

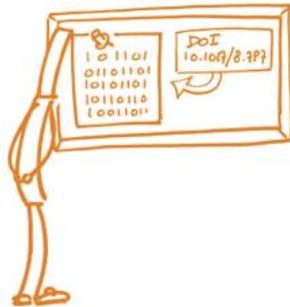
# Why care about research data: The European perspective

## FAIR DATA PRINCIPLES

AH!



FINDABLE



ACCESSIBLE

HOW DO YOU  
OPEN A .XZQ FILE?



INTEROPERABLE



REUSABLE

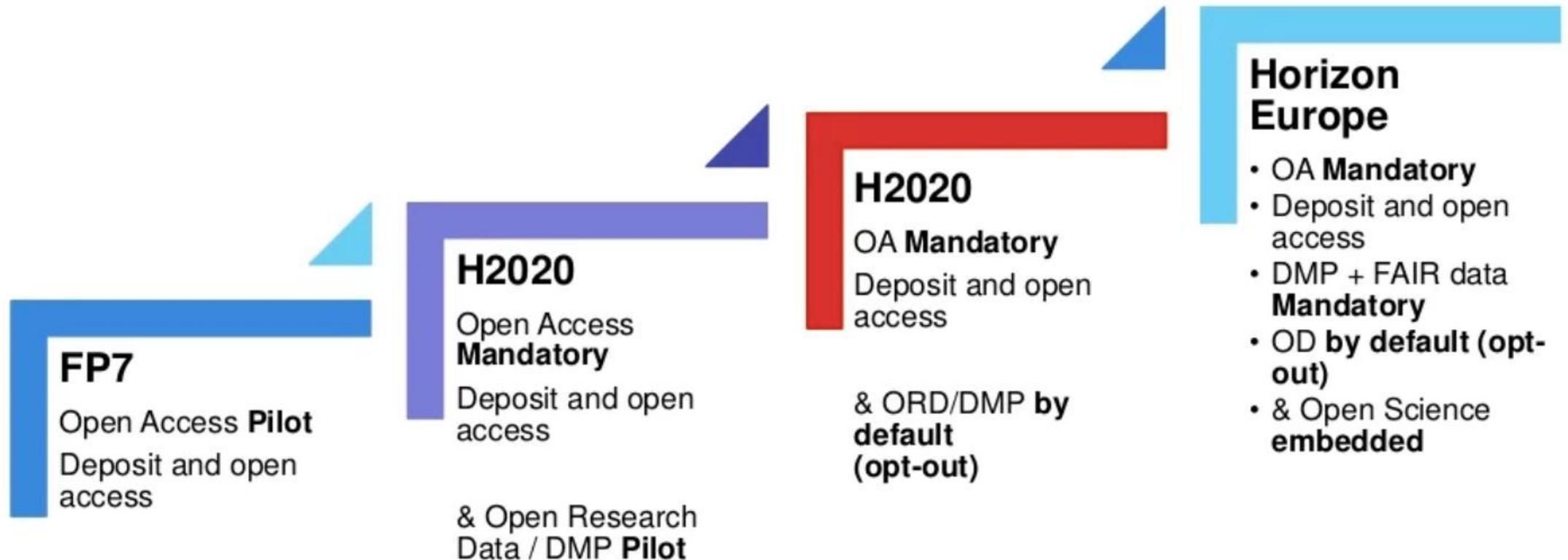
Dr Birgit Schmidt  
University of Göttingen, State and  
University Library  
11 October 2022

<https://book.fosteropenscience.eu/>

# A diverse European data landscape

- **Interplay between European, regional, national and institutional levels**, readiness and commitments vary
- **Data and infrastructures are core assets for research and innovation**
- **Steering via policies** (from encouragement to mandates), **regulations** (e.g. GDPR), **funding and investments** (e.g. Horizon Europe, national programmes, institutional contributions, industry)
- However, there are **several challenges**:
  - Strategies only partly aligned (autonomy, subsidiarity)
  - Funding concentrates on development, not maintenance and sustainability
  - Human infrastructure (skills and competences, roles, career development) only partly addressed and underresourced

# Open Science policies: the evolution of the EU funding programmes for R&I



# Why care about FAIR data?

- Research data plays a central role across the research cycle in almost all disciplines
- Research data management (RDM) enables reproducibility and (re)use
- Data is **meant for use by humans and machines**
  - Many actions: plan, discover, reuse, process, describe, archive, share, publish, cite, etc.
  - Enabled by: documentation, infrastructure, standards

## The Research Data Management Lifecycle

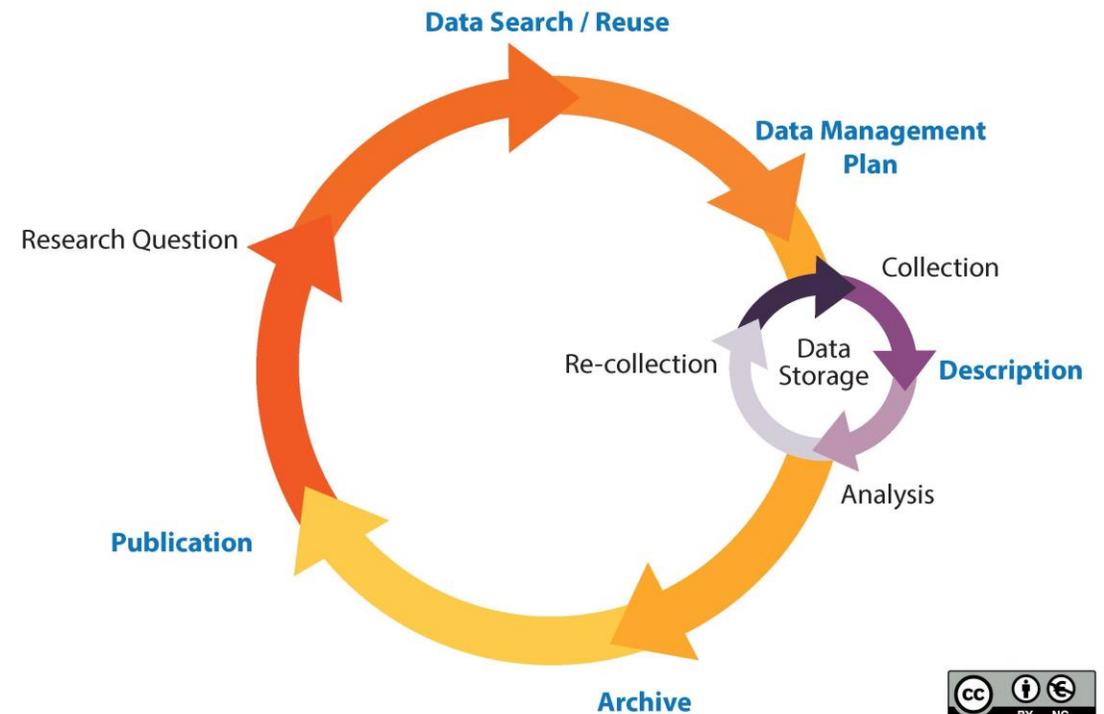


Image source: [libguides.rutgers.edu](http://libguides.rutgers.edu)

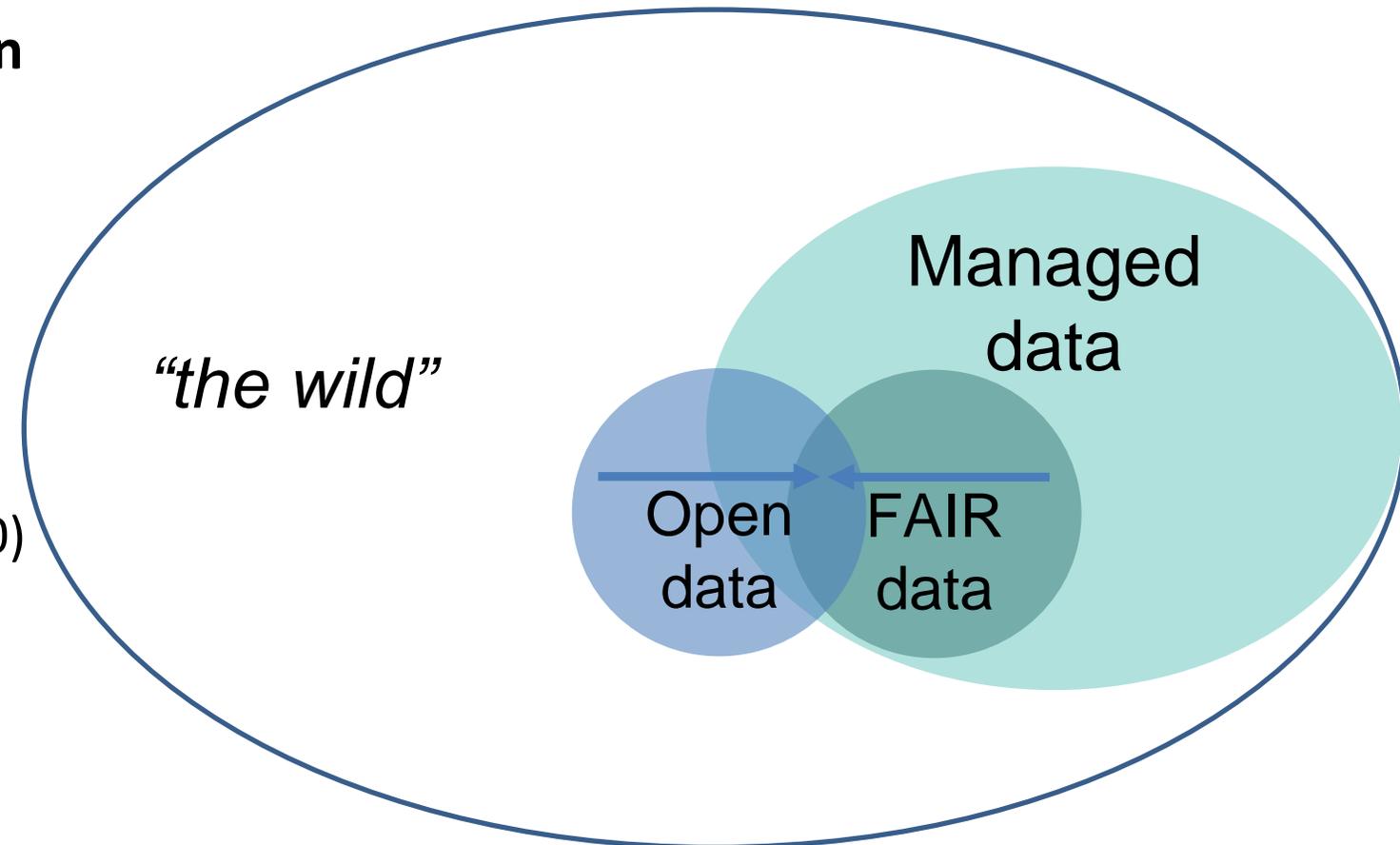
# FAIR and Open Data

**The FAIR data principles and Open data are complementary concepts.**

#1 Make data FAIR.

#2 Make data “as open as possible while as closed as necessary”.

(European Commission, Horizon 2020)



# Horizon Europe & Open Science practices

## **Mandatory** vs. **recommended** Open Science practices

- Proposers **have to provide concrete information on how they plan to comply with the mandatory OS practices**
- OS practices will be evaluated under the **'Excellence'** criterion (in particular under methodology) and under **'Quality and efficiency of implementation'**
- A clear explanation on how **recommended OS practices** are adopted will result in a **higher evaluation score**.

## **Mandatory open science practices**

- Some open science practices are **mandatory for all beneficiaries per the grant agreement**. They concern:
  - **open access to scientific publications** under the conditions required by the grant agreement;
  - **responsible management of research data in line with the FAIR principles of 'Findability', 'Accessibility', 'Interoperability' and 'Reusability'**, notably through the generalised use of data management plans, and open access to research data under the principle 'as open as possible, as closed as necessary', under the conditions required by the grant agreement;
  - **information about the research outputs/tools/instruments needed to validate the conclusions of scientific publications or to validate/re-use research data**;
  - digital or physical access to the results needed to validate the conclusions of scientific publications, unless exceptions apply;
  - in cases of **public emergency**, if requested by the granting authority, immediate open access to all research outputs under open licenses or, if exceptions apply, access under fair and reasonable conditions to legal entities that need the research outputs to address the public emergency<sup>19</sup>.

These obligations are described in the Model Grant Agreement (Article 17) and detailed guidelines on complying with them are provided in the Annotated Grant Agreement (Article 17).

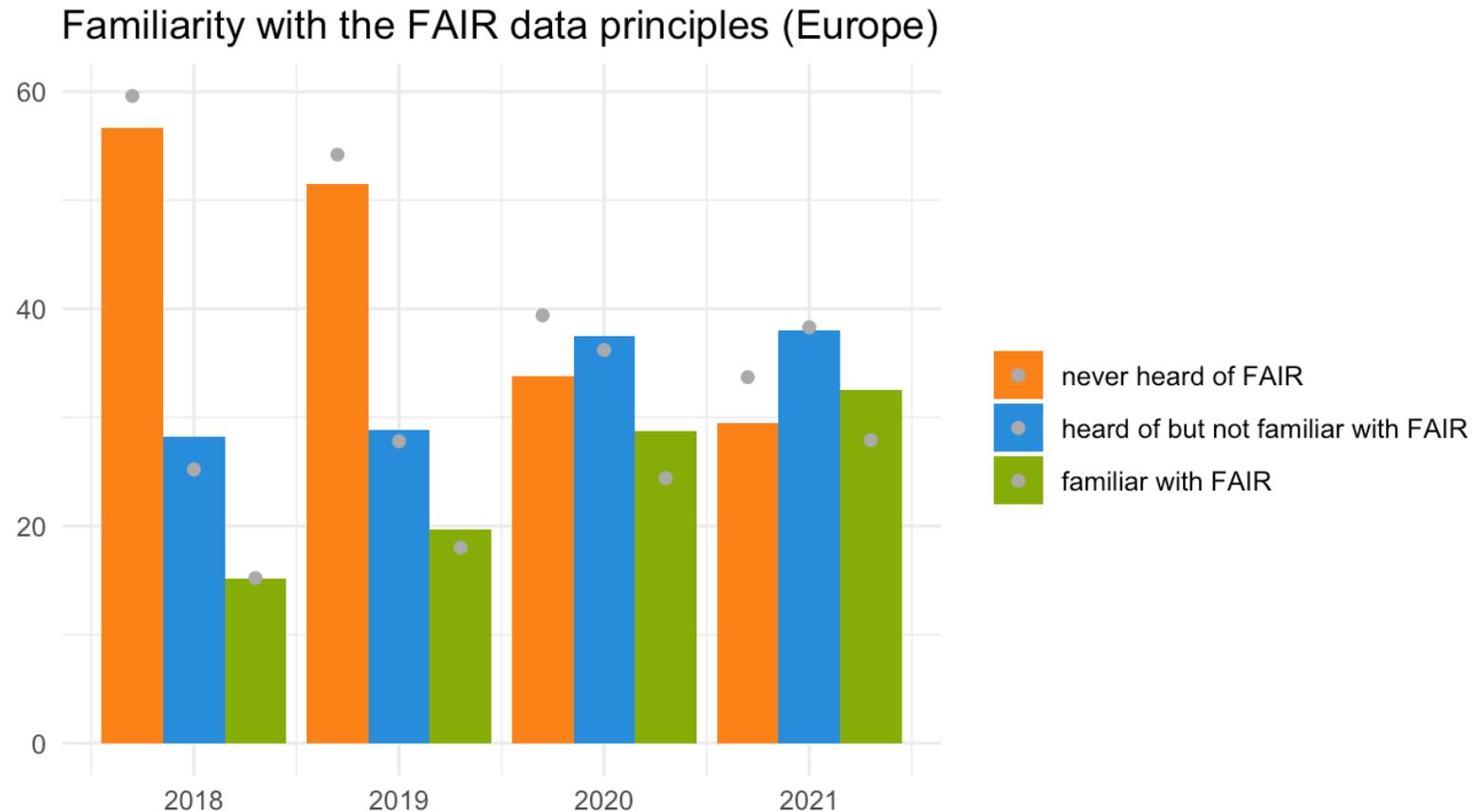
Source: European Commission. Horizon Europe Programme Guide, 19 July 2021, [https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide\\_horizon\\_en.pdf](https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf)

# European Research Area (ERA) Policy Agenda (2022-2024)

<i>Priority Area: Deepening a truly functioning internal market for knowledge</i>	
ERA Actions	Outcomes
<b>1. Enable the open sharing of knowledge and the re-use of research outputs, including through the development of the European Open Science Cloud (EOSC)</b>	<ul style="list-style-type: none"> <li>• Deploy Open Science principles and identify Open Science best practices</li> <li>• Deploy the core components and services of EOSC and federate existing data infrastructures in Europe, working towards the interoperability of research data</li> <li>• Establish a monitoring mechanism to collect data and benchmark investments, policies, digital research outputs, open science skills and infrastructure capacities related to EOSC</li> </ul>
<b>2. Propose a EU copyright and data legislative and regulatory framework fit for research</b>	<ul style="list-style-type: none"> <li>• Identify barriers and challenges to access and reuse of publicly funded R&amp;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</li> <li>• Propose legislative and non-legislative measures to improve the current EU copyright and data legislative and regulatory frameworks</li> </ul>
<b>3. Advance towards the reform of the Assessment System for research, researchers and institutions to improve their quality, performance and impact</b>	<ul style="list-style-type: none"> <li>• Analysis of legal and administrative barriers at national and trans-national level for a modern research assessment system</li> <li>• Create a coalition of European research funders and research performers who agree on a new approach for research assessment, following wide and inclusive consultations at European and international level</li> <li>• Implementation plan of the coalition to roll-out the new approach, including pilots in different domains</li> </ul>

Source: Council of the European Union (2021). Conclusions on the future governance of the European Research Area (ERA). Brussels, 19 Nov 2021. 14126/21. Available at: <https://data.consilium.europa.eu/doc/document/ST-14126-2021-INIT/en/pdf>

# How familiar are researchers with FAIR?

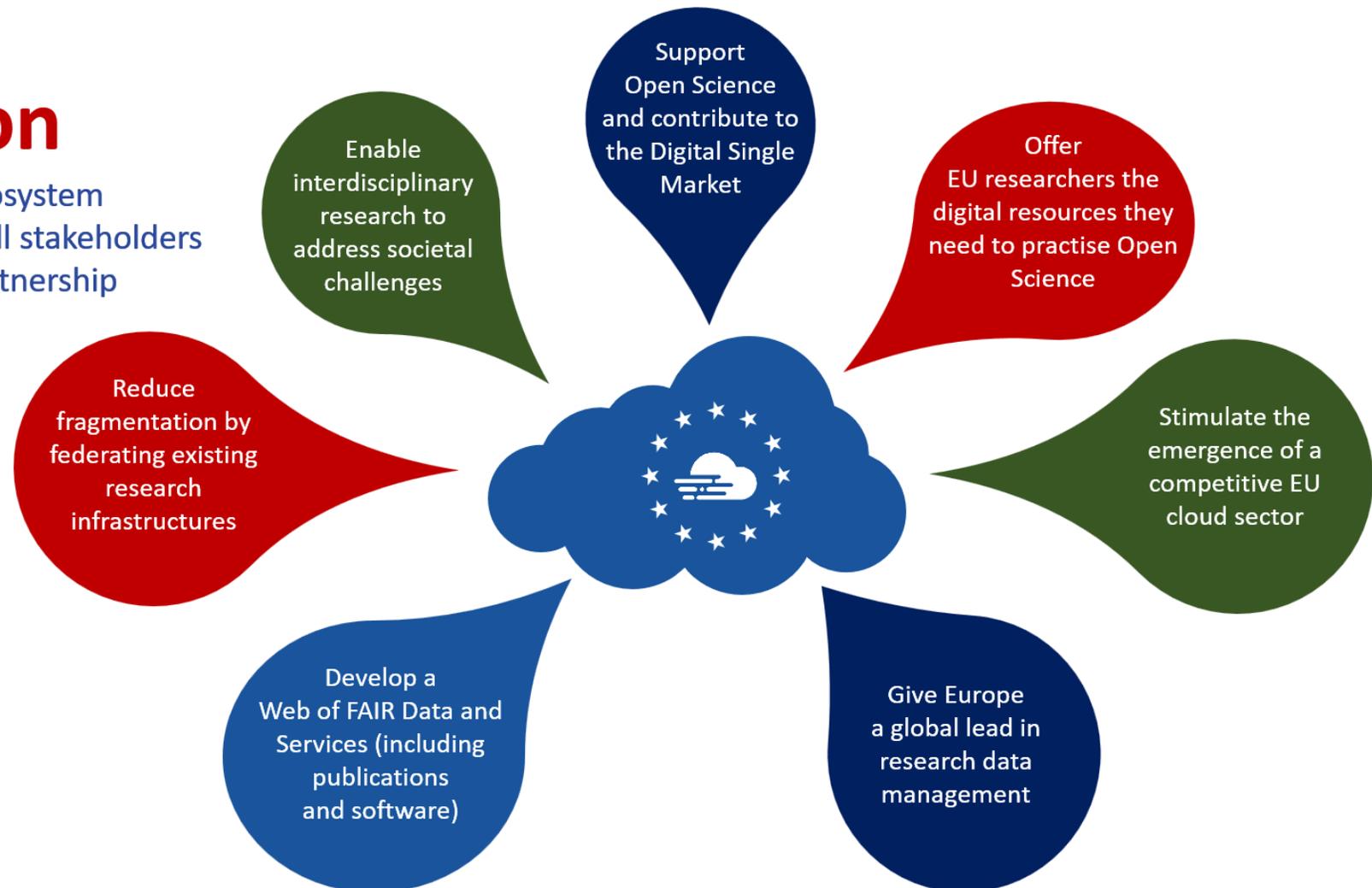


Source: Research, N., & Goodey, G. (2021). State of Open Data Survey 2021 additional resources. [Data set]. figshare. <https://doi.org/10.6084/M9.FIGSHARE.17081231.V1> - The grey dots represent the percentage for all respondents (global).

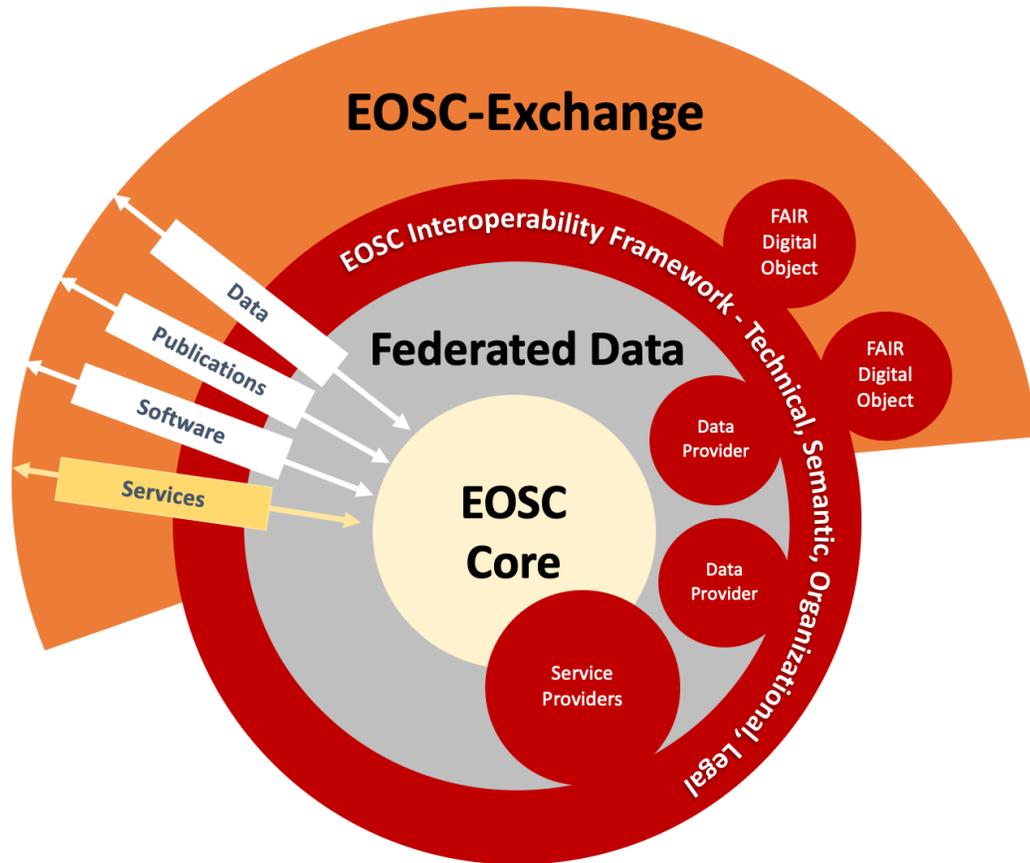
# EOSC Vision: A web of FAIR data and services

## The Vision

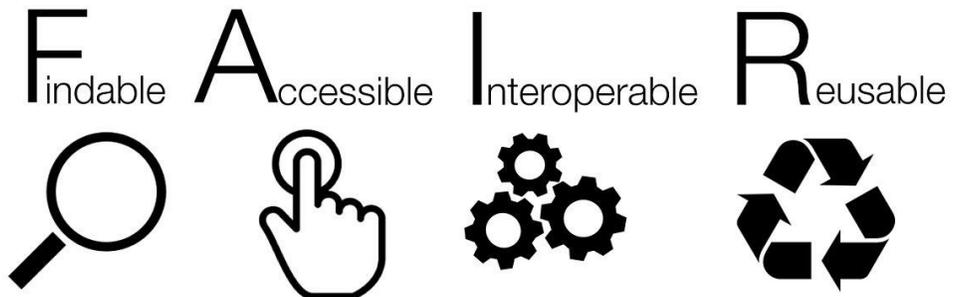
Building the EOSC ecosystem collaboratively with all stakeholders through the EOSC Partnership



# FAIR is central to principles in EOSC



- Is the glue that connects data & services
- Requirement for FAIR to support reuse
- Use community standards
- Share all types of output (openly)



# Benefits of EOSC for researchers

- Federated identity management – ease of single sign on
- Access to a greater number of services
- Funding provided to pay for compute e.g. EGI-ACE, DICE
- Discovery of related data from other disciplines / sectors
- Greater ability to collaborate and address key research questions

# European Universities Initiative



European Universities are transnational alliances that will become the *universities of the future*, promoting **European values and identity**, and revolutionizing the **quality and competitiveness** of European higher education.

Initiative in 2017: “enable students to obtain a degree by combining studies in several EU countries and contribute to the international competitiveness of European universities”

- Pilot Call 2019: 17 alliances, 114 HEIs
- Pilot Call 2020: 24 alliances, 165 HEIs



5% of HEIs in Europe

# European Universities: A testbed for enhanced collaboration & transformation

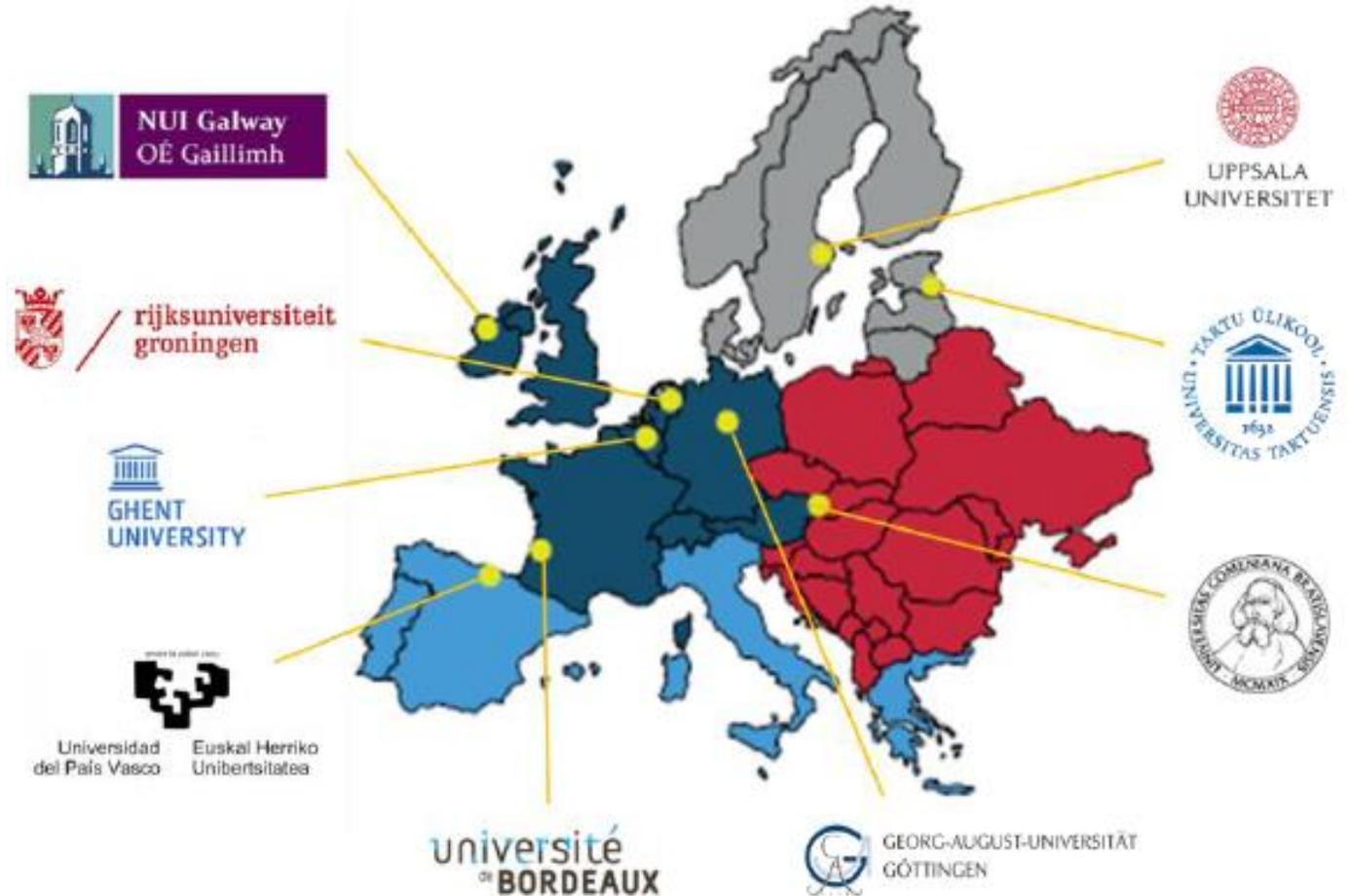
- Additional earmarked funds for creating **a joint R&I agenda** (SwafS calls for the 2019 and 2020 cohorts)
- **Transformation modules** (TM, suggestions from the call)
  - Common R&I agenda
  - Sharing infrastructures and resources
  - Reinforcing cooperation in R&I with other sectors
  - Strengthening human capital
  - Mainstreaming Open Science
  - Embedding citizens & society
- About 2 out of 3 alliances included a TM on Open Science

# ENLIGHT E+/H2020: same alliance



- **9 comprehensive, research-intensive universities**
- Sharing a deep commitment to their **social responsibility**:

University of the Basque Country  
University of Bordeaux  
Comenius University Bratislava  
National University Ireland Galway  
Ghent University  
University of Göttingen  
University of Groningen  
University of Tartu  
Uppsala University



- ENLIGHT serves over **5.5M inhabitants**, important **diversity in size**
- With **11 official languages**, a strong **intercultural diversity**

# RISE | FOCUS ON RESEARCHERS and THEIR ENVIRONMENT



Open Science incentives & starter kits



Sharing and connecting digital research infrastructures



Civil Society engagement tools & mentoring



Early career development instruments

# MAINSTREAMING OPEN SCIENCE ACROSS THE ENLIGHT ALLIANCE

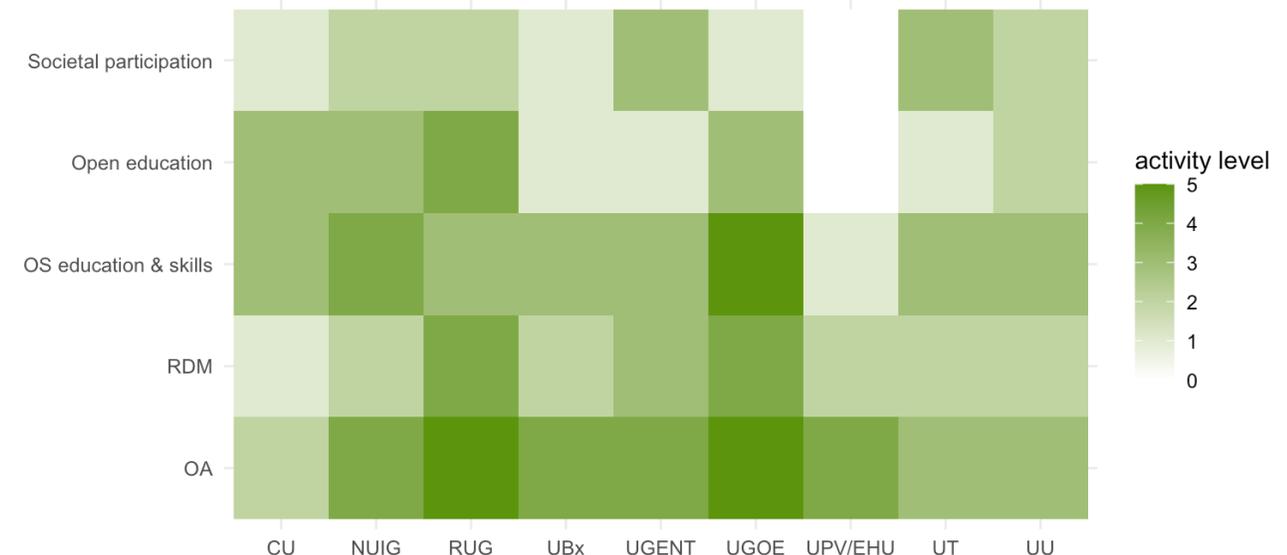
**Create a joint understanding & implement activities:** in a first step, learn about current approaches, identify good practice, gaps and opportunities.

Our survey\* provided the following main findings:

- Overall **good levels of activity and support for OS**
- **Commonalities and diversity** across the ENLIGHT network
- **Willingness and room to learn from each other** (i.e. opportunities and interest to dive deeper into selected topics and challenges)

\* Bringing together: 1) Survey on OS topics (Dec 2021-Jan 2022); 2) Survey on research data management (RDM) and FAIR data (Nov 2021)

Open Science activity areas (self-assessment) at ENLIGHT partner universities



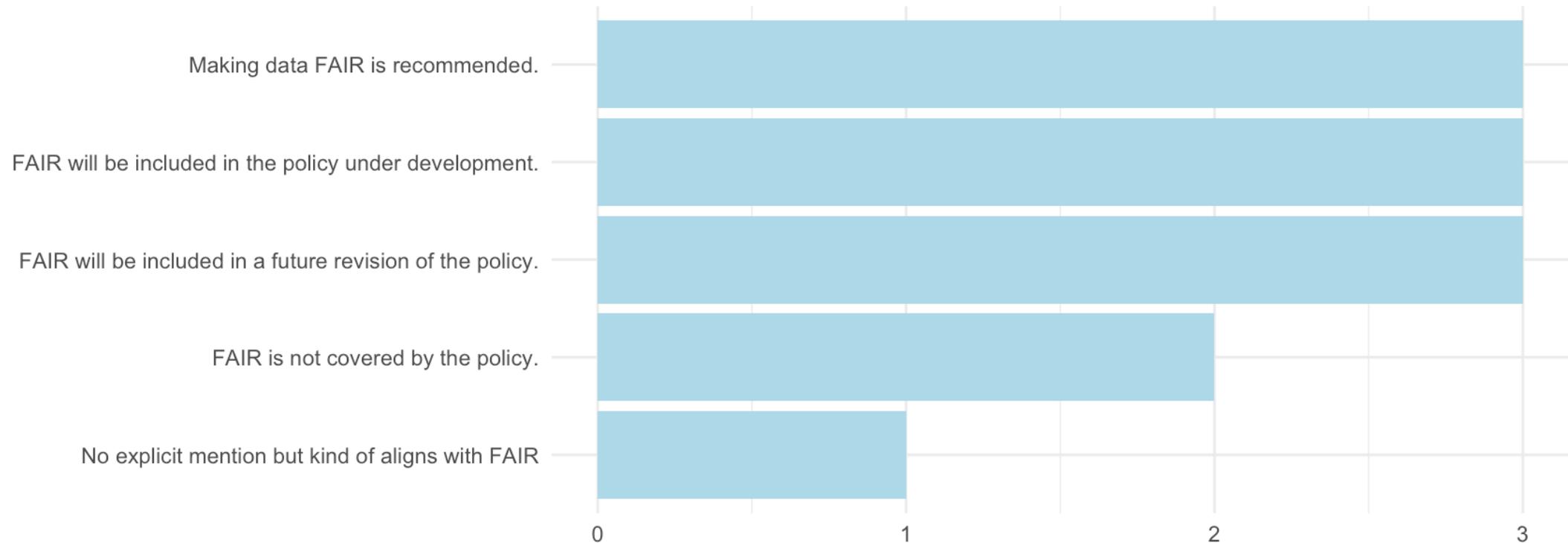
Data and code is available via:

- [https://github.com/gitti1/ENLIGHT\\_OS](https://github.com/gitti1/ENLIGHT_OS)
- <https://rstudio.cloud/project/3366390>
- Report submitted to the European Commission in August 2022, <https://doi.org/10.5281/ZENODO.7092120>

# Data policies at ENLIGHT partner institutions

4 policies in place, 3 under development, 2 not started yet

FAIR in RMD policies at ENLIGHT institutions  
9 responses



# Conclusions & remaining challenges

- Open Science, data management (incl. FAIR and open data) and digital research infrastructures have arrived on the institutional R&I agenda
- Ensure and sustain commitment on implementing Open Science at all levels
- Promote existing solutions, identify and address gaps (infrastructures, support, training, etc.)
- Engage all relevant actors, bringing together top-down and bottom-up approaches
- Celebrate achievements but acknowledge remaining barriers and inequities

# Thank you for your attention! Questions?

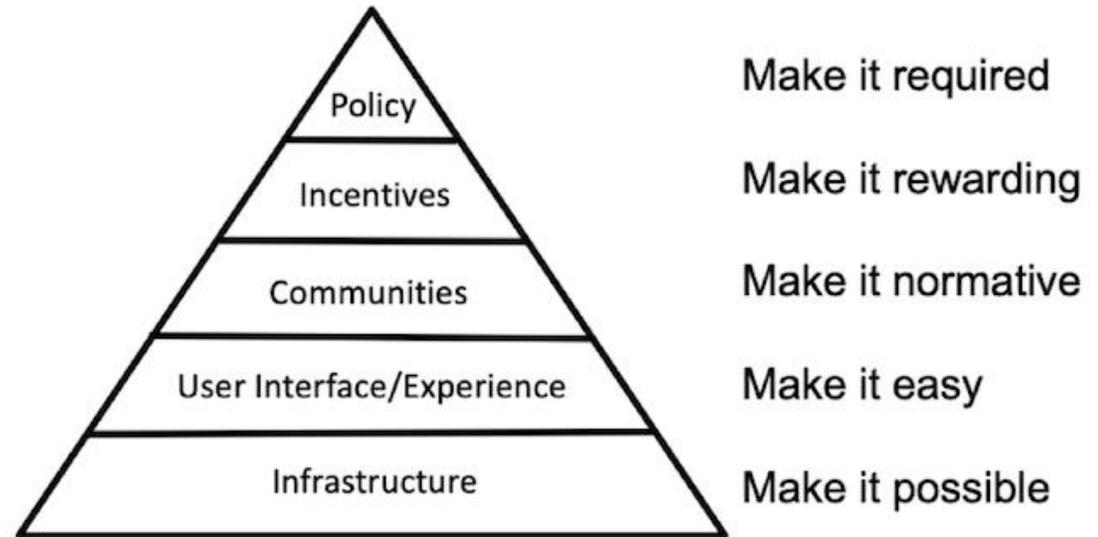
Contact: Birgit Schmidt, [bschmidt@sub.uni-goettingen.de](mailto:bschmidt@sub.uni-goettingen.de)

# References

- Higman, R., Bangert, C., & Jones, S. (2019). Three Camps, One Destination: The Intersections of Research Data Management, FAIR and Open. *Insights* 32 (1): 18. <http://doi.org/10.1629/uksg.468>
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# Open Science requires cultural change

- Open science/scholarship targets a broad **cultural change** in research, education & communication
- **Bottom-up and top-down efforts** are combined
- Uptake and success depends on **individual and community commitment**
- A range of **individual and collective benefits** can be achieved, e.g. visibility, broader access to and (re)use of research outcomes (publications, data, code, etc.)



Open Science: Strategy for Cultural Change  
(Nosek, 2019, <https://www.cos.io/blog/strategy-for-culture-change>)

# Towards a European Researcher Competence Framework

- Aim: improve support for researcher careers in the context of the ERA
- Tools: e.g. create a researcher competence framework
- First steps: Conceptual model (draft), update of [European Skills, Competences, Qualifications and Occupations classification \(ESCO\)](#) (v1.1) – several relevant for Open Science: e.g. manage research data, manage open source software, increase the impact of science on policy and society, promote open innovation in research, manage open publications)



Important to keep in mind that:

- The development process is still ongoing
- All competences are equally important & interrelated
- Each stakeholder can use the Framework as a starting point to address its own needs
- Researchers need to develop competences in all 7 areas, but should not acquire the same or the highest level of proficiency for all competences

Search skills

Find

- K - knowledge +
- L - language skills and knowledge +
- S - skills +
- T - transversal skills and competences +

**manage findable accessible interoperable and reusable data**

conducting studies, investigations and examinations > conducting academic or market research > skills > information skills > managing information > managing information > manage data > manage findable accessible interoperable and reusable data >

**Description**

**Description**

Produce, describe, store, preserve and (re) use scientific data based on FAIR (Findable, Accessible, Interoperable, and Reusable) principles, making data as open as possible, and as closed as necessary.

**Alternative Labels**

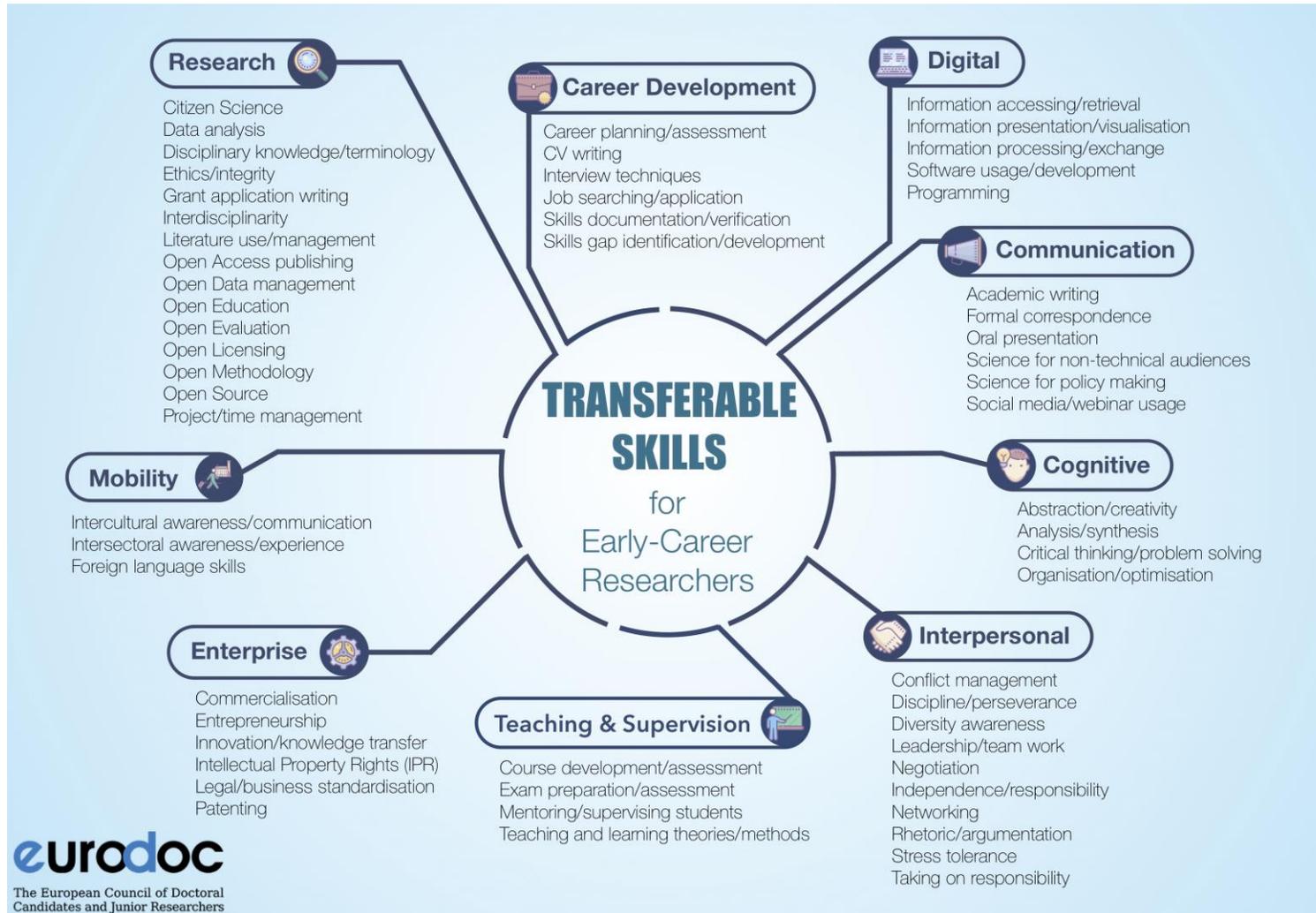
- support data reuse in research
- ensure data reusability
- ensure corrected data storing
- ensure data availability

**Skill type**

skill

**Skill reusability level**

cross-sector skills and competences



Source: Weber, C. T., Borit, M., Canolle, F., Hnatkova, E., O'Neill, G., Pacitti, D., & Parada, F. (2018). Identifying and Documenting Transferable Skills and Competences to Enhance Early Career Researchers Employability and Competitiveness. Zenodo.

<https://doi.org/10.5281/ZENODO.1299178>