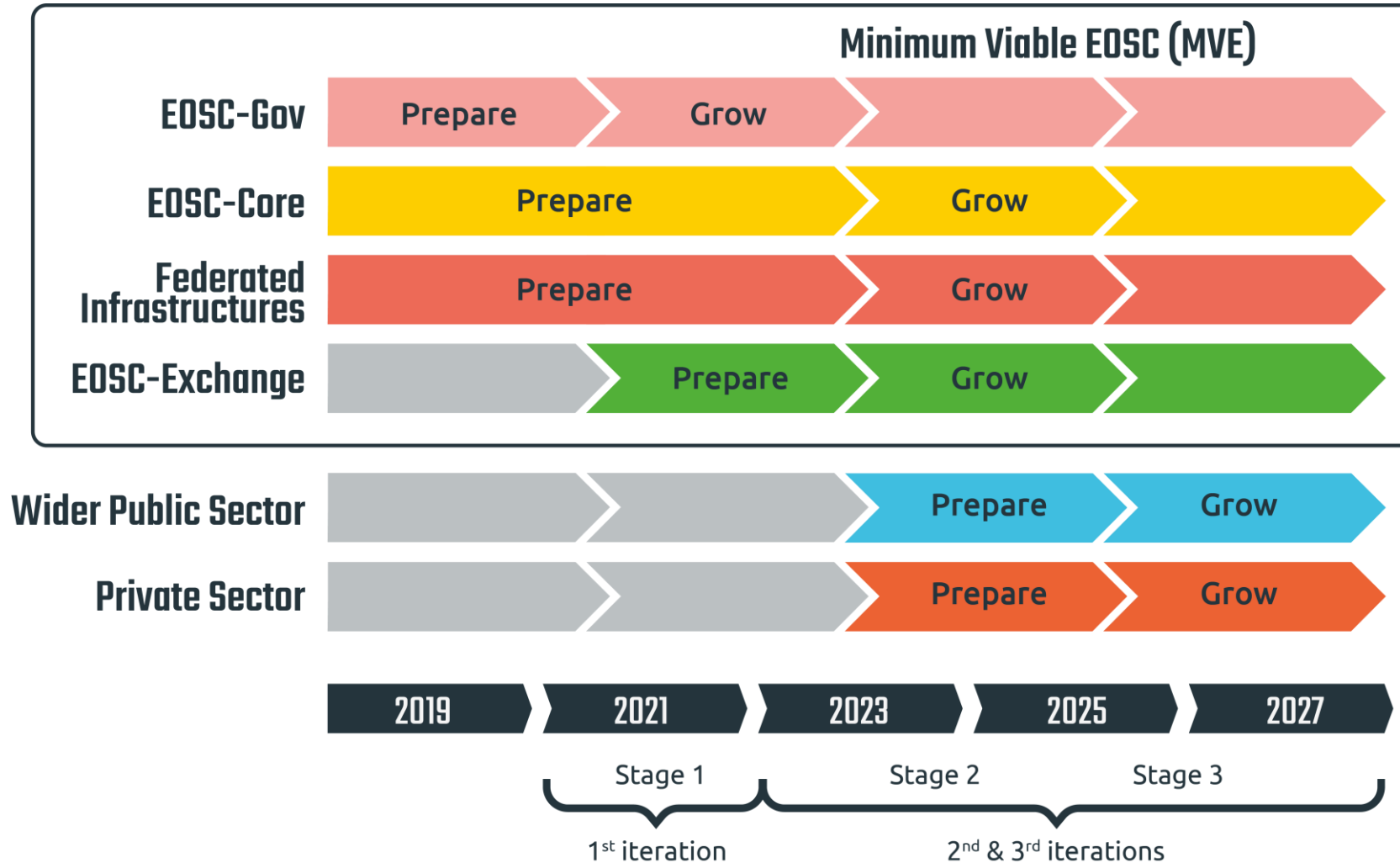
Let's co-create EOSC

THANK YOU

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EOSC-ecosystem objectives tree

	PEOPLE	DATA	INFRASTRUCTURES
PROBLEMS	Public and private sectors do not exploit Open Science for improving quality and productivity of research	Researchers do not combine and build upon ever-growing available scientific results	National, European and global infrastructures do not share Open Science standards and practices

	OPEN	FAIR	FEDERATION
BARRIERS	Absence of incentives, rewards and skills for open sharing stifles the uptake of Open Science	Scientific results are unfindable, inaccessible, not interoperable, and often used only once	Scientific landscape consists of national and disciplinary research silos and infrastructures

	SCIENCE	INDUSTRY	SOCIETY
OBJECTIVES	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

BENEFITS	Improved trust, quality and productivity in science	Development of innovative services and products	Improved impact of research in addressing societal challenges

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Timeline

(EOSC Strategic Research Innovation Agenda v1)
https://eosc.eu/documents

The 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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