Welcome to the Belgian National Tripartite Event

Master of Ceremonies: Gaétan du Roy, Ministry of the Wallonia-Brussels Federation

Auditorium Albert II

Standing in for the Chairman of the Board of Directors, Belgian Science Policy Office (BELSPO)

Marc Vanholsbeeck

Director of Federal Inter-federal and International Coordination, BELSPO

13:30-13:40

Auditorium Albert II

Vote for the top 3 posters

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European Tripartite Briefing

13:40-14:00

Auditorium Albert II

- Michael Arenthoft, European Commission
- Karel Luyben, EOSC-A
- Volker Beckmann, co-chair EOSC Steering Board

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EU policy drivers and EC support to the European Open Science Cloud

EOSC Belgian tripartite event

Brussels, 16 April 2024

Michael Arentoft

Head of Unit, Open Science and Research Infrastructures

DG R&I, European Commission

Embracing open science as the *modus operandi* of research

Improving *the practice*

- **Providing full and immediate open access** to scientific publications, research data, models, algorithms, software, protocols, notebooks, workflows, and all other research outputs
- **Research output management** - publications, data, and other outputs - in line with FAIR principles
- **Early and open sharing** of research, e.g.
  - Pre-registration, registered reports, data deposition in shared repositories, pre-prints
  - Ensuring verifiability and reproducibility of research outputs
  - Open collaboration within science and with other knowledge producers/users, incl. citizens, civil society and end users

Developing *the enablers*

- **Incentives and rewards** to adopt open science practices, e.g. initiative for Reforming Research Assessment
- **Legislative and regulatory framework** for practicing open science
  - An EU data, copyright and digital legislative framework fit for research
  - Horizon Europe provisions on Open Access and Open Science practices
- **Open research infrastructures and skills** e.g.
  - **European Open Science Cloud (EOSC)**
  - Open Research Europe publishing service[1]
  - EU Open Research Repository[2]
  - Support for skills & education for practicing open science

[1] open-research-europe.ec.europa.eu/
[2] zenodo.org/communities/eu/

Enabling open science through EOSC

- **A community-driven process** (commitments by EU Member States, Associated Countries, research stakeholders)
- **Gradual implementation** based on **mutual alignment** and pooling of resources at European, national and institutional levels. Move **from prototyping to operations**

With direct support by:

- **EOSC European Co-programmed Partnership** to pool commitments and resources along priorities set in the EOSC Strategic Research and Innovation Agenda
- **EOSC Tripartite Governance** to ensure dialogue and strategic coordination between EC, EU Member States and Associated Countries, and EOSC Association

European Commission

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EOSC support by the European Commission

Keeping the **policy momentum: EOSC as a pillar of the digital transition**

- 'Open Science including EOSC' embedded in the ***European Research Area Policy Agenda***
- EOSC as a common European data space of the ***European Strategy for Data***

Strong support through the **Horizon Europe** programme

- ***Research Infrastructures work programme***
  - €490 million EU investment for 2021-2027
  - Calls for proposals: 28 ongoing projects
  - Procurements: EOSC EU node
  - Commissioned studies: e.g. the 'European Research Data Landscape' report[1]

Continued strong involvement in:

- The ***EOSC governance*** (EOSC Tripartite EOSC Steering Board, EOSC Partnership Board)
- ***EOSC coordination with ERA Forum, ESFRI*** *and other MS groups*
- ***Thematic demonstrators and good practices***
  e.g. the Science Clusters, European Covid-19 Data Platform, the Blue Cloud etc.
- ***Monitoring*** of the uptake of Open Science and 'EOSC readiness'

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[1] https://data.europa.eu/doi/10.2777/3648

EOSC common European data space

European node
EOSC EU node enabling the federation with common AAI/SSO, application workflows, resource catalogues, monitoring and accounting, etc.

Thematic community nodes
e.g. ESFRI/ERIC thematic research infrastructures

National nodes
e.g. national repository platforms of national research information system

e-Infrastructure nodes
providing generic data services

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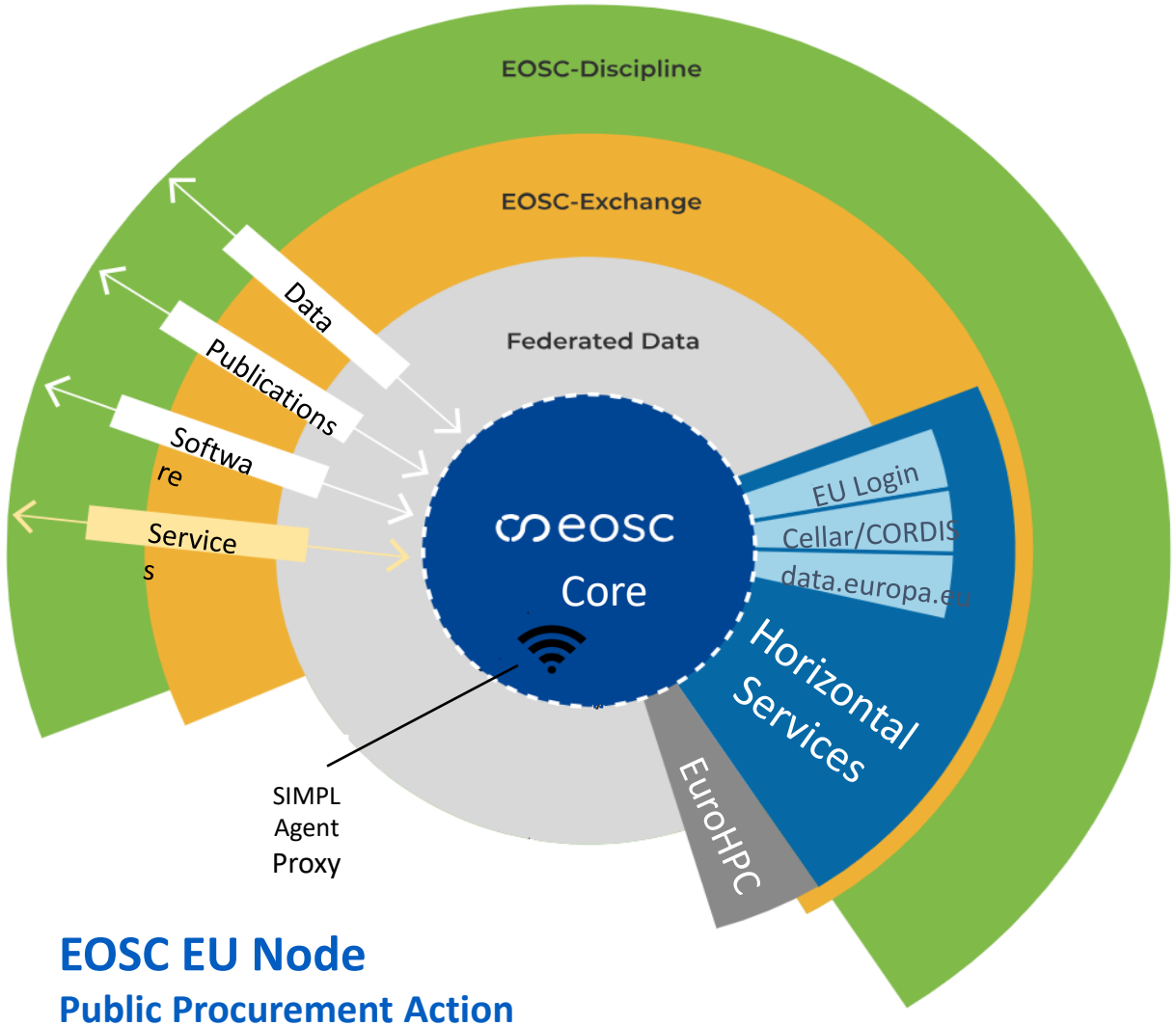

EOSC EU Node

Public Procurement Action

EOSC EU Node Value Proposition

- **Facilitate** the creation of the *"Web of FAIR data and interoperable services"* (aka. EOSC Federation) under the open science policy
- **Put** a *"seed in the ground"* by operating 24/7 the first recognised EOSC Node at the European level for the initial 3 years
- **Offer** "*core services"* for scientific research infrastructures to federate (single-sign-on, catalogues, knowledge graph, application workflow, monitoring, accounting, helpdesk) and common "*horizontal services"* for end-users to benefit from (compute, containers, data transfer, notebooks, file sharing, open research data)
- **Define** the *pathway and blueprint* (EOSC Interoperability Framework) for other potential EOSC Node operators to join the federation

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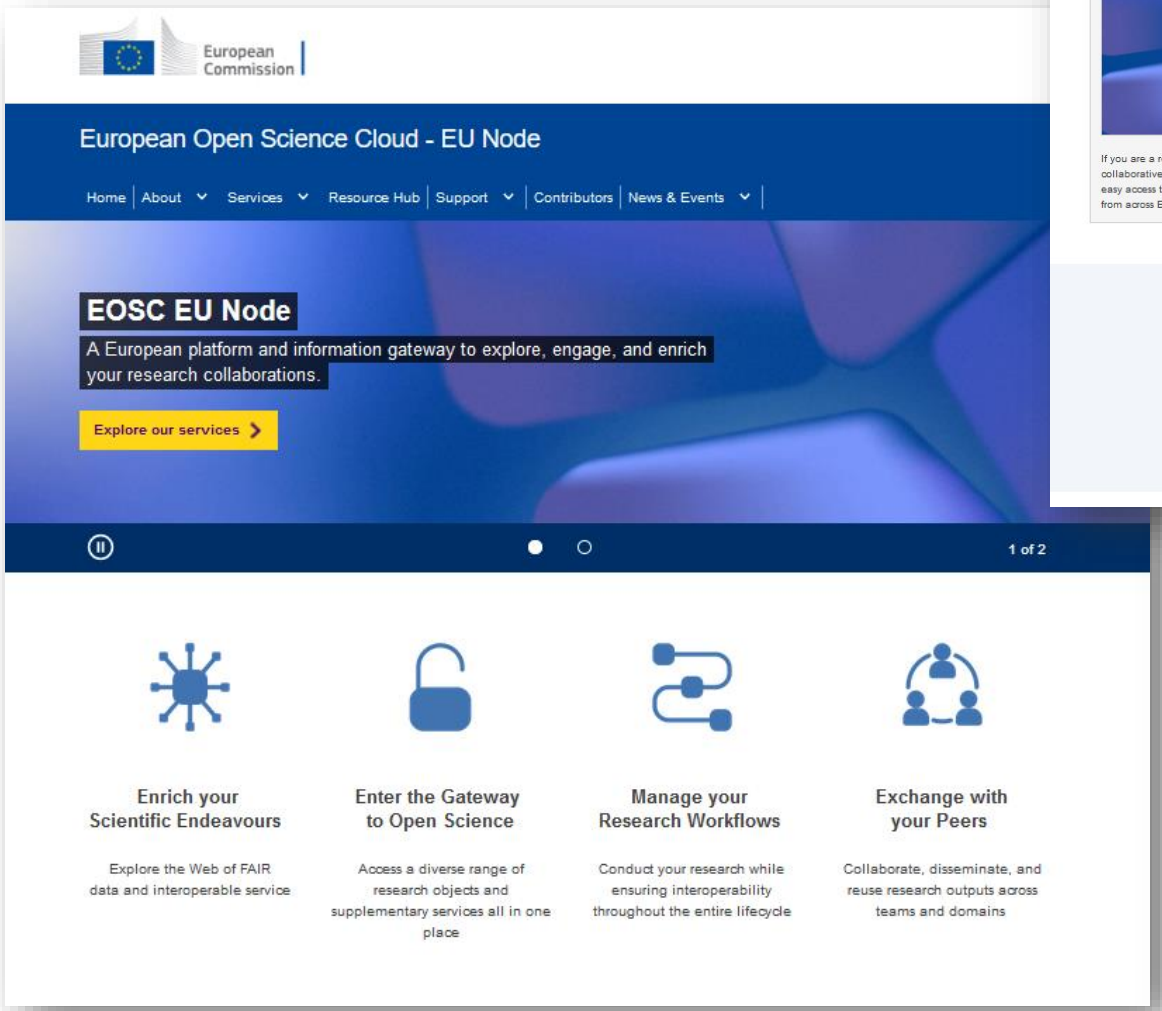
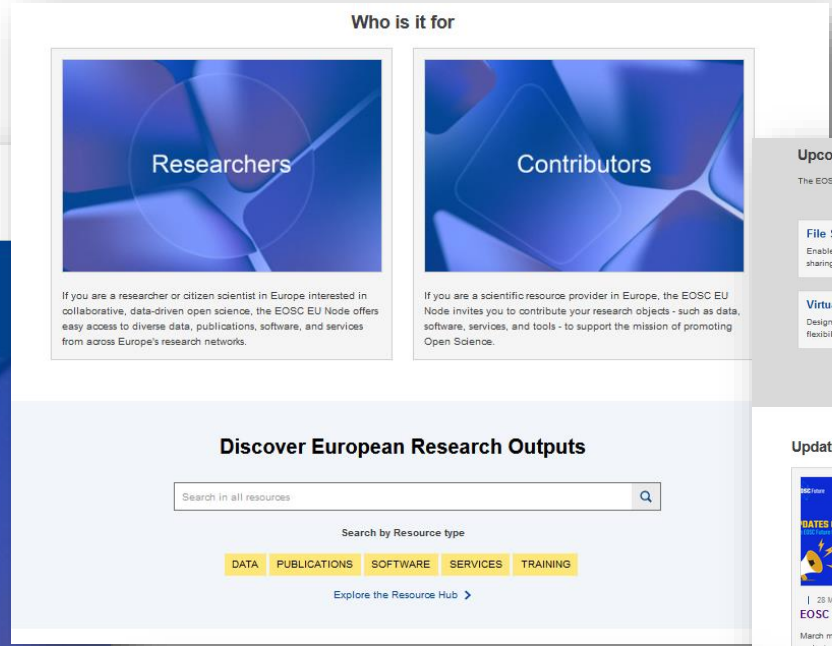
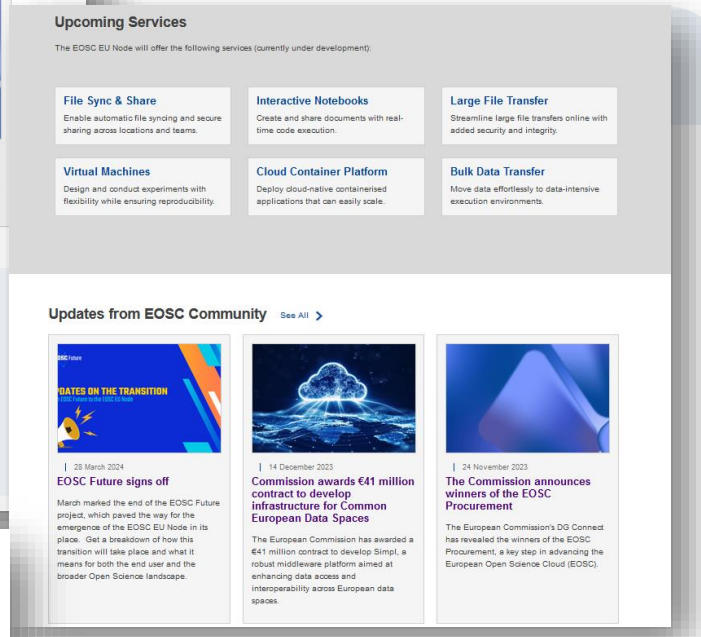
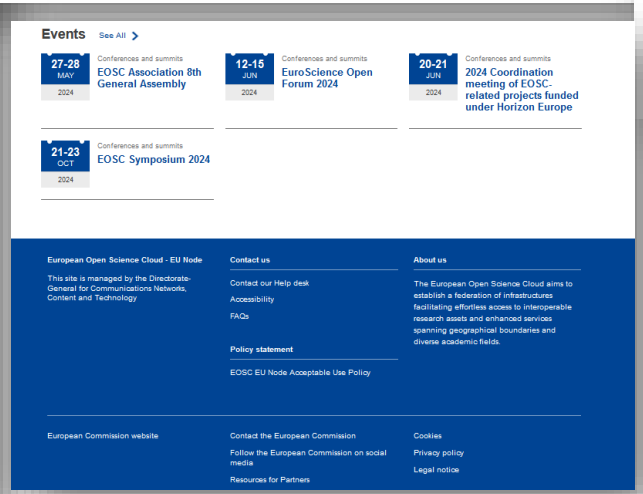
EOSC EU Node initial web presence









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The way ahead

now

The EOSC EU node increases uptake by researchers and data/services contributors.

The node-enrolment requirements and the common rules, policies and frameworks of the EOSC federation are set.

Additional thematic and national/regional nodes enroll in EOSC, offering their services and increasing the EOSC user base.

EOSC secures long-term growth and sustainability with a model for its governance, operations and financing after 2027.

2027

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Thank you

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Philosopher of Science, University of Exeter, United Kingdom

Sabina Leonelli

14:00-15:00

Moderator: Marc Vanholsbeeck, Belspo

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Human-Centric Open Science

SABINA LEONELLI

EXETER CENTRE FOR THE STUDY OF THE LIFE SCIENCES (EGENIS), UNIVERSITY OF EXETER

KLUGE CENTRE OF THE USA LIBRARY OF CONGRESS

[FROM SEPTEMBER 2024: TECHNICAL UNIVERSITY OF MUNICH (TUM)]

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Outline

1. What concerns is Open Science supposed to address?

2. Openness 1.0: Sharing, transparency and disclosure

3. The trouble with 1.0: Documenting OS practices in diverse and under-resourced research environments [The PHIL_OS project]

4. Openness 2.0:
    1. Inclusion: Judicious connections
    2. Equity: Reframing research environments
    3. Reliability: Verifiable story-telling

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1. What concerns is Open Science supposed to address?

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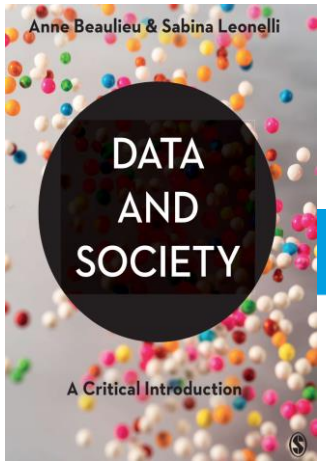
Troubled research in a troubled world

- Long shadow of discrimination, racism and colonialism over what counts as best science
  - Alienation from publics and uneasy relation to “public interest”
  - Acknowledgment does not easily translate into understanding implications (or what should be done about those)
- Self-referential & hypercompetitive academic publishing…
  - volume and prestige > quality and reproducibility
  - no attention to non-academic expertise and viewpoints
- …when there actually *is* some publishing
  - data, models, methods, samples, software as second-tier output
  - threats to sustainability of infrastructures (digital and physical)
  - hard to track industrial and military research

Diversity rules?

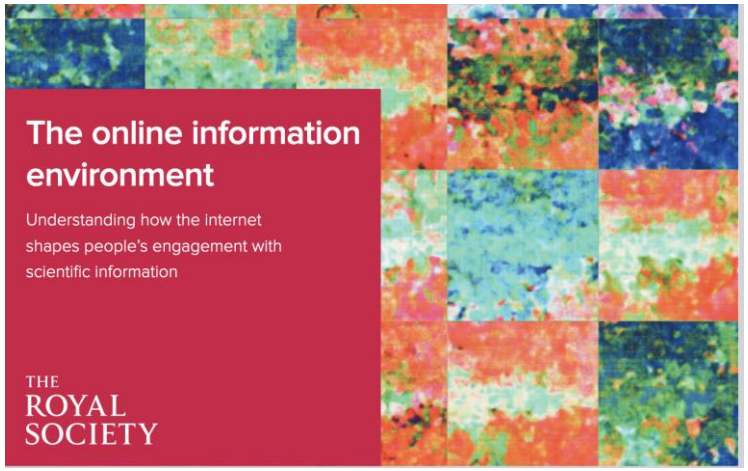


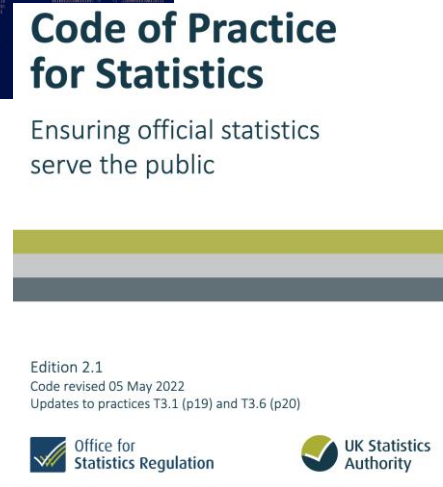
- Very good scientific reasons for domain-specific, system-specific methods, standards, evaluative criteria
  - Not just culture wars – specialized knowledge and widely different ways of knowing..
  - .. grown from a long history of engagement with phenomena
- In strong tension with standardizing drive underpinning sharing efforts in Open Science sharing
  - Crucial for interoperability, reproducibility and re-use

Crisis in Quality Evaluation: Data systems

- Difficulties in locating error and evaluating data provenance and quality, esp. when data travel beyond specific communities of practice
- Data quality assessment
  - **data- and domain-specific**
  - **varies** depending on specific use
  - often **depends on access to original materials or instruments**, yet
    - sample collections are unsystematic, underfunded, and not interlinked (which makes samples hard to locate and relate to data)
    - old instruments are not kept, unless for historical purposes

Under-resourced systematic and periodic review of statistical and computational methods/models





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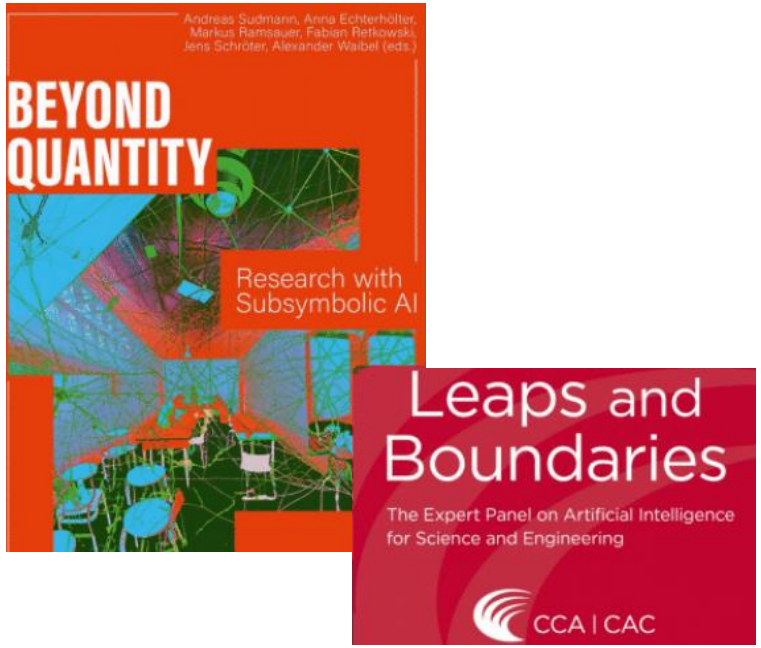
Crisis in Quality Evaluation: AI



Generative AI greatly expands scope for discovery.. and unreliable results

XAI accelerating urgency of privacy, trust and quality concerns

- Deep fakes in imaging, observational studies, footage
- AI-generated articles via LLMs
- Synthetic data

Misguided expectation that XAI will fix data quality issues (Big Data myth on steroids)

- + Misinformation, - investment in quality datasets and trustworthy infrastructures
- Increase of data quasi-monopolies, opacity around what is held and how it is used

Crisis in Quality Evaluation: Peer Review

Urgently needed beyond articles: data, methods, code, yet

- No incentives, so severe (and increasing!) difficulties in producing high-quality reviews
- No shortcuts (especially for data, e.g. Illari and Floridi 2017, Leonelli 2017)
- Little systematic training / debate within each field

Putative solutions have problems too

- Open peer review: even more labour-intensive, still “service” work, prone to abuse and bias in its own ways
- Preregistration: often mistaken as predefining investigation (problematic for exploratory research)
- Preprint clubs: ideal but again no incentives/rewards (e.g. reproducibiliTEAs)

Reproducibility: Not a magic formula

- does not necessarily ‘fix’ concerns around research quality
  - does not help distinguish unintentional mistakes, cheating, difference in research conditions, constructive vs malicious questioning of ‘facts’
- does not provide a universal solution
  - reproducibility means different things to different fields/problems/approaches
- risks enshrining quantitative methods as ‘gold standard’
  - potentially discrediting know-how and expert judgement
- does not address systemic issues with rewards and incentives

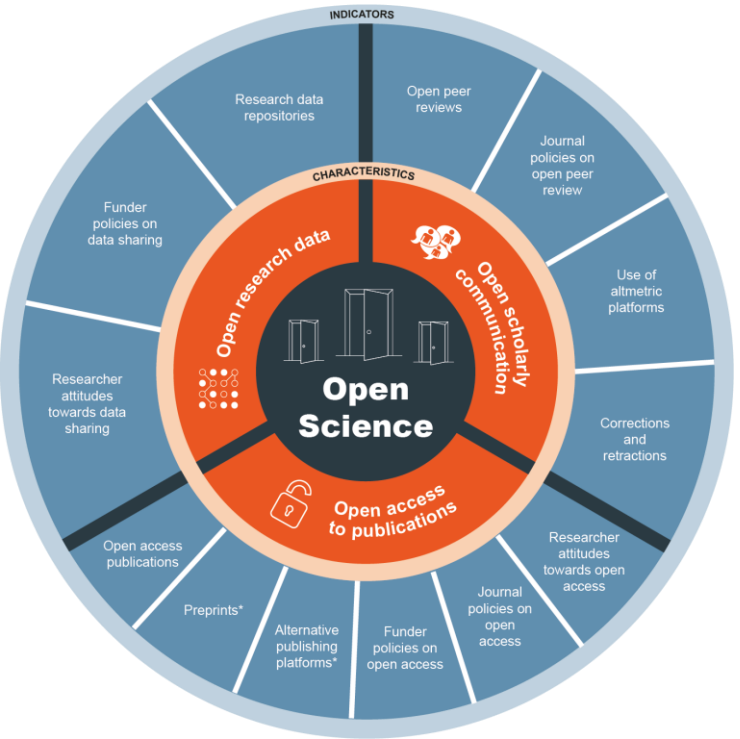
[Leonelli 2018, Leonelli and Lewandowski 2023]

Lack of incentives and rewards for

- Responsible dissemination and scrutiny of research components
  - Encouraging open communication beyond strictures imposed by commercial publishers and service providers
  - While acknowledging role of know-how and trust
- Transdisciplinary collaboration and community participation
  - Emphasis on community building and role of institutions therein (beyond individuals)
- Sustainable development / responsible use of (digital) tech
  - Beyond ‘lure of novelty’, thinking through systemic implications of adopting new tech
- Addressing injustice and resisting discrimination, prejudice, racism

2. Openness 1.0: Sharing, transparency and disclosure

Openness as a solution?



"a **new** approach to the scientific process based on **cooperative work** and new ways of diffusing knowledge by using **digital technologies** and new collaborative tools.. [..] .. **sharing** and using all available knowledge at an **earlier stage** in the research process"

Carlos Moedas, *Open Innovation, Open Science, Open to the World (2015)*

Fast, efficient, free sharing of research outputs helps

- To manage Big Data and the digital transformation of research processes
- To build on existing collections as public goods and data sharing norms/technology (esp. in life sciences)
- To involve diverse publics and forms of scrutiny in science, thereby improving quality and addressing inequity and injustice
- To ensure the production of robust, reliable and socially responsive science and technology

Vision of Open Science as

- about **unlimited access**: making any research element available at any time for everyone
- about the **digital transformation**: it is a novel phenomenon and completely dependent on ICTs
- always **good**: it automatically improves the content of science as well as researchers' working conditions
- **global**: it can reach everybody with an interest in research, no matter where they are based
- facilitating **equity** in research production and consumption: it makes previously inaccessible resources available to those who may wish to use them

3. The trouble with Openness 1.0:

Documenting OS practices in diverse and under-resourced research environments

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PHIL_OS (21-26): A Philosophy of Open Science for Diverse Research Environments

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Situating research processes

To understand how inferential practices relate to characteristics of research environments, epistemic diversity and (in)justice

- **Approach:** *co-produced* philosophy, history and social studies of science (with scientists, OS infrastructures and policy-makers)
- **Focus:** interpretations of openness as a window on the epistemic implications of
  1. **Diversity** in research environments
     - Backgrounds and skills
     - Resourcing: material, human, conceptual, institutional, infrastructural
     - Grounds for reasoning around “best practice”
  2. **Inequity** between research environments
     - Constraints on methods, resourcing and networks
     - Reputational cycles and epistemic injustice

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Subproject 1 [with Nathanael Sheehan]: Openness, speed and data governance in COVID-19 research

Comparing two data governance models

Differences in actionability as well as diversity of contributions and re-use →
“openness as free sharing” not necessarily conducive to inclusivity and participation

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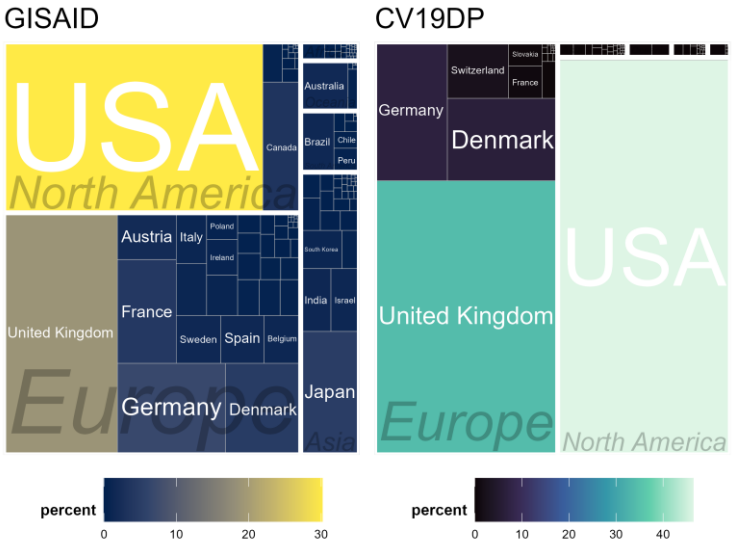

Sheehan, N. Leonelli, S. and Botta, F. (in press) Unrestricted versus Regulated Open Data Governance: A Bibliometric Comparison of SARS-COV-2 Nucleotide Sequence Databases. *Data Science Journal*
bioRxiv 2023.05.13.540634; doi: https://doi.org/10.1101/2023.05.13.540634

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Subproject 2 [with Rose Trappes]: Openness and citizen science - eBird India

- How infrastructure & expectations inform and shape data crowdsourcing and usage

- Mismatch between US-based and Bangalore community expectations around birdwatching and its purposes: relevant traits, location services, methods of crowdsourcing, use of app (Trappes and Leonelli in preparation)

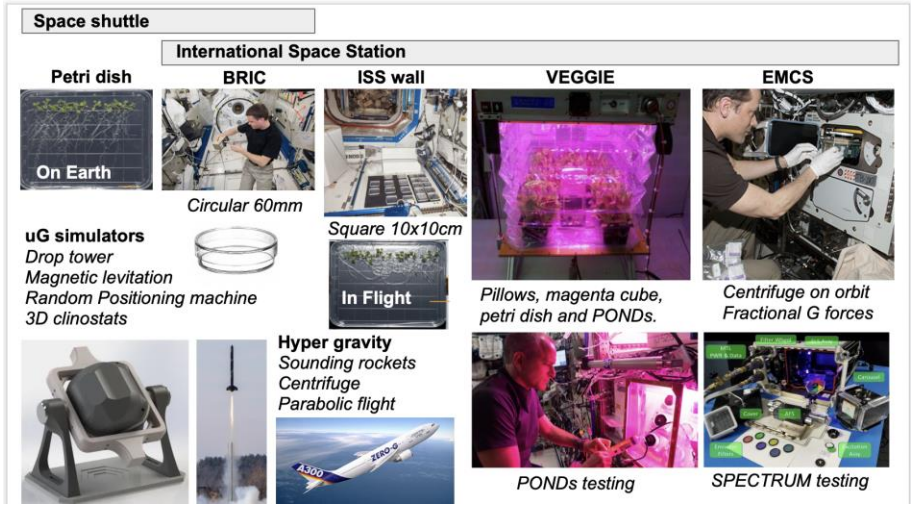
- For open sharing to work, extensive community engagement mediated by Nature Conservation Foundation (NCF) in Bangalore

P Jeganathan, Wikimedia commons, CC BY-SA 4.0

Global birdwatching data platform, adapted for use in India

Subproject 3 [with Paola Castaño]: Re-use of unique experimental data - NASA GeneLab

- Engagement and re-use practices built around existing plant omics datasets
- Top-down approach to open data or bottom-up engagement with plant scientists?
- **Analysis Working Groups (AWG**) as attempt to engage sustainably and effectively
  - Fairly small, largely US-based community
  - Extremely effective as community of practice
  - Relatively isolated from transnational efforts

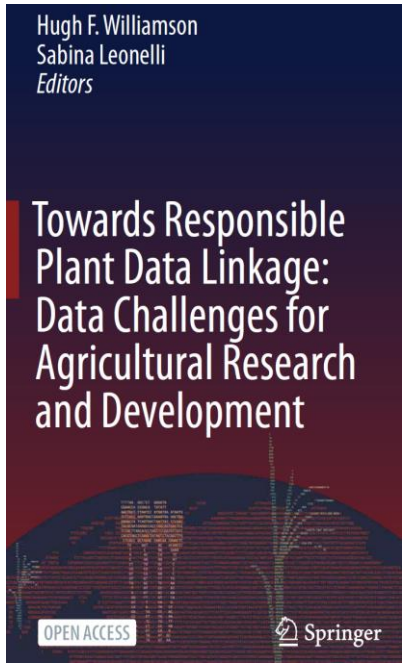


Subprojects 4-5-6: Openness and research quality in plant and crop science

- How academic, industry and governmental researchers and stakeholders coordinate efforts and expertise to resolve phytosanitary emergencies

- Different national, research, cultivation contexts: Ghana, Greece, Northern Italy, UK [with Hugh Williamson, Emma Cavazzoni, Joyce Korantenh-Acquah, Fotis Tsiroukis]

- Marginalised researchers with relatively low resources (compared to internationally recognised centres) and (unsystematic) access to satellite tech and global databases
  - Openness helps here?



Key findings so far

Open Science movement as counterpoint to IP regimes and commercial publishing services, YET:

- OS co-opted by commercial publishing industry
  - adopted as strategy to cope with digital transformation, outsourcing to commercial providers with little regard for data ownership
  - OA market reshapes around Author-Pays or institutional deals, while data are commodified via OD
- OS co-opted by data capitalism
  - Market share over data as commodified assets
  - Unregulated sharing beyond IP, sovereignty and transnational agreements

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Key findings so far

- confusion and divergent interpretations around conceptual underpinnings and practical implications of OS
- OS tools developed by high-resourced and high-powered, English-speaking centres on fashionable topics and (digitally) tractable components
  - unclear how OS supports different (domain/location-specific) understandings of good research practice
  - unclear relation between digital and material resources and practices
  - emphasis on cutting-edge tech: yet some research environments lack infrastructures, equipment, training, institutional support to take advantage..
  - .. and do not always need high tech to develop excellent research!

Key findings so far

- "global" standards can accelerate discrimination
  - researchers may be adversely affected by OS mandates such as data sharing, especially when lacking capacity to participate in development/governance and to negotiate fair credit
  - OS practices may further disadvantage researchers who are not working in the best-established, richest labs in the world
- OS and sensitive data/materials: enduring tensions around governance models
  - 'closed when necessary' does not cut it – the question is HOW to open, to WHOM and for which PURPOSES
- Inequity and colonial heritage
  - Crisis of self-perception by low-resourced researchers
  - Evidence of differential treatment by peers (publishing, funding, rankings..)

Openness 1.0:
An object-oriented philosophy of OS

- Sharing as unlimited access to resources → focus on **appropriation**
  - Research components as bounded objects to be collected and shared
  - Discovery as linear path from accumulation of objects to extraction of insight
  - Grounded on commodification of research components: Central role of intellectual property and debates over ownership and control

- Sharing as unlimited collaboration → focus on **disruption** of appropriation
  - Social movement approach: often bypassing IP and refusing to engage with ownership claims
  - YET: model of discovery remains unchallenged: focus on sharing commodified outputs, complicity with epistemology of data accumulation

4. Openness 2.0

- Inclusion: Judicious connections
- Equity: Reframing research environments
- Reliability: Verifiable story-telling

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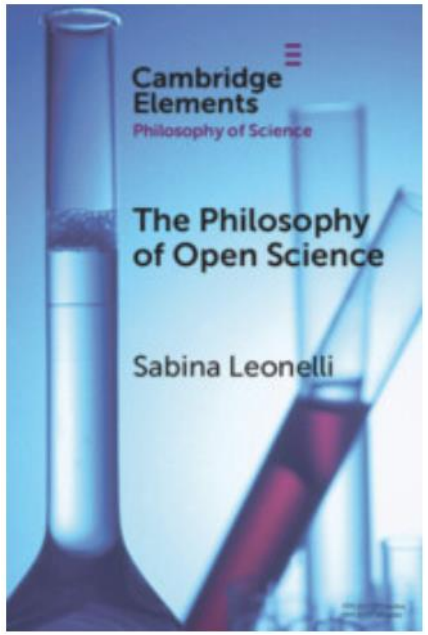
Prioritising inclusion



Transparency ~~Quality~~ Inclusion

Inclusion Quality Transparency

Openness as judicious connection: A process-oriented philosophy of OS

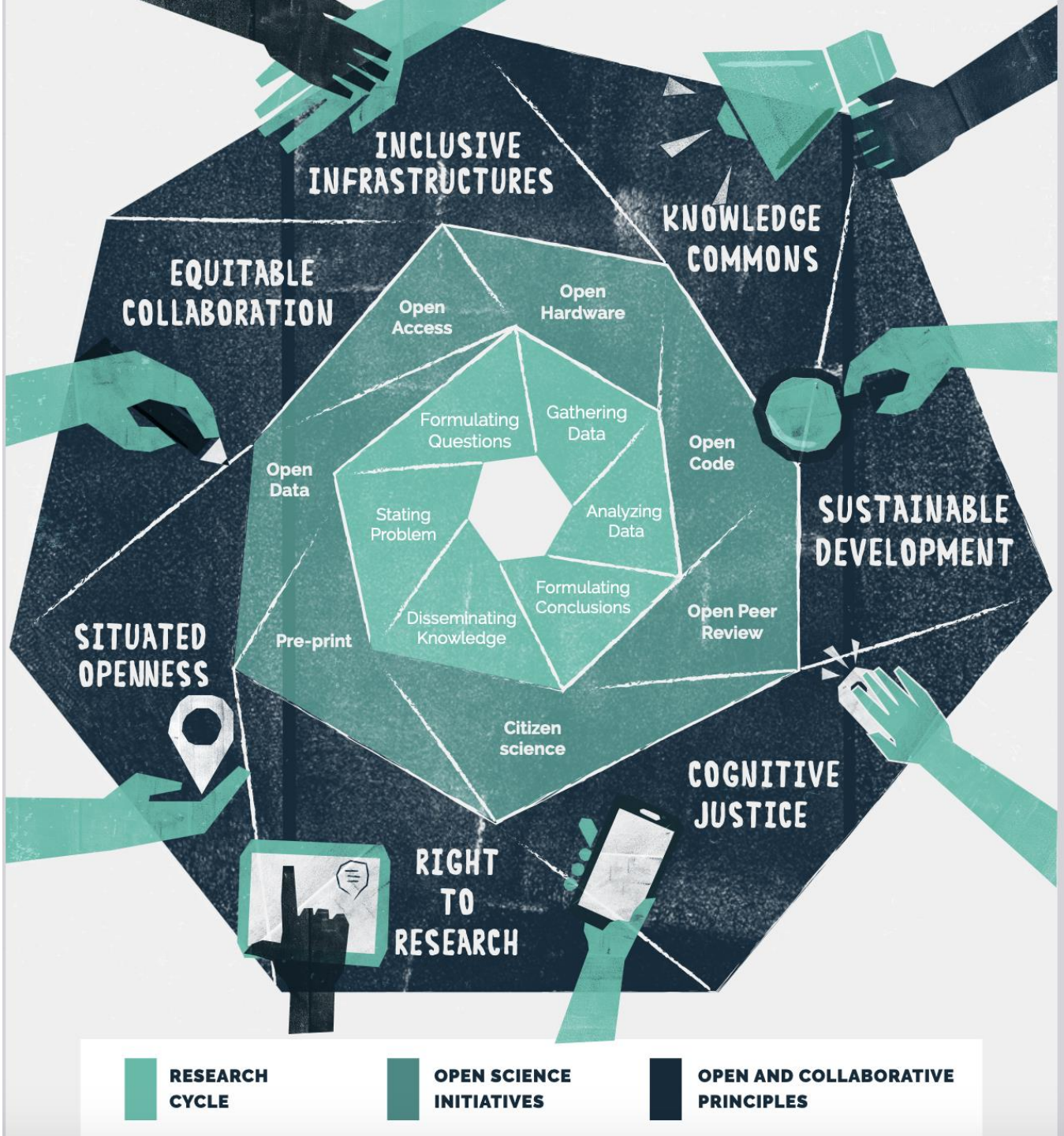
Discovery as skilled, distributed interaction with the world

- Does not require control over resources:
- Away from debates over ownership
- Focus on social agency: creating new intimacies, potentially facilitating trust and collaboration
- Epistemic justice and diversity as crucial conditions for inquiry

Connection needs to be *judicious*:

- Situated and responsive to context
- What constitutes relevant context is key part of any investigation

Sabina Leonelli CC BY



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Seeking Equity

- Balance call for transdisciplinarity engagement with attention to politics of knowledge and colonial/neoliberal violence (de Sousa Santos) and propaganda (Oreskes)
- Reframe research environments – not all are created equal
- Govern research practice in ways that nurture judicious connection
- Institutions should foster debate over best-fitting demarcation strategies

Trappes and Leonelli Conceptualising Research Environments (under review) Leonelli and Trappes Research in the Multiplex (under review) Leonelli, S. (in preparation) Not all research environments are created equal.

Ensuring Reliability

- Crisis of scientific legitimacy and proliferation of mis/disinformation: Safeguarding quality and reliability of research process and outputs is paramount
- Reliability requires (some) intelligibility and reciprocal understanding
- This is not what transparency as ‘sharing’ or ‘disclosure’ necessarily delivers
- Narrative works better than offloading: need to consider audience and type of conversation / use when sharing

“Stories keep us together. Untold stories keep us apart”
(Elif Shafak, 2021)

Ensuring Reliability

Demanding for all intended interlocutors

- Resource-hungry: time, thinking, logistics, emotional energy
- Technically challenging: Standardization needs to be balanced with situational knowledge
- Epistemically complex: evidencing truth-value requires careful assessment of what constitutes relevant evidence and how it should be presented
- Value-laden: requires articulation of and engagement with value systems and socio-economic priorities

These extra demands need to be acknowledged by scientific credit system

Open Science 2.0: Towards Engaged Empirical Inquiry

- about **responsible use**
- about the critical and constructive scrutiny of how **digital platforms** can support existing and future work
  - Encouraging development of relationship that can sustain and nurture scientific research in the long term
- **good for some and not others**: value-judgements and choices are unavoidable when developing open research and infrastructures
- **accessible to some and not others**: transparent criteria for which users are privileged can be a platform for trustworthiness
- facilitating **equity** in research production and consumption: it makes previously inaccessible resources *more easily* available to those who may wish to use them *for specific purposes* (whose social and scientific value has been explicitly evaluated)

Table 3. Synoptic comparison of the main features of the two interpretations of openness I have discussed in this book.

Openness as sharing	**Openness as judicious connection**
Unlimited	Relational
Digital	Social
Good	Divisive
Global	Situated
Equal	Equitable
Focused on itemized outputs (objects that can be shared)	Focused on social agency (ways of doing and being with others)

The Value of Openness

- Openness as capacity for novel meaning-making
  - Identifying, receiving and assimilating information in ways that increase ability to think and act (knowledge)
- Unavoidable “vulnerability”:
  - Need to allow for change
  - Process of learning: Trial-and-error
- Full control is impossible
  - Can’t ensure 100% safety, trustworthiness and reliability
  - Yet ”closed” = stops relations to others, thereby stopping change and learning

Relation to research cultures

- Acknowledging multiple perspectives and well-established (but diverse) cultures of openness: beware of centralized assessment criteria

- Support openness across publicly and privately funded institutions, taking care not to single out publicly funded institutions as the only conceivable target for OS policies and assessment

- Invest in understanding scientific motivations for specific habits and preferences, beyond conformity to problematic assessment / credit systems (a ‘culture problem’ is not necessarily a ‘people problem’)
  - Attention to ECRs is key, e.g. Global Young Academy activities in this space since 2012

Relation to research cultures

- Support researchers' transition to OS: cannot simply be delegated down, especially as researchers are already overwhelmed by admin and management

- Don't buy into 'novelty' narrative relating to OS: openness has long been a constitutive value for scientific research, with many different ways of operationalizing it over the last few centuries

- Beware of attempts to interpret openness as disregard for expertise and know-how
  - Build in methods to identify and value expert knowledge

Humanities, Arts and Social Sciences as models of OS practice

- In all these ways, HASS subjects can act as a role model
- Shift of gears: emphasis on relations, situatedness of knowledge claims and research processes, contextualization
- Reflexivity at the heart of openness as engaged empirical inquiry

Thank you for your attention

European Research Council

Established by the European Commission

References:

- Leonelli, S. (monograph in preparation) *Beyond the Given*
- Leonelli, S. (2018) Re-Thinking Reproducibility as a Criterion for Research Quality. *Research in the History of Economic Thought and Methodology* 36B, 129-146. Open Access version: http://philsci-archive.pitt.edu/14352/
- Leonelli, S. (2017) Global Data Quality Assessment and the Situated Nature of "Best" Research Practices in Biology. *Data Science Journal* 16(32): 1-11. DOI: 10.5334/dsj-2017-032
- Leonelli, S. (2023) *Philosophy of Open Science.* Elements series. Cambridge, UK: Cambridge University Press. Open Access.
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Coffee Break

15:00-15:30

Marble Room

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Panel:
Open Science in Belgium

Panelists

- Christophe Dony, Liaison and research librarian, Uliège
- Joke Meeus, Coordinator Open Science, FWO
- Isabelle Gérard, Head of Service Publications Division, Africa Museum
- Jean-Claude Burgelman, Em. Professor and Academic Coordinator Open Science, VUB
- Yves Deville, Full Professor and Rectoral Adviser for the Digital University and Open Science, UCLouvain

15:30-16:20

Moderator: Sven Rogge, Jonge Academie

Auditorium Albert II

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Break

16:20-16:35

Panel:
EOSC in Belgium

16:35-17:25

Moderator: Inge Van Nieuwerburgh, Open AIRE

Auditorium Albert II

Panelists

- Sally Chambers, Digital Librarian, KBR-British Library
- Johan Philips; Coordinator Research Data Management Competence Centre, KULeuven
- Patricia Mergen, Liaison Officer, Africa Museum and Meise Botanic Garden
- Isabelle Gribomont, Digital humanities researcher, UCLovain
- Karel Luyben, President of EOSC-Association

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Announcement: Public Choice Poster Session

17:25-17:30

Auditorium Albert II

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Reception with continued Poster Session

17:35-19:30

Atrium

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