



**USING SCIENCE DIPLOMACY  
FOR ADDRESSING GLOBAL CHALLENGES**



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# Open Science Diplomacy?

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 770342.

## Case Study: Open Science Diplomacy

Open Science policy arena as a potential site for science diplomacy: How can Open Science be exploited for decision-making support, knowledge resources and science diplomacy governance frameworks? How is the European Open Science strategy perceived and how can it be harnessed for foreign policy? How can science diplomacy and Open Science mutually benefit from each other, while the modus operandi of the global science system is facing fundamental changes?

- 1) content/procedural perspective: how can/does Open Science help foreign policy-making and vice versa
- 2) thematic perspective: Open Science as topic of foreign policy



## Case study details

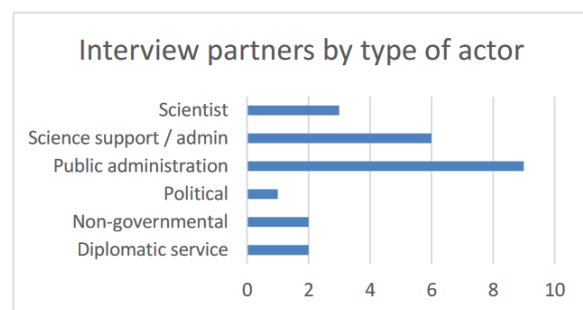
Duration: June 2018 - June 2019

Methods: Mixed qualitative approach, document analysis, participatory observation, 23 expert interviews, computer supported QDA

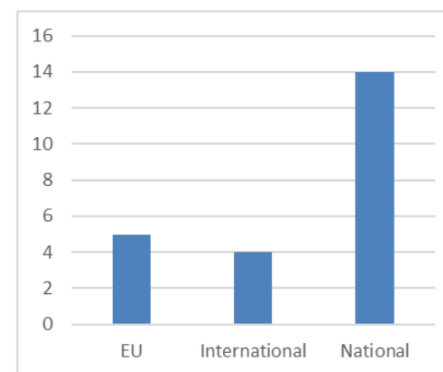
Poster: [https://www.s4d4c.eu/wp-content/uploads/2019/10/6-Open-Science-Diplomacy\\_A4.pdf](https://www.s4d4c.eu/wp-content/uploads/2019/10/6-Open-Science-Diplomacy_A4.pdf)

Report: [https://www.s4d4c.eu/wp-content/uploads/2020/03/D3.2\\_6\\_Open\\_Science\\_final.pdf](https://www.s4d4c.eu/wp-content/uploads/2020/03/D3.2_6_Open_Science_final.pdf)

Training: Open Science in Global Health (Diplomatische Akademie 2019)



**Figure 2: Interview partners by type of actor**



**Figure 3: Governance level of interview partners' Open Science activities**







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# UNESCO, WHO and the UN High Commissioner for Human Rights call for “open science”

A lot has changed....

We see more international policy engagement for the topic

UNESCO JOINT  
APPEAL 27/10/2020

UNESCO Joint Appeal <https://en.unesco.org/news/joint-appeal-open-science#:~:text=We%2C%20the%20Directors%2DGeneral%20of,open%2C%20inclusive%20and%20collaborative%20science.>

19/01/2019 USA: President Trump today signed into law the *Open, Public, Electronic and Necessary (OPEN) Government Data Act*, a sweeping, government-wide mandate requiring U.S. federal agencies to publish all non-sensitive government information – including federally-funded research – as open data.



"The COVID-19 crisis has shown that cooperation at international level in research and innovation is more important than ever, including through open access to data and results. No nation, no country can tackle any of these global challenges alone. An important role for science diplomacy is to build bridges between science, technology and innovation practices, national interests, as well as global challenges."

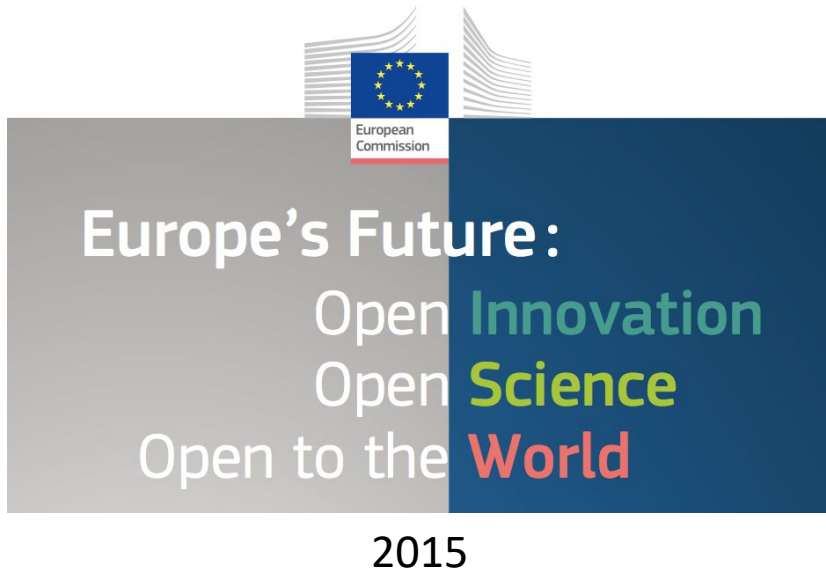
Mariya Gabriel, Commissioner for Innovation, Research, Culture, Education and Youth



SPARC\*  
Europe



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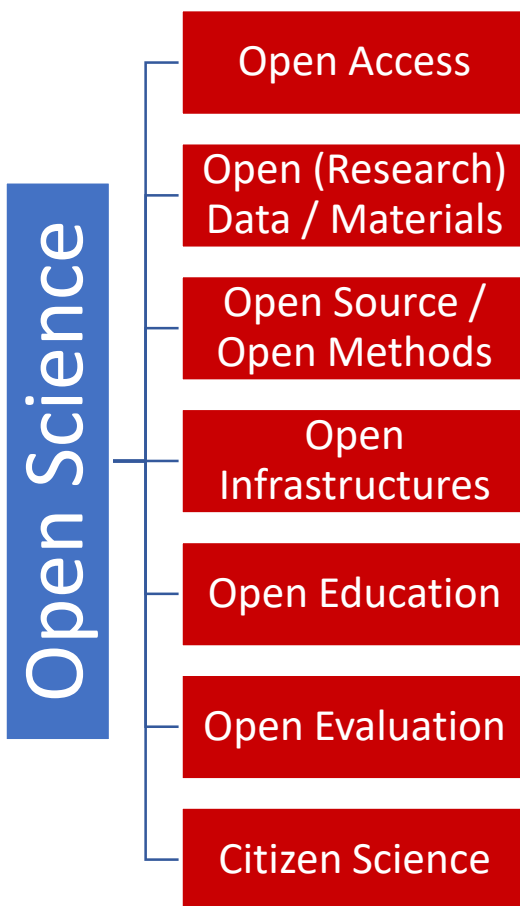
## What is Open Science?

**Open Science** describes an on-going movement in the way research is performed, researchers collaborate, knowledge is shared, and **science** is organised. It affects the whole research cycle and its stakeholders, enhances **science** by facilitating more transparency, openness, networking and collaboration.

*(OpenAIRE)*



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## What is Open Science?

Open science is the idea that scientific knowledge of all kinds should be openly shared as early as is practical in the research process.

Open strategies in science share the following objectives

- sharing and collaboration
- transparency and reproducibility
- re-usability and new applications
- societal participation and feedback loops





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# Open scholarship as strategy, but not as goal

- Goals are equity, inclusivity, a better science that leaves no one behind.
- Open Science is a key enabling strategy, to create culture change on the ground.
- Openness is not only about access and re-use; it has a great anti-discriminatory and power-challenging potential to realise a sociotechnical environment that enables a more equitable knowledge exchange.
- Openness also has the power to mobilise engagement for sustainable development and collaboration.



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# What is Open Science?

- Methods and tools for opening the research cycle
- Scientific / epistemic culture
- International bottom-up movement (since 30 years active, open source since 1970s) – part of open cultures
- Set of policies / set of principles





# Open Science is tackling the following issues of the science system on a global scale

- Reproducibility / replication crisis
- High competition (embargos, positivity bias → unproductivity)
- Massification and high degree of specialization / fragmentation, despite globalization
- Inter- and transdisciplinarity
- Monopolised and expensive publication markets and biased indicators for evaluation
- Privatization of infrastructures and problems of knowledge ownership / knowledge access
- Knowledge transfer: neglect of importance of knowledge commons for global innovation systems and sustainability outside of specialist communities
- Brain drain





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# OPEN SCIENCE TRANSITION STAKEHOLDERS



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**Plan S** is an initiative for open access publishing that was launched in September 2018 by a consortium of major national research agencies and funders from twelve European countries and with support of international funders, such as the Gates Foundation and Wellcome Trust.

**Plan S** requires that, from 2021, scientific publications that result from research funded by public grants must be published in compliant open access journals or platforms.



cOAlition S  
Making full  
and immediate  
Open Access  
a reality

A DECLARATION OF COMMITMENT  
BY PUBLIC RESEARCH FUNDERS



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<https://www.coalition-s.org/>



# Opening the markets of scholarly knowledge

A transition to Open Access requires

- A big change in scientific culture
- Robust and sustainable open infrastructures
- Incentives and rewards
- New diversified and inclusive evaluation systems
- Elaborated monitoring systems and access to national and international research information
- Legal frameworks to support text and data mining and reuse of publicly funded knowledge
- Backing by policy makers and funders on global scale

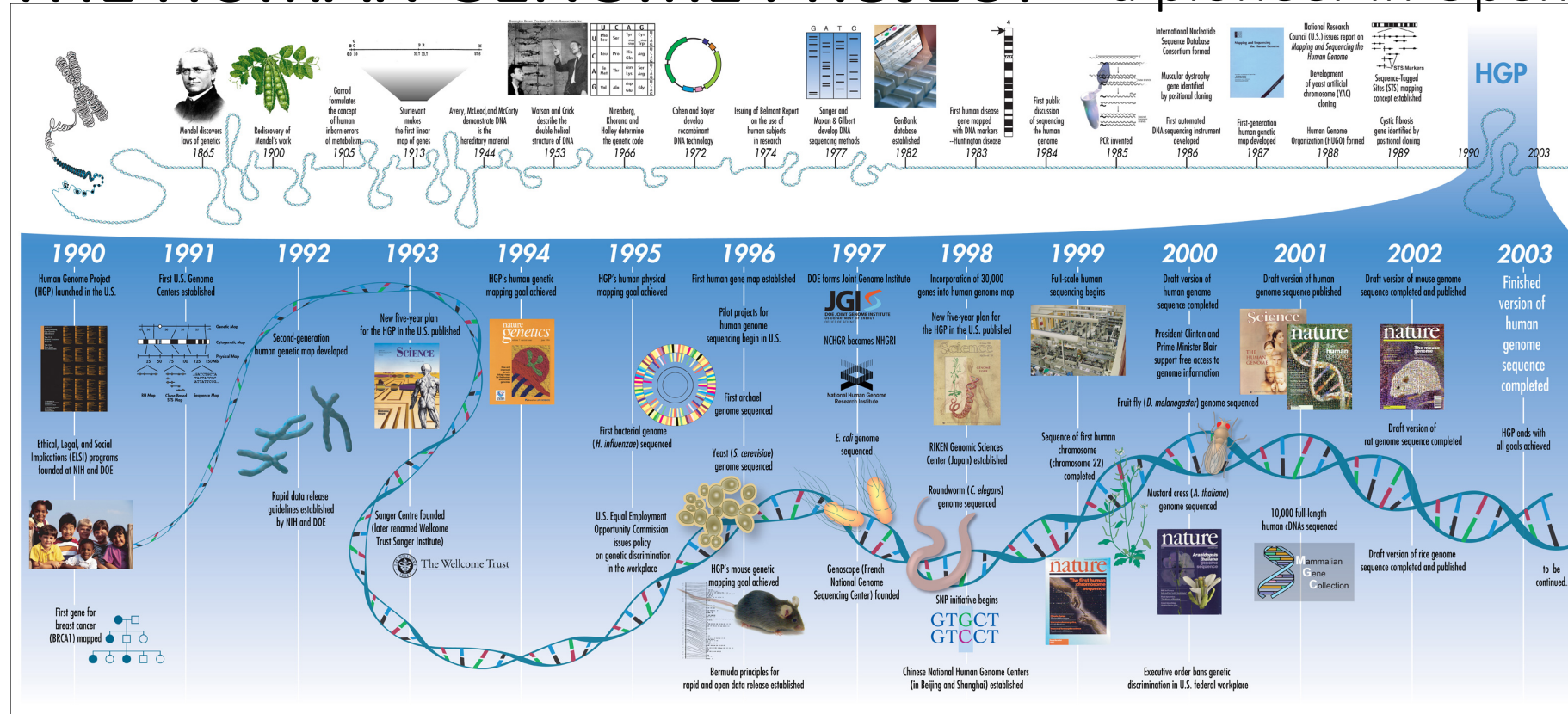






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# THE HUMAN GENOME PROJECT – a pioneer in Open Science



The Human Genome Project Timeline contains major milestones in genomics from 1865 to 2003. More: [www.genome.gov/11007569](http://www.genome.gov/11007569). Credit: Darryl Leja, NHGRI.



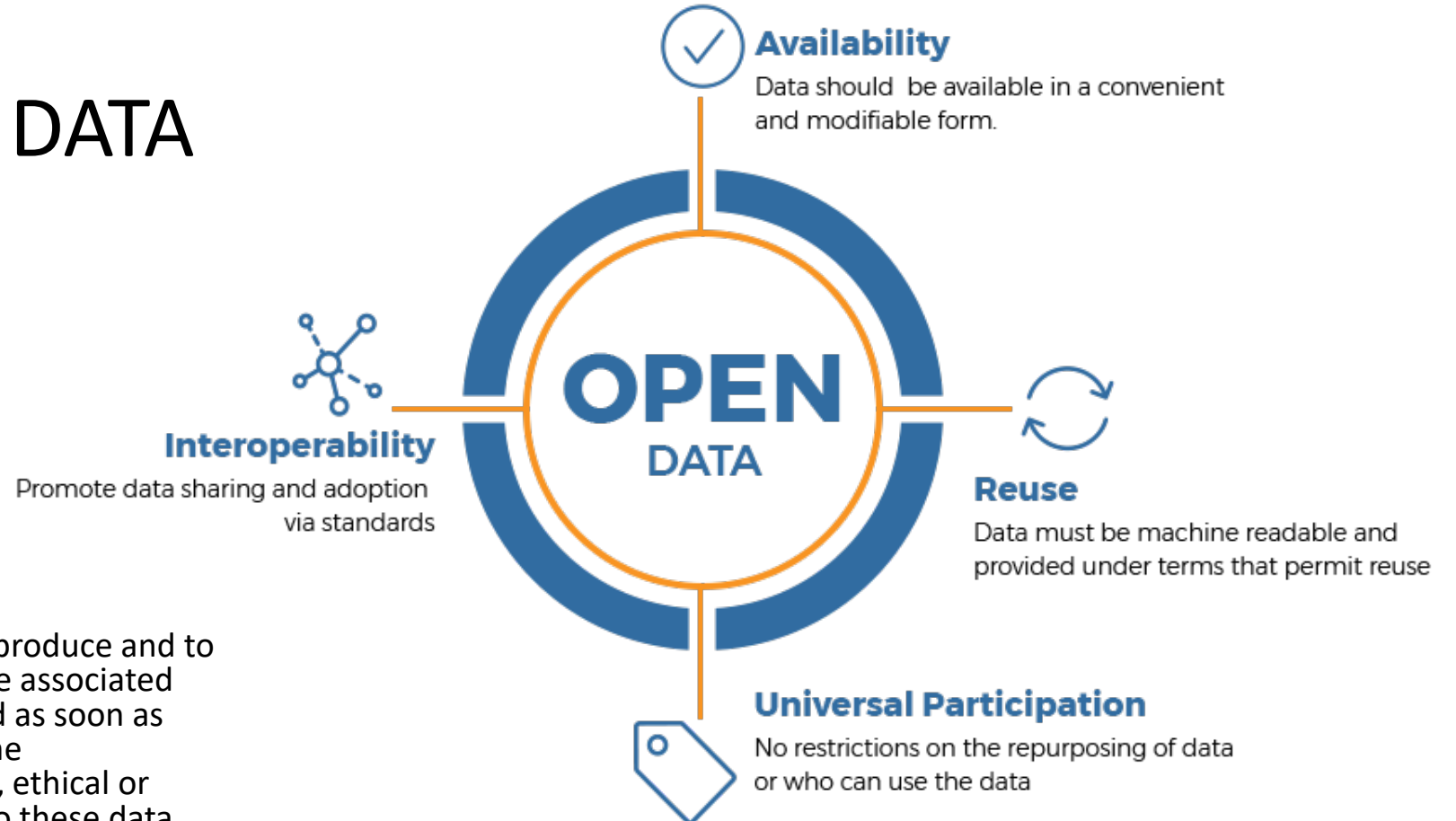
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# OPEN RESEARCH DATA

is data that can be

- freely accessed,
- reused,
- remixed and
- redistributed

Research data are all data necessary to reproduce and to verify the results of research, including the associated metadata. These data should be published as soon as possible, but at the latest together with the corresponding research publication. Legal, ethical or other reasons, that prevent open access to these data should be explained.





European Commission Expert Group,  
Turning FAIR into Reality (2018)

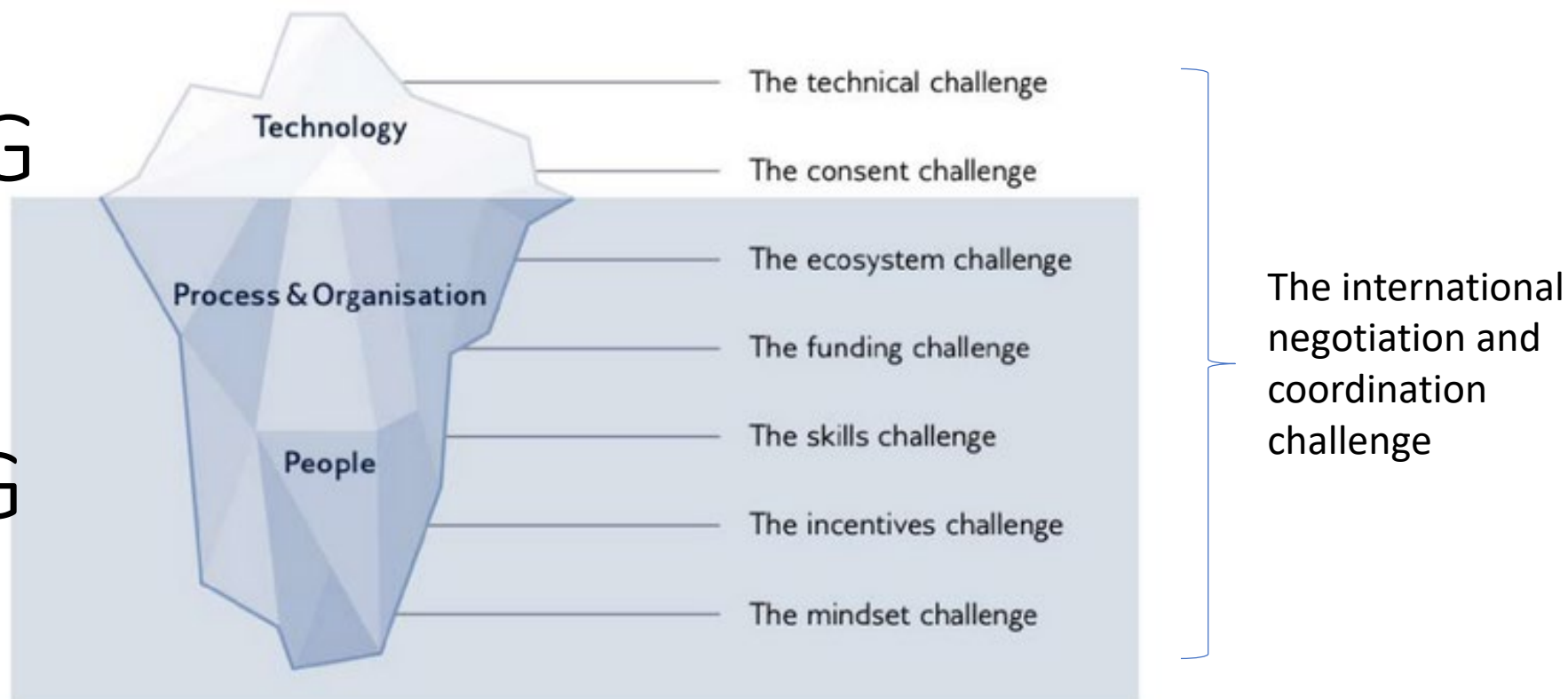
## FAIR DATA

- **F**indable: have sufficiently rich metadata and a unique and persistent identifier, to enable discovery.
- **A**ccessible: retrievable by humans and machines through a standard protocol; authentication and authorisation where necessary. Allows programmatic access for analysis.
- **I**nteroperable: metadata use a ‘formal, accessible, shared, and broadly applicable language for knowledge representation’. The descriptions of variables etc follow a shared specification and are commensurable.
- **R**eusable: metadata provide rich and accurate information; clear usage license; detailed provenance. Both humans and their analytical tools know what can be done with the data (license) and can assess its provenance.

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 770342.



# OPENING DATA FOR SHARING



Source: Deetjen U., E.T. Meyer and R. Schroeder (2015), *Big Data for Advancing Dementia Research*, OECD Publishing, Paris, forthcoming.

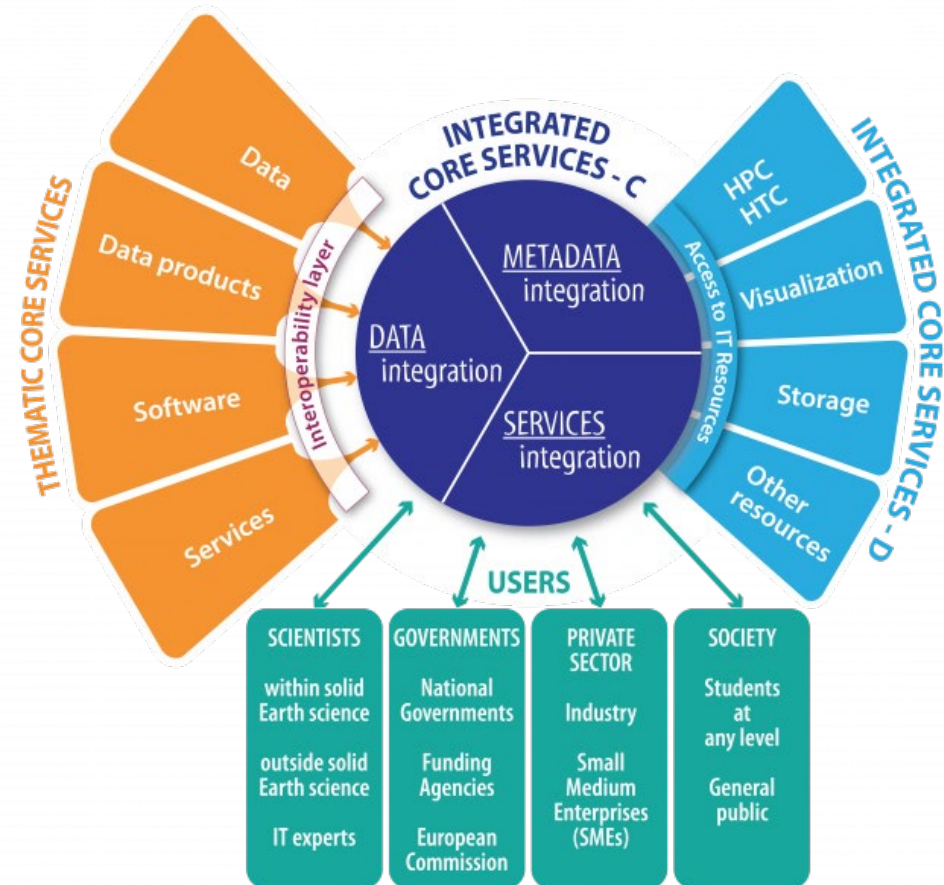


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# EUROPEAN OPEN SCIENCE CLOUD

The European Open Science Cloud (EOSC) is a European Commission initiative aiming at developing an infrastructure providing its users with services promoting open science practices. The EOSC officially launched in November 2018, starting to provide access to services via their EOSC Portal.



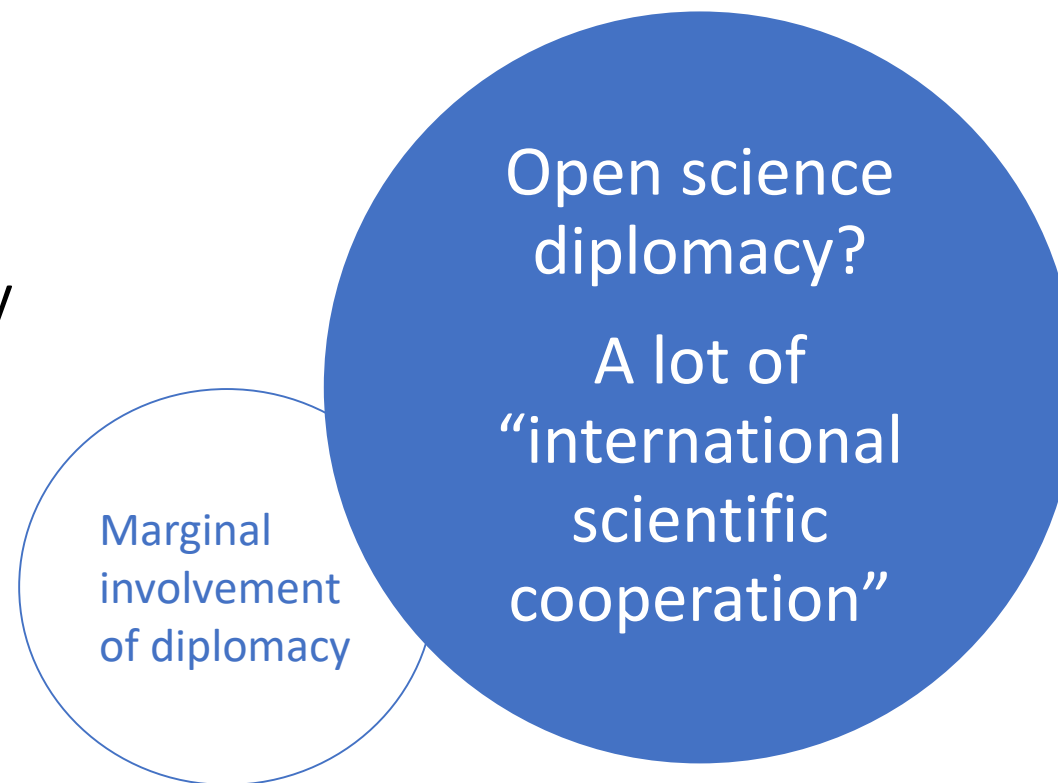


## Results of the Case Study

### 2018-2019:

The international open science community is organizing itself mainly bottom-up, only recently there is more policy involvement, such as Plan S or the European Open Science Cloud, or several national open access strategies.

**Professional diplomacy is rarely involved.**



## OPEN SCIENCE DIPLOMACY – Results of the Case Study

- Even though taken up increasingly by international organisations at the interface of science and global policy: open science and in particular, open data are not yet on the agenda of diplomacy.
- Advocates would welcome the involvement of foreign policy experts and diplomats in negotiations of – and push for pressing issues like the harmonisation of standards and legal frameworks for the exchange of data (data diplomacy).
- Opportunities for innovation (social, ecological, economic, technological, ....) based on open science and data sharing are still neglected by international policy actors.





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Open Science Diplomacy

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Report: [https://www.s4d4c.eu/wp-content/uploads/2020/03/D3.2\\_6\\_Open\\_Science\\_final.pdf](https://www.s4d4c.eu/wp-content/uploads/2020/03/D3.2_6_Open_Science_final.pdf)