Workshop
"Open science, a landscape under construction with a horizon of possibilities“

Centro Internacional de Encuentros Matemáticos (CIEM). Universidad de Cantabria

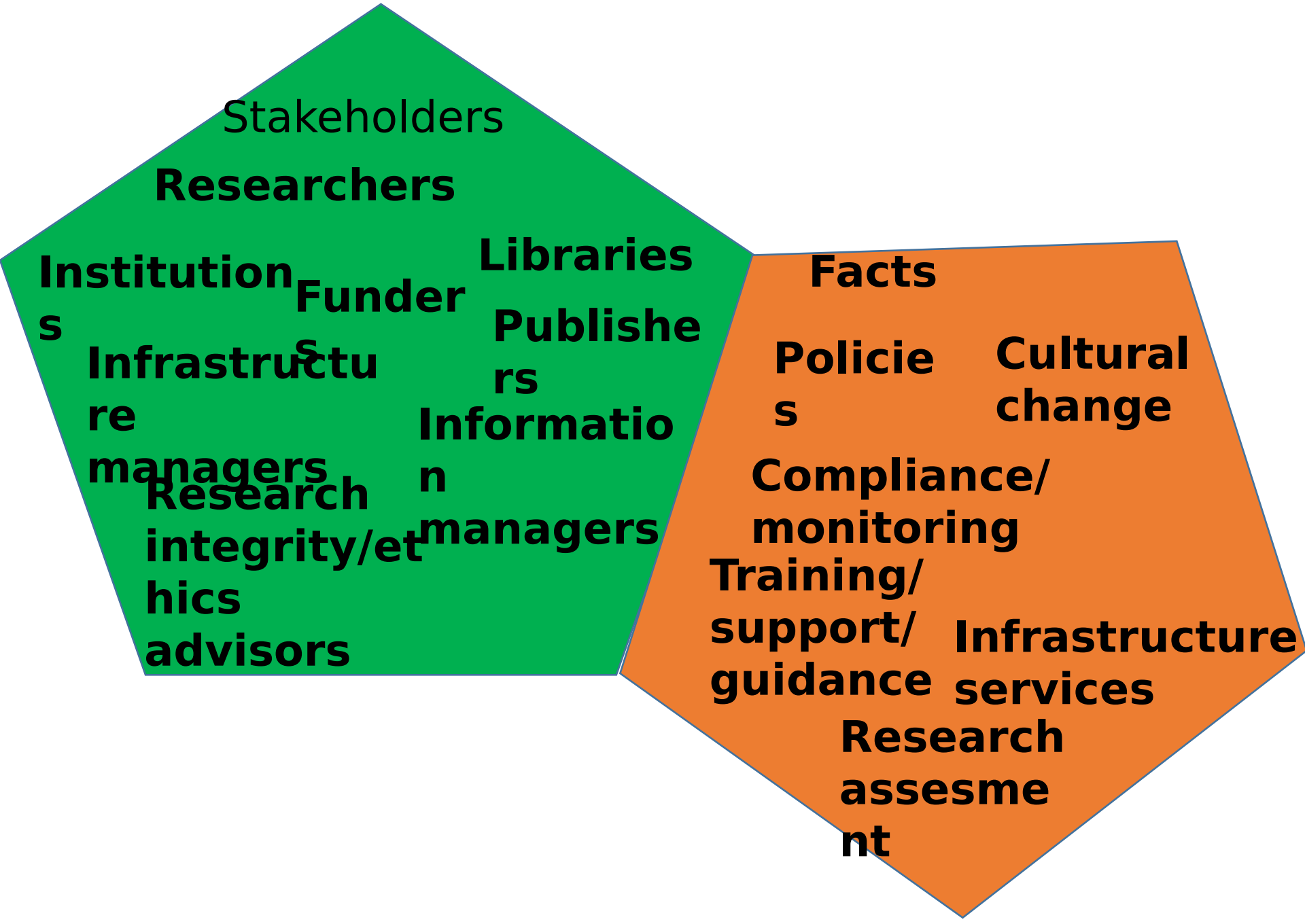
November 11-13th 2022, Castro Urdiales, Cantabria, Spain

Open research data

Remedios Melero. IATA-CSIC, Valencia, España

https://datamanagement.hms.harvard.edu/plan-design/biomedical-data-lifecycle

Research Data Lifecycle


Stakeholders
Researchers
Institutions
Funders
Libraries
Publishers
Infrastructure managers
Information managers
Research integrity/ethics advisors
Facts
Policies
Cultural change
Compliance/ monitoring
Training/ support/ guidance
Infrastructure services
Research assesment

The “tentacles” of research open data

Data saves lives

Data transparency allows replicability and reproducibility

The value of data is sharing

Open data increases visibility or research results

Data sharing saves time and money (increases eficiency)

Data sharing allows new findings by reanalysing of existing datasets (reusable)

Open data as a driver for economic growth

Open data favours networking and collaboration

DIRECTIVE (EU) 2019/1024 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 20 June 2019 on open data and the re-use of public sector information

Article 10
Research data

1. Member States shall support the availability of research data by **adopting national policies and relevant actions aiming at making publicly funded research data openly available** (‘open access policies’), **following the principle of ‘open by default’ and compatible with the FAIR principles**. In that context, concerns relating to intellectual property rights, personal data protection and confidentiality, security and legitimate commercial interests, shall be taken into account in accordance with the principle of ‘as open as possible, as closed as necessary’. **Those open access policies shall be addressed to research performing organisations and research funding organisations**.

(NEW) Spanish Law 17/2022, of 5 September, which amends Law 14/2011 on Science, Technology and Innovation.

Article 37. Open Science.

1. The public agents of the Spanish Science, Technology and Innovation System shall promote the dissemination of the results of scientific, technological and innovation activity, and that **the results of research, including scientific publications, data, codes and methodologies, are available in open access.** Free and open access to results will be promoted through the development of own or shared institutional or thematic open access repositories.
2. Research personnel in the public sector or whose research activity is mainly funded by public funds and disseminate their research results in scientific publications, will **deposit a copy of the final version accepted for publication and associated data in open access** institutional or thematic repositories simultaneously with the date of publication.

June 2021

"Horizon Europe will set a new standard for dissemination of knowledge and new skills across European societies. With clear and immediate open access requirements for beneficiaries, the Open Research Europe publishing platform and a strengthened European Open Science Cloud, we are well underway in making truly open science a reality".

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

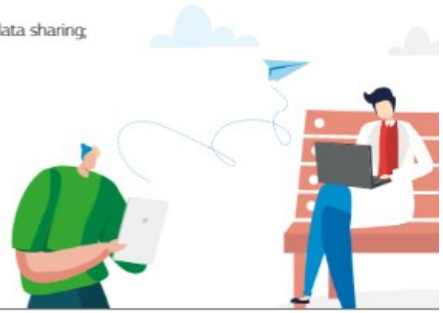
OPEN SCIENCE

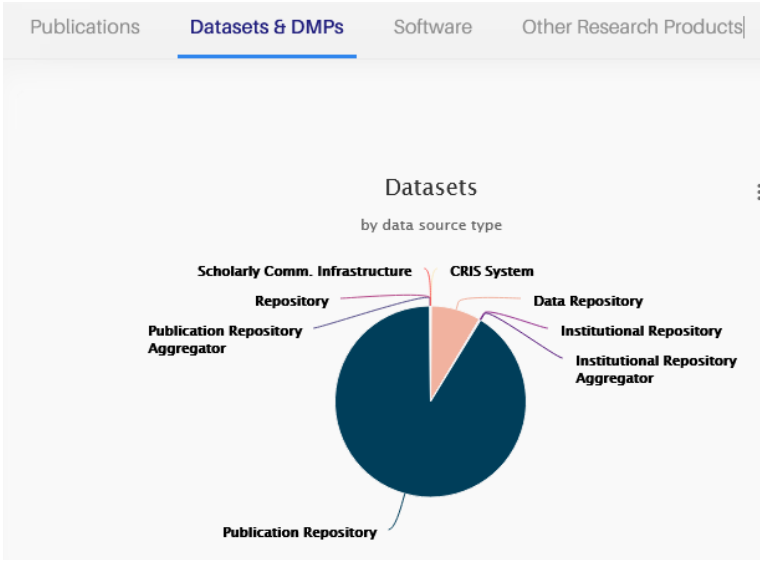
EARLY KNOWLEDGE AND DATA SHARING, AND OPEN COLLABORATION

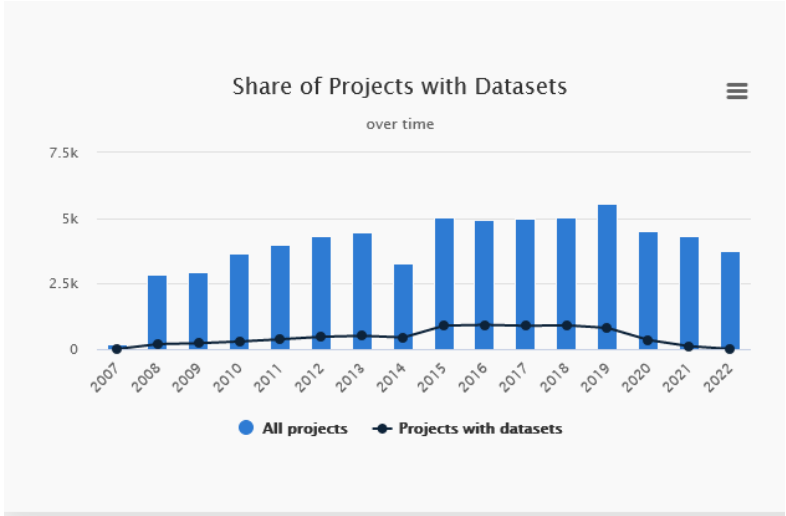
The challenge is for Europe **to embrace open science as the modus operandi for all researchers**. Open science consists in the sharing of knowledge, data and tools as early as possible in the Research and Innovation (R&I) process, in open collaboration with all relevant knowledge actors, including academia, industry, public authorities, end users, citizens and society at large. Open science has the potential to increase the quality, efficiency and impact of R&I, lead to greater responsiveness to societal challenges, and increase trust of society in the science system.

What are open science practices?

- Open access to research outputs such as publications, data, software, models, algorithms, and workflows;
- Early and open sharing of research, for example through preregistration, registered reports, pre-prints, and crowd-sourcing of solutions to a specific problem;
- Use of open research infrastructures for knowledge and data sharing;
- Participation in open peer-review;
- Measures to ensure reproducibility of results; and
- Open collaboration within science and with other knowledge actors, including involving citizens, civil society and end-users, such as in citizen science.





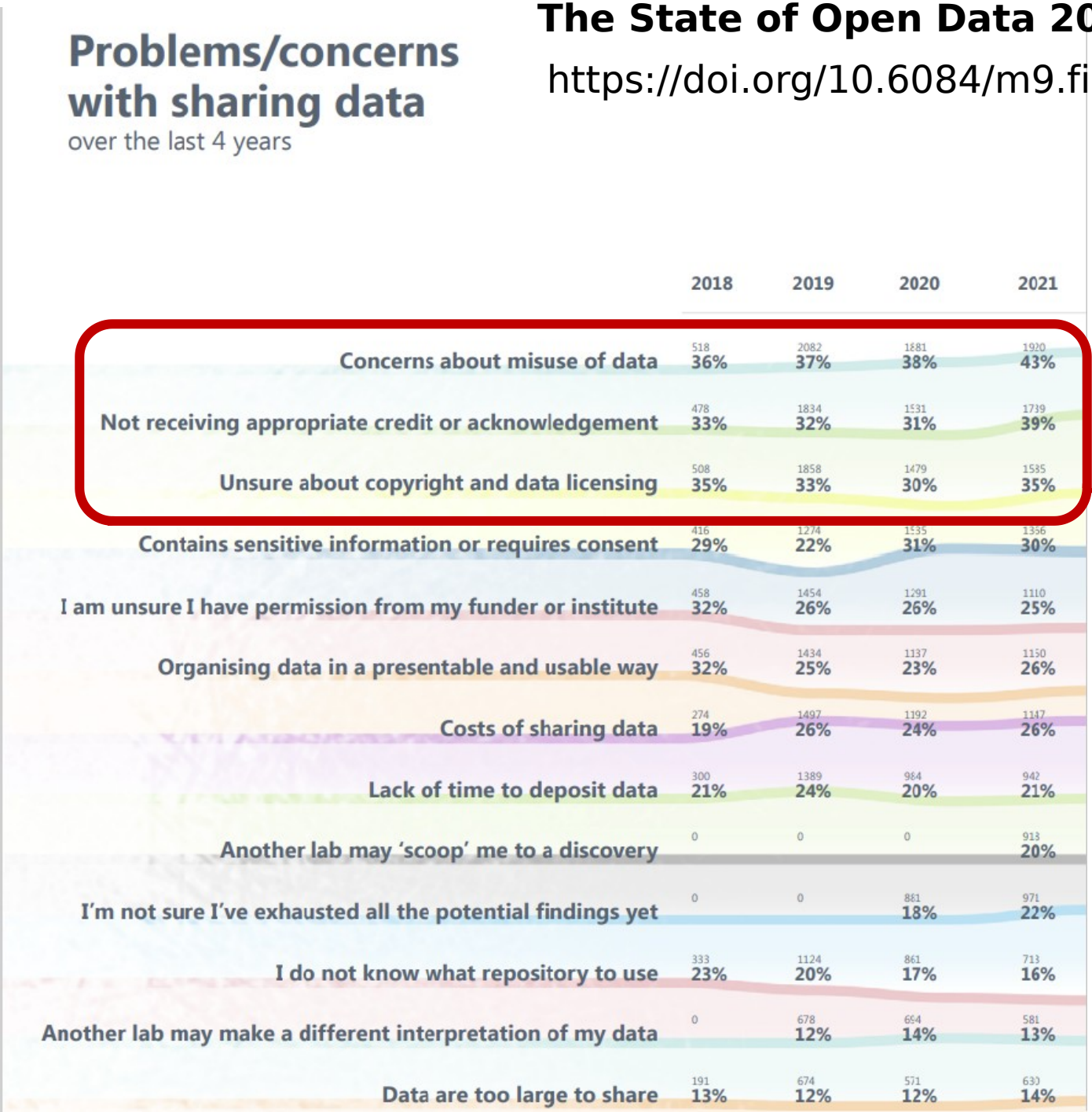


https://monitor.openaire.eu/dashboard/ec/research-output/datasets-&-dmps

BUT.....

The State of Open Data 2021

https://doi.org/10.6084/m9.figshare.17081231



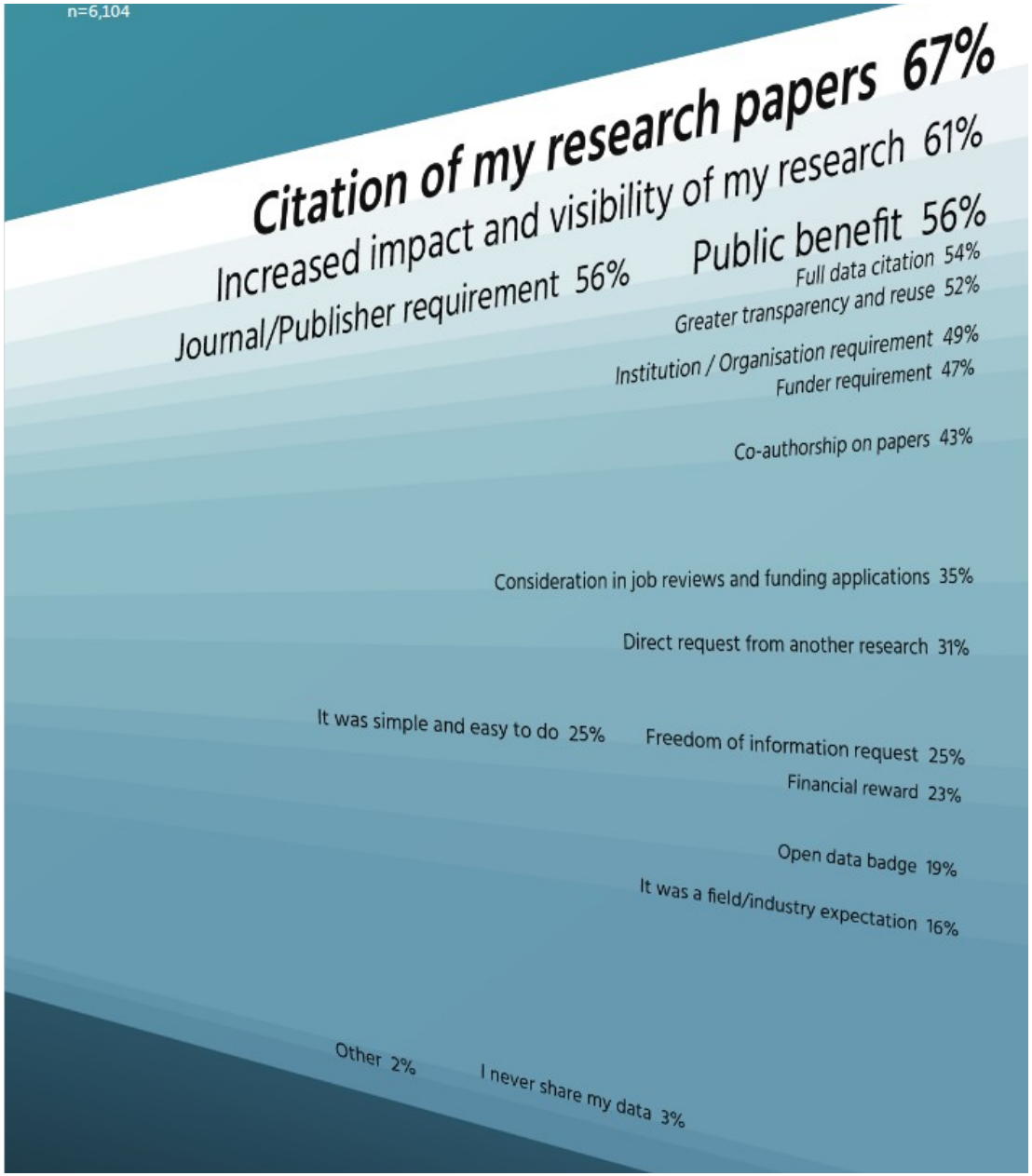
Lack of trust

Incentives/ rewards

Ignorance

Time consuming

ircunstances would you motivate you to share your data?



Misplaced motivation?

Public benefit < Citation

Self interest vs altruism?

The state of open data. Digital Science Report 2022 https://digitalscience.figshare.com/articles/report/The_State_of_Open_

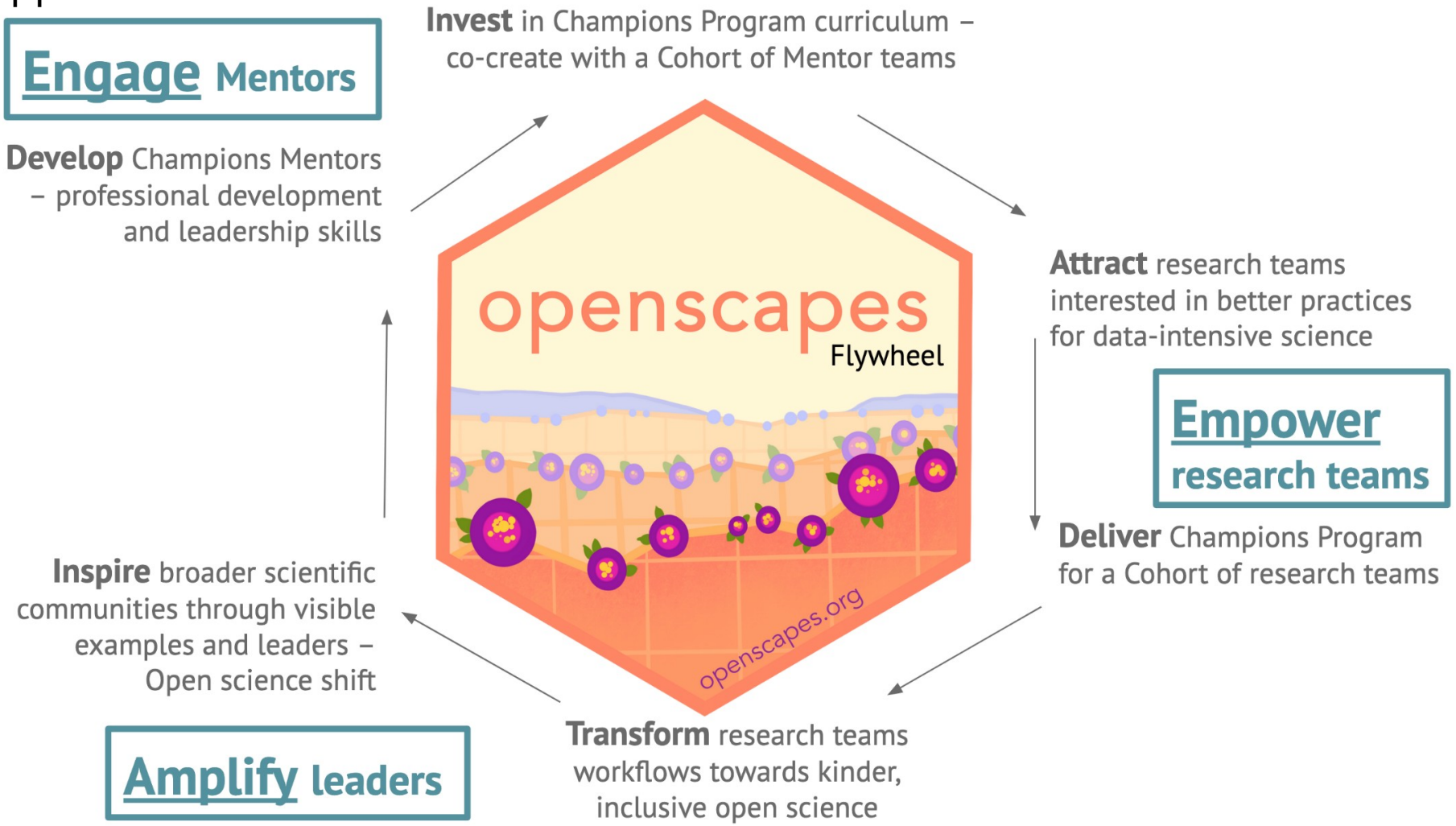
Table 1. Overview of challenges perceived by funding agencies and solution approaches.

Name of the challenge	Aspects of the challenge	Proposed solution
Challenge I: Design of data sharing policies and requirements	▪ Lack of clarity ▪ Consider different discipline standards ▪ Need for shared efforts	▪ Guidelines and detailed explications ▪ Provide overviews on best practices and raise awareness ▪ Engage in funder networks
Challenge II: Monitoring of compliance with data sharing policies	▪ Lack of monitoring ▪ Discourage researchers ▪ Shortage of information ▪ Lack of capacities and resources	▪ Additional resources ▪ Alternative approaches like automated checks ▪ Trust in researchers
Challenge III: Sanctions for non-compliance with data sharing policies	▪ Lack of enforcement mechanisms ▪ Reluctance towards sanctions ▪ Complexity of data sharing ▪ When and how to apply sanctions?	▪ Clear prescriptions and grant conditions ▪ Hold back part of funding ▪ Consider future grants ▪ Hope for cultural change
Challenge IV: Incentives for data sharing	▪ General lack of incentives ▪ Struggle to provide concrete incentives ▪ Too little reward and recognition for data sharing ▪ Conservatism towards data sharing	▪ Change grant evaluation metrics towards data sharing ▪ Better recognition and acknowledgment ▪ Hope for cultural change
Challenge V: Support and guidance for data sharing	▪ Fund data sharing infrastructure ▪ Lack of information due to lack of feedback and monitoring ▪ Disconnect between policy level and researchers ▪ Funded researchers lack awareness of funders' and institutional support	▪ Make it easier for funded researchers ▪ Hands-on support by research organisations ▪ Funders provide general guidance ▪ Funders try to make it "as easy as possible"
Challenge VI: Limits to the capabilities of funders	▪ Different stakeholders and community standards ▪ Conflicts with other stakeholders and within funding agencies ▪ Dependence on other stakeholders ▪ Ethical and legal boundaries	▪ Shared efforts by funder networks ▪ Learn from other agencies ▪ Collaboration with journals and research organisations ▪ Governmental strategy on research data

https://doi.org/10.1371/journal.pone.0273259.t001

Anger M, Wendelborn C, Winkler EC, Schickhardt C (2022) Neither carrots nor sticks? Challenges surrounding data sharing from the perspective of research funding agencies—A qualitative expert interview study. PLOS ONE 17(9): e0273259. https://doi.org/10.1371/journal.pone.0273259
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0273259

Openscapes Framework. A scalable leadership and community building framework that supports researchers and staff transitioning to open data science. The framework involves developing a Mentor community, empowering science teams through the Champions Program, and scaling the Champions program with the Mentors in a way that is sustainable and supported.



https://www.openscapes.org/approach/

Discussion……..

Challenges and solutions for sharing data perceived by the research community???