Open Science @EU:
an overview and current developments

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Content of the presentation

1. The significance of open science

2. Open science in Horizon Europe

3. Open Research Europe (ORE)

4. Reforming Research Assessment

5. EOSC & EU copyright and regulatory framework fit for research

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1.The significance of open science (or, why do this?)

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What do we mean by open science?

- **Open science** means an approach to the scientific process based on open cooperative work, tools and diffusing knowledge.

- It comprises practices including, among others:

  - Open access to **publications** (incl. protocols, methods…) and **data** (incl. software, algorithms, workflows…)

  - **Early** and open sharing of research (e.g. preregistration, pre-prints…)

  - Use of **open research infrastructures** for knowledge and data sharing

  - Measures to ensure **reproducibility** of results (incl. open **licenses**)

  - Participation in **open peer-review**

  - Open collaboration within science and with other **knowledge producers/users**, including involving **citizens**

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Why is open science important?

Improves research QUALITY: transparent, accessible, reusable methods and outputs - facilitate verifiability and reproducibility of research results - leading to higher robustness and reliability
- Pre-registration, registered reports, data deposition in shared repositories, pre-prints
- Research output management in line with FAIR principles

Accelerates research EFFICIENCY: sharing and reuse of methods and outputs - enables researchers to build upon others' work more easily and quickly - leading to faster research progress
- Full and immediate open access to research outputs
- Open collaboration within science and with other knowledge producers/users

Enhances IMPACT of research: research methods and outputs visible and accessible to industry and society - facilitate their valorisation and practical application - leading to increased uptake and use of outputs and enhanced trust in research
- Transparent research processes and methodologies
- Early and open sharing and collaboration

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An EU priority for more than ten years

- 2016 Council Conclusions on the '**Transition Towards an Open Science System**'

- 2018 EC Recommendation on '**Access to and Preservation of Scientific Information**' (revised from 2012)

- 2021 Council Recommendation on a '**Pact for R&I in Europe**'

- 2021 Council Conclusions on the '**Future Governance of the European Research Area (ERA)**' including the 'ERA Policy Agenda 2022-2024'

- 2022 Council Conclusions on '**Research Assessment and Implementation of Open Science**' and the **EC endorsed the DORA Declaration** (San Francisco Declaration on Research Assessment)

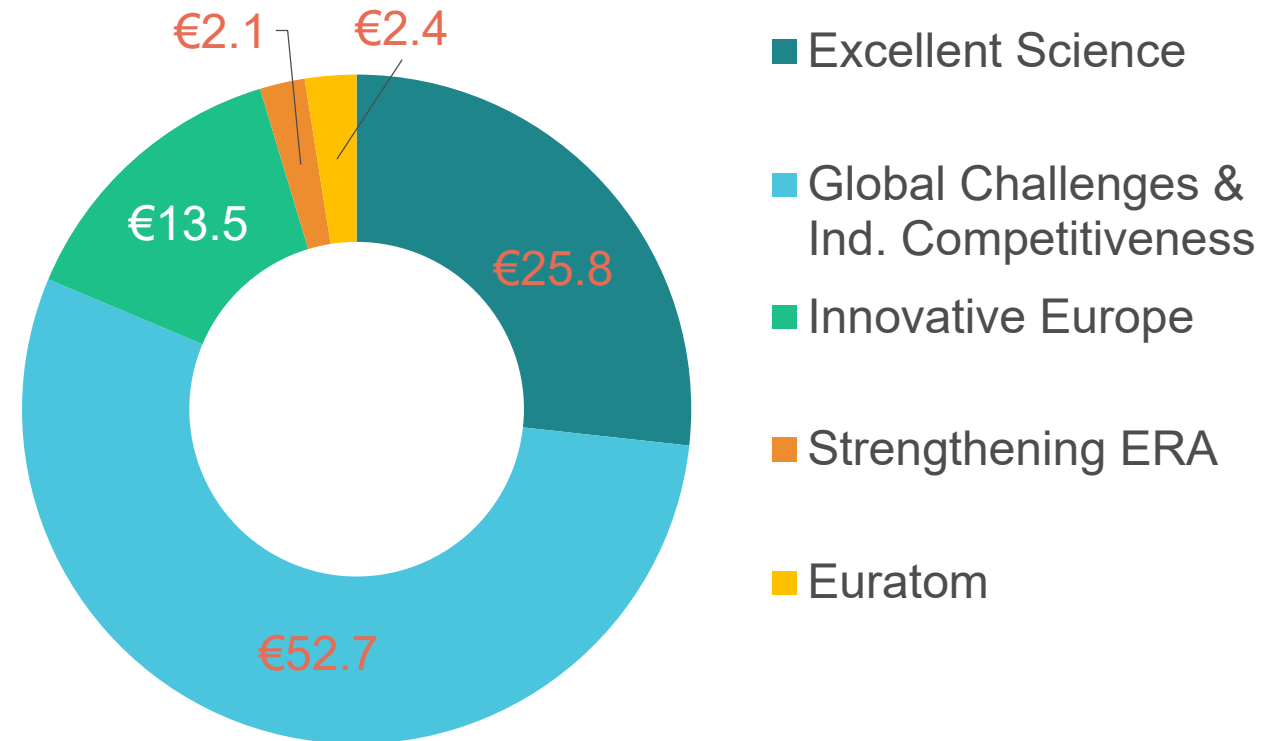- 2023 Council Conclusions on '**High-quality, transparent, open, trustworthy and equitable scholarly publishing**'

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2. Open science in Horizon Europe

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Horizon 2020 & Horizon Europe

Horizon 2020: ~ €80bn
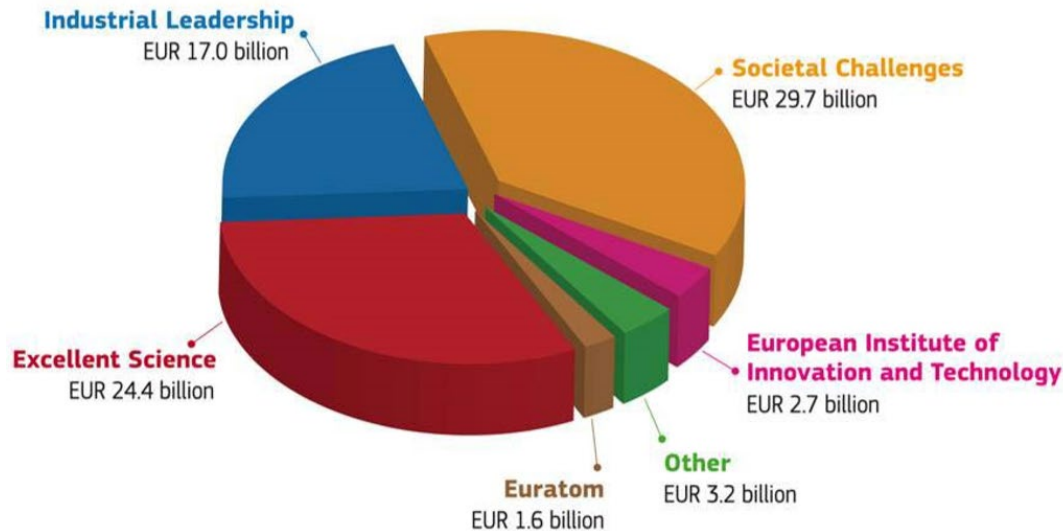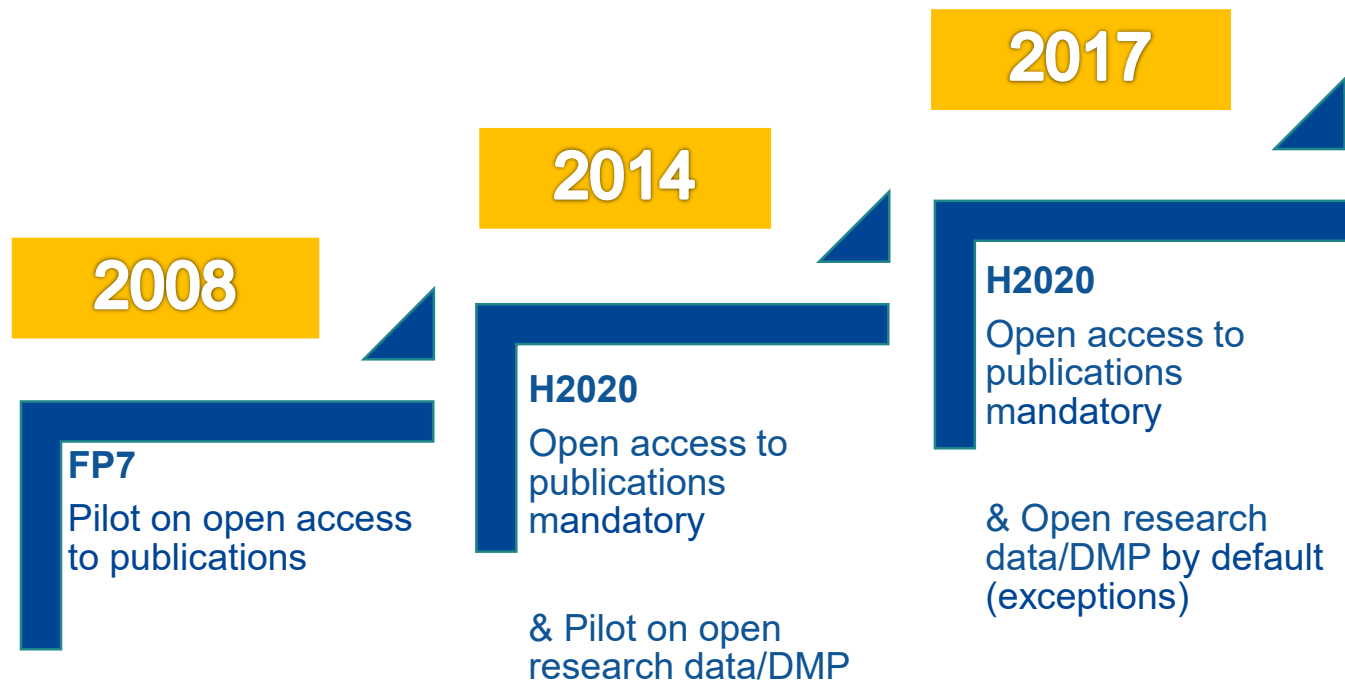

Horizon Europe: ~€95.5bn

Legend:
- Excellent Science
- Global Challenges & Ind. Competitiveness
- Innovative Europe
- Strengthening ERA
- Euratom

- The Commission invests heavily in Research and Innovation.
- Over **30000 H2020 projects**—Projects produce **research outputs**, **data**, **deliverables**, etc.
- It becomes increasingly important to make the **best possible use** of previous work.
- **Over 200K peer-reviewed publications** in Horizon 2020 to date.

From open access to open science

Evolution of Open Science policies across Framework Programmes

2008

FP7
Pilot on open access to publications

2014

H2020
Open access to publications mandatory

& Pilot on open research data/DMP

2017

H2020
Open access to publications mandatory

& Open research data/DMP by default (exceptions)

Under **Horizon Europe (2021)**

- Open Science **embedded** across Horizon Europe

- **Strengthening of the open access obligations** and focus on responsible research data management in line with the FAIR principles

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Requirements for open science in Horizon Europe

Open science evaluated under criterion 'Excellence' (not 'Impact'); practices beyond mandatory incentivized through evaluation; publications evaluated on basis of **qualitative** assessment provided (**not Journal Impact Factor**)

- **Publications**: Immediate open access (= **no embargo**) through repositories to **ALL publications** under CC BY licenses; only publication fees in **full open access venues** reimbursable (= hybrids possible but not at EC expense)

- **Intellectual Property Rights**: requirement to **maintain enough rights** to meet open access requirements to publications (a **prior obligation** of the beneficiary towards the funder)

- **Research data**: research data management (including **data management plans**) mandatory for all projects generating and/or reusing data; open access '**as open as possible as closed as necessary**'

- **Technical requirements for research outputs** to **enable FAIR: trusted** repositories; open metadata using standards; **PIDs** for digital objects, authors, and if possible organizations and grants.

- **Reproducibility of research**: information for validation of publications and for validation and reuse of data required; **access for validation** of publications must be provided (legitimate interests safeguarded)

- **Open science and public emergencies**: **immediate open access to all research outputs** (non-exclusive licenses under fair and reasonable conditions to the relevant legal entities if open access not possible)

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3. Open Research Europe (ORE)

@OpenResearch_EU

https://open-research-europe.ec.europa.eu/
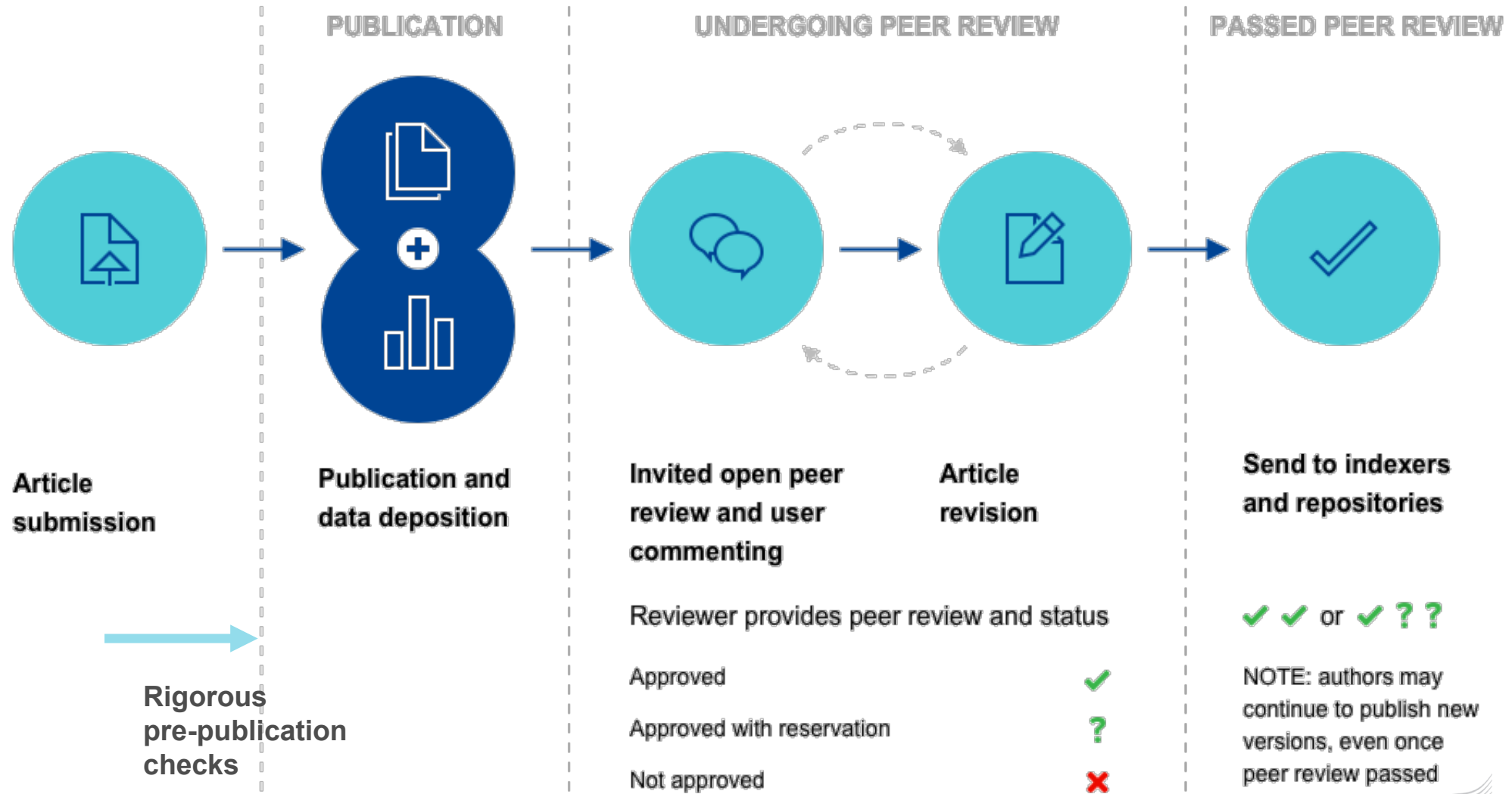
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About ORE (1/2)

- Publishing platform for peer-reviewed research for Horizon 2020/Europe grantees, incl. Euratom and COST actions
  - Publishes **original research** funded at least partially by the EC and **in all scientific areas**
  - **Optional** service, at **no cost to researchers** during and **after end of their projects**
- Innovative publishing model initiated by a funder
  - **Post-publication open peer-review**: first publication and then open review (both reviewer names and reviews open)
  - All articles and reviews in **open access under CC BY licenses**
  - **High scientific standards,** policies/guidelines, **Scientific Advisory Board** and scientific advisory in various areas

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About ORE (2/2)

- Launched in March 2021: > **380 publications** in all fields; strong waive of submissions at outset of third year of life

- Researcher-led **community gateways and collections** in particular fields (ca. 120 gateway/collections advisors; over 30 gateways, over 90 collections)

- **Indexed** in Scopus, ERIH+, Inspec and gradually other important indexers & national lists (**no JIF**!); has just been accepted in PubMed

- Operated though a **public procurement until 2026;** has brought price of service down (currently **F1000 Research Ltd**).

How does it actually work?

PUBLICATION

UNDERGOING PEER REVIEW

PASSED PEER REVIEW

Article submission

Publication and data deposition

Invited open peer review and user commenting

Article revision

Send to indexers and repositories

Rigorous pre-publication checks

Reviewer provides peer review and status

Approved ✔

Approved with reservation ?

Not approved ✘

✔ ✔ or ✔ ? ?

NOTE: authors may continue to publish new versions, even once peer review passed

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A vision for ORE as of 2026

- A top-quality, trusted **open access publishing service**

- **Collectively driven, owned and supported** by European research funders and research institutions, as a service for **researchers**, with **no author-facing fees**

- Supported by an **open source infrastructure** to underpin the publishing workflow

- **Ambition for a 'diamond' open access** publishing service

    - Driven by the research community with no fees for readers or authors (i.e. no payment of Article Processing Charges for the authors or their institution)

- Discussion with interested national research funders across Europe, aiming at:
  (i) further detailing the **vision with principles**, and a **roadmap** for implementation
  (ii) converging on a **not-for-profit 'business model'**
 (iii) soliciting **participation and funding commitments**

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4. Reforming Research Assessment

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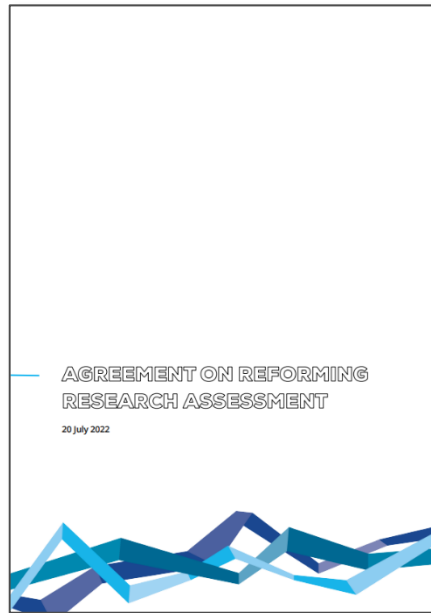# Need for reform of research assessment

- To reflect **evolving research processes**
  - ✓ Digital transition; Iterative and recursive; Collaborative and open

- To reflect **increasing demands on research**
  - ✓ Societal, environmental, economic challenges; Diversity of outputs

- To move away from **inappropriate uses** of journal- and publication-based metrics
  - ✓ Rewards quantity and publication venue rather than quality; does not reward sharing, collaboration and outputs other than publications

- To further support the **quality of research** and the **attractiveness of research environments**
  - ✓ Requires a system and cultural change, involving institutions, funders and researchers

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Timeline of progress

Commission Scoping Report
November 2021
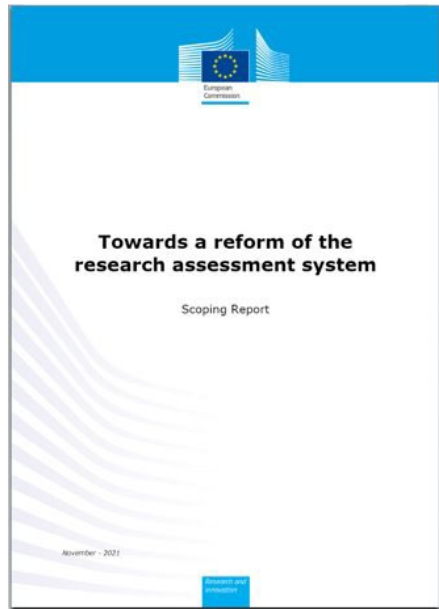
Agreement on Reforming Research Assessment
20 July 2022

Coalition Constitutive Assembly
1 December 2022

Next steps

- Signatories start the process of **reviewing or developing criteria, tools and processes** in line with the Agreement principles and commitments

- Call for **CoARA Working Groups** (28 March – 6 June 2023)

531 signatories (8 May 2023)
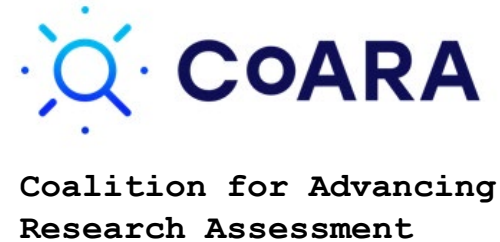
455 members of CoARA (8 May 2023)

CoARA
Coalition for Advancing Research Assessment

EC support to the reform

ERA Forum

- Liaison with MS/AC
- Facilitate the setting up of national/regional framework conditions

CoARA

- Financial (Horizon Europe) and in-kind support to CoARA operations
- Active member as research funder & DORA signatories
- CoARA Steering Board observer and operational support to the Secretariat

- Synergies with other EU policy initiatives (University Alliances, EOSC, ORE… others)
- Evolution of assessment practices for EC funding on R&I

- Foster global alignment and cooperation

5. EOSC & EU copyright and regulatory framework fit for research

Enabling open science through developing the European Open Science Cloud

EOSC is a community-driven process

Gradual implementation based on mutual alignment and pooling of resources at European, national and institutional levels

➢ **EOSC European partnership** and EOSC **Tripartite governance**

To reach the following objectives by 2030:

1. **Open Science (OS) practices and skills become the 'new normal'**

   ➢ Open Science addressed in **national policies**, action plans and research funding programmes
   ➢ **Catalogue of Open Science best practices** across the Member States and Associated Countries
   ➢ Outreach and engagement through European and national **EOSC tripartite events**
   ➢ Critical mass of **FAIR data scientists and data stewards**

2. **EOSC enables a 'Web of FAIR data and services' for science**

   ➢ Procure **an EOSC Core Infrastructure and Exchange platform** with functionalities available 24/7
   ➢ **Sustainability options** over the long-term
   ➢ Common **interoperability and quality frameworks** for research data, codes & software
   ➢ Grow the **EOSC federation** of existing research infrastructures
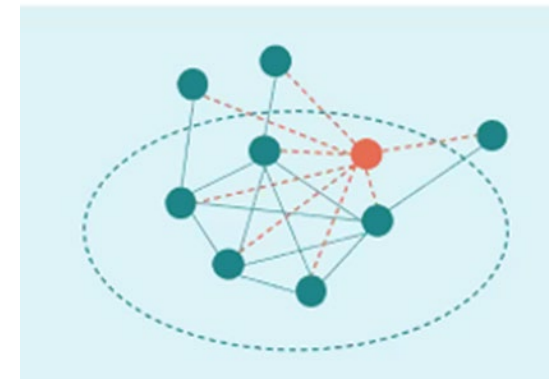   and expand it progressively to the wider public sector and the commercial sector

3. **Assess trends of the uptake of Open science practices across Europe**

   ➢ **EOSC Observatory** and **EOSC European partnership monitoring framework**.

Let's co-create EOSC

Courtesy of the EOSC Association

Open ecosystem

An EU copyright & data legislative and regulatory framework fit for research

- One of the 20 priority areas in the ERA Policy Agenda 2022-2024, with two main outcomes:

  - Identify **barriers and challenges to access and reuse** of publicly funded R&I results and of publications and data for scientific purposes, and identify potential impacts on research, through an analysis of relevant provisions under **EU copyright and data legislation** and related regulatory frameworks, and of relevant institutional and national initiatives.

  - Propose **legislative and non-legislative measures** to improve the current EU copyright and data legislative and regulatory frameworks

- Publication of **four independent experts´ studies** in August 2022 + organization of two workshops in June 2022 and February 2023

Study on EU copyright and related rights and access to and reuse of scientific publications, including open access

Study on EU copyright and related rights and access to and reuse of data

Study on the Open Data Directive, Data Governance and Data Act and their possible impact on research

Study on the Digital Services Act and Digital Markets Act and their possible impact on research

- Upcoming study in 2023 to evaluate the **effects of the EU copyright framework on research** and the effects of **potential interventions** and to identify and present relevant provisions for research in EU data and digital   legislation, with a focus on rights and obligations

Thank you!

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