
Measuring openness

Why measure openness
and how do we do it?

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How to measure openness?

Indicators

- Quantity (or: output or productivity)
 - # publications
- Performance (or: impact or quality)
 - # citations, Journal Impact Factor, H-Index
- Structural
 - # co-authors, cited disciplines
- Process (or: doing open science)
 - Use of open source software, publish OA
- System level (or: framework conditions)
 - Policies, tenure-decisions

How to measure openness?

The Open Definition

- Open means anyone can freely access, use, modify, and share for any purpose (subject, at most, to requirements that preserve provenance and openness).

How to measure openness?

Altmetrics/ Social Media Metrics

- Greater variety
 - Types of engagement
 - Types of research products
 - Types of stakeholders
- MLE showed that “only few types of Open Science incentives and rewards are currently being implemented” (p. 99)



How to measure openness?

Open Science Career Evaluation Matrix (OS-CAM)

- Areas to be considered
 - Research output
 - Research process
 - Service and leadership
 - Teaching and supervision
 - Professional experience

Open Science Career Assessment Matrix (OS-CAM)	
Open Science activities	Possible evaluation criteria
RESEARCH OUTPUT	
Research activity	Pushing forward the boundaries of open science as a research topic
Publications	Publishing in open access journals Self-archiving in open access repositories
Datasets and research results	Using the FAIR data principles Adopting quality standards in open data management and open datasets Making use of open data from other researchers
Open source	Using open source software and other open tools Developing new software and tools that are open to other users
Funding	Securing funding for open science activities
RESEARCH PROCESS	
Stakeholder engagement / citizen science	Actively engaging society and research users in the research process Sharing provisional research results with stakeholders through open platforms (e.g. Arxiv, Figshare) Involving stakeholders in peer review processes
Collaboration and Interdisciplinarity	Widening participation in research through open collaborative projects Engaging in team science through diverse cross-disciplinary teams
Research integrity	Being aware of the ethical and legal issues relating to data sharing, confidentiality, attribution and environmental impact of open science activities Fully recognizing the contribution of others in research projects, including collaborators, co-authors, citizens, open data providers
Risk management	Taking account of the risks involved in open science
SERVICE AND LEADERSHIP	
Leadership	Developing a vision and strategy on how to integrate OS practices in the normal practice of doing research Driving policy and practice in open science Being a role model in practicing open science
Academic standing	Developing an international or national profile for open science activities

How to measure openness?

Areas to be considered

- scientific process
 - conceptualisation, data gathering/creation
 - analysis
 - diffusion of results
 - review and evaluation

- system level
 - reputation system, recognition of contributions, trust
 - open science skills, awareness
 - science with society

NEW INDICATORS FOR OPEN SCIENCE

POSSIBLE WAYS OF MEASURING THE UPTAKE AND IMPACT OF OPEN SCIENCE

DIETMAR LAMPERT, MARTINA LINDORFER, ERICH PREM, JÖRG IRRAN AND FERMÍN SERRANO SANZ

Requirements from research funders	mean rating (0..10 max.)			
% of research funders that mandate the provision of the data / software code produced in the context of the funded activity AND who mandate the conformity to data (exchange) standards	7.9			
		RFO	PM	
Accessibility	mean rating (0..10 max.)			
accessibility of open data / code as % of all data / code produced by publicly (co-)funded projects	9.1			
		R	RO	RFO
Machine-readable	mean rating (0..10 max.)			
% of machine-readable data / metadata	7.9			
		PU	R	RFO
Availability of metadata	mean rating (0..10 max.)			
availability of explanatory metadata as % of all available data (resulting from publicly (co-)funded research)	7.5			
		PU	R	RFO
Quality of metadata	mean rating (0..10 max.)			
quality of metadata (versioning, volume, data format, description of fields, etc.)	8.2			
		PU	R	RFO
Simulation results	mean rating (0..10 max.)			
usability of simulation results (models, data, and code)	7.5			
		R	RFO	PU

How to measure openness?

Open Science Monitor

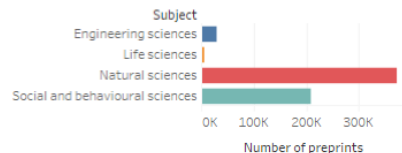
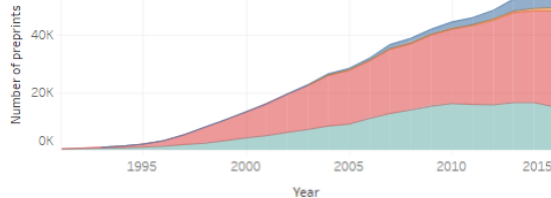
Number of preprints

This visualisation shows the number of preprints in arXiv, RePEc, bioRxiv and Peer Preprints.

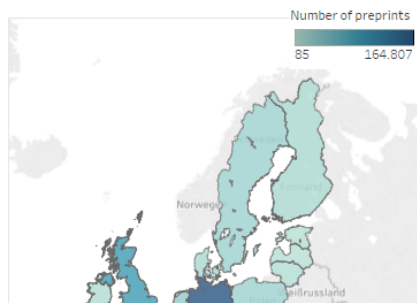
Focus on one or more countries or subjects by selecting them on the barcharts below. The CTRL key can be used to select multiple bars.

To reset, use the reset button in the bar below.

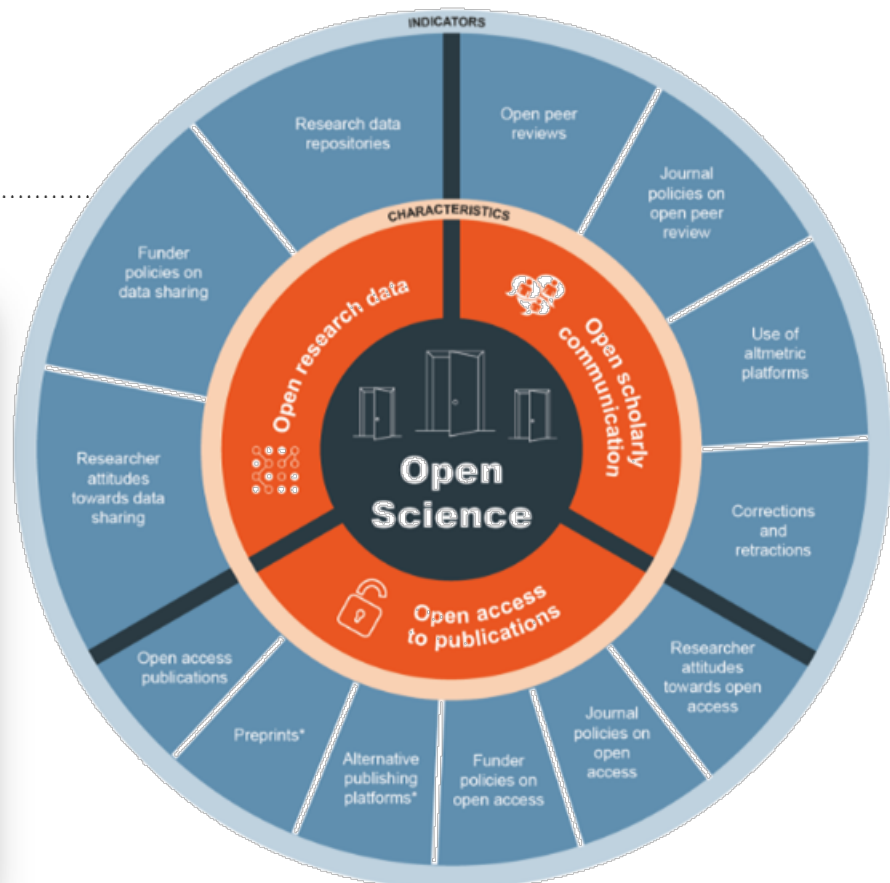
Region
 EU28
 Other



Country
Germany
France
United Kingdom



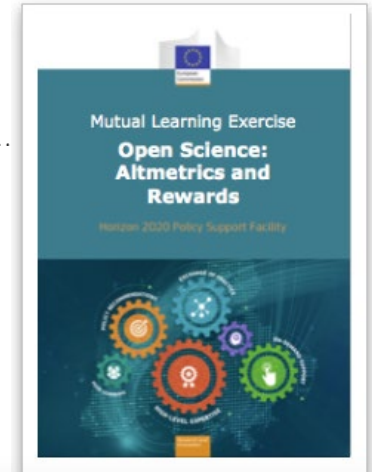
arXiv.org bioRxiv Peer Preprints RePEc



Why measure openness?

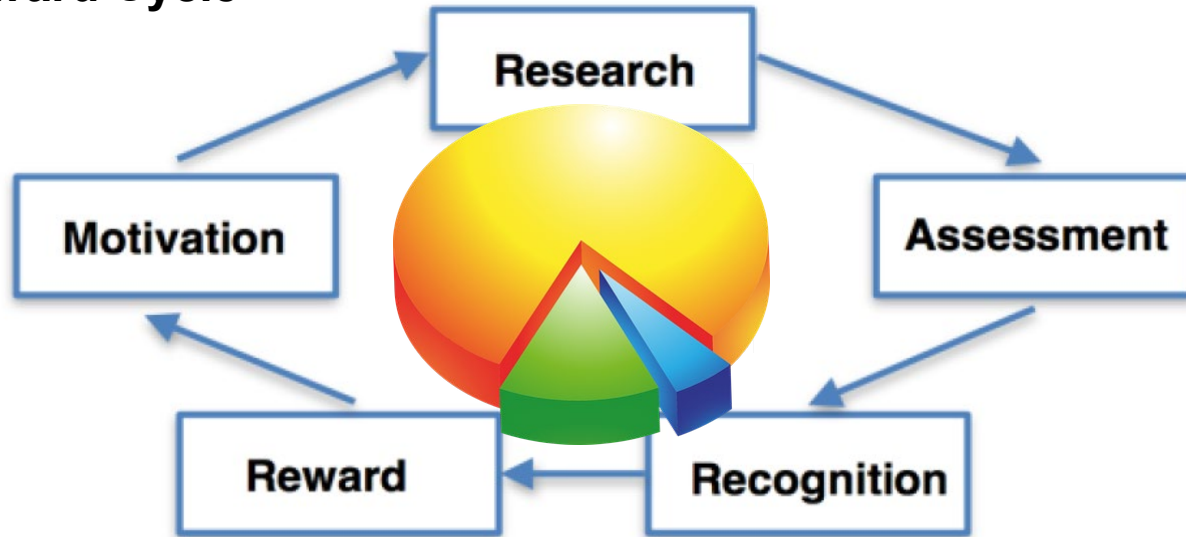
Sticks and carrots

- “incentivize both research quality and open practices” (p. 26)
- “linking open practices with performance evaluation has proven to be a very effective measure, especially when made mandatory” (p. 29)



Why measure openness?

Research Reward Cycle



What does openness mean to us?

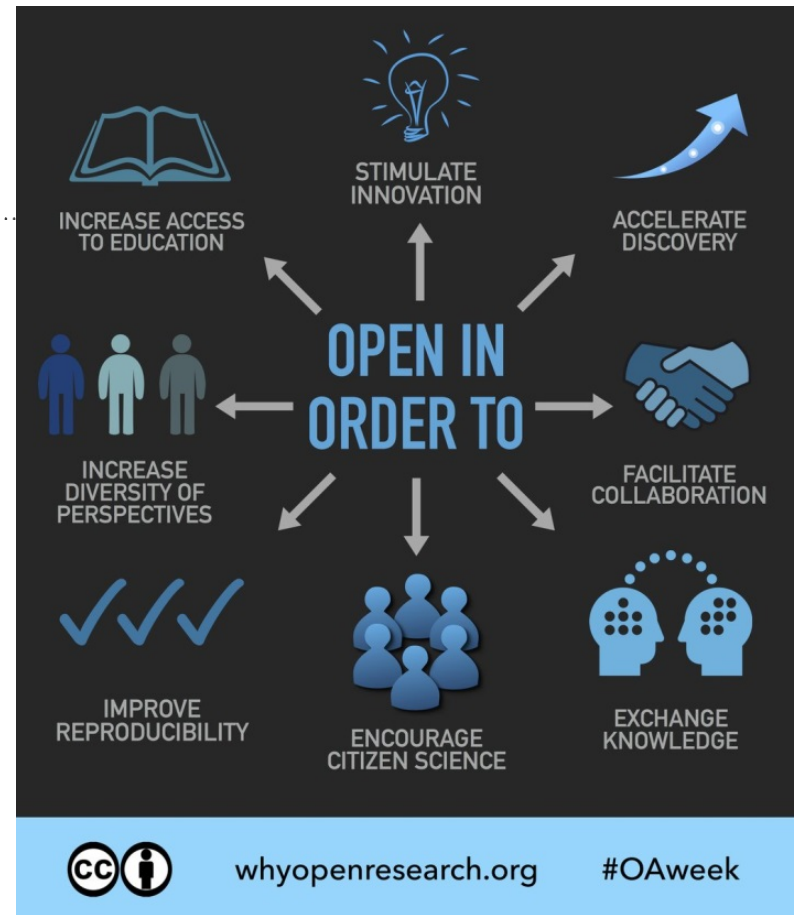
Indicators of Openness

- Do they really measure what matters?



What does openness mean to us?

- Quality
- Efficiency
- Reproducibility
- Credibility
- Visibility
- “Open science is about improving the quality, accountability and social contribution of research...” (p. 96)



What does openness mean to us?

Openness Index

- Import + export
GDP

The screenshot shows the FRED Economic Data website header with the logo and 'ECONOMIC RESEARCH FEDERAL RESERVE BANK OF ST. LOUIS'. A search bar is visible in the top right. Below the header is a navigation menu with links for 'FRED Economic Data', 'Information Services', 'Publications', 'Working Papers', 'Economists', and 'About'. The main content area is titled 'The FRED® Blog' and features the article 'Are you open?' with the subtitle 'The openness index measures countries' exposure to international trade'. Social media sharing icons for Twitter, Facebook, LinkedIn, and others are present. The article is dated 'Posted on May 25, 2017'. Below the text is a world map titled '2010 Openness at Current Prices by Nation (percent)'. The map uses a color scale from light blue (low openness) to dark blue (high openness) to represent the openness index for various countries. Iceland is notably dark blue, indicating high openness. Other countries like the United States, Canada, and several European nations are also shown in shades of blue. A legend is located in the bottom right corner of the map.

What does openness mean to us?

It is a chance to reorganize the science system

- “...this MLE was dedicated to discussing core challenges [...] when redesigning how scientific quality and impact is assessed, and which incentives and rewards should be developed to gradually **replace a self-referential and hypercompetitive system, which has both harmed scientific integrity and discouraged social engagement**” (p. 22).
- ...”opportunity to reorganise [...] challenging some of the **unfair and unproductive aspects** of current research and evaluation practice” (p. 96).

What does openness mean to us?



STRATEGIC APPROACH

HuMetricsHSS takes the approach that metrics should only be used to measure a scholar's progress toward embodying five values that our initial research suggests are central to all HSS disciplines:

COLLEGIALITY, which can be described as the professional practices of kindness, generosity, and empathy toward other scholars and oneself;

QUALITY, a value that demonstrates one's originality, willingness to push boundaries, methodological soundness, and the advancement of knowledge both within one's own discipline and among other disciplines and with the general public, as well;

EQUITY, or the willingness to undertake study with social justice, equitable access to research, and the public good in mind;

OPENNESS, which includes a researcher's transparency, candor, and accountability, in addition to the practice of making one's research **OPEN ACCESS** at all stages; and

COMMUNITY, the value of being engaged in one's community of practice and with the public at large and also in practicing principled leadership.

What does openness mean to us?

'Open science' is just 'science'



open science

Open science describes the practice of carrying out scientific research in a completely transparent manner, and making the results of that research available to everyone. Isn't that just 'science'?

- Mick Watson, Genome Biology 2015, 16:101
doi:10.1186/s13059-015-0669-2

Image by G.emmerich, CC BY-SA 3.0, via Wikimedia Commons



**OPEN SCIENCE:
JUST
SCIENCE
DONE RIGHT**

What does openness mean to us?



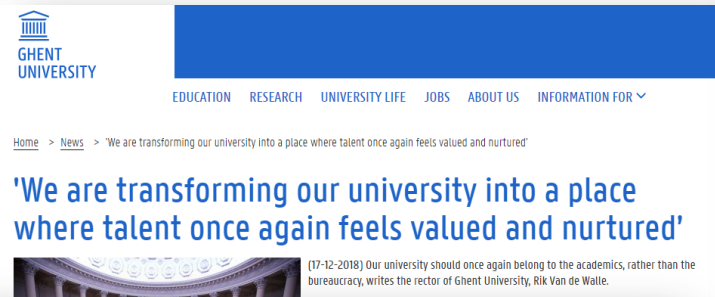
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Editorial board of Journal of Informetrics resigns and launches new journal

January 14th, 2019



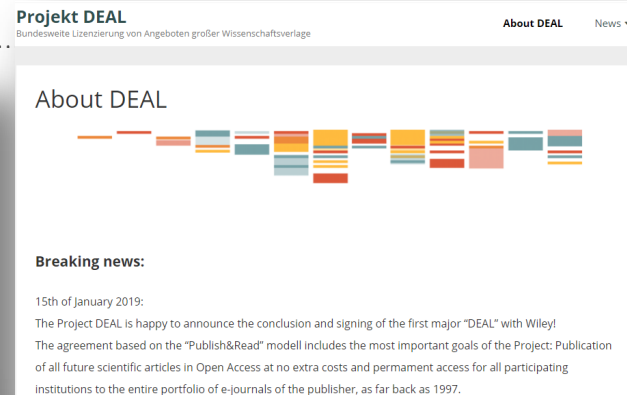
GHENT UNIVERSITY

EDUCATION RESEARCH UNIVERSITY LIFE JOBS ABOUT US INFORMATION FOR

Home » News » 'We are transforming our university into a place where talent once again feels valued and nurtured'

'We are transforming our university into a place where talent once again feels valued and nurtured'

(17-12-2018) Our university should once again belong to the academics, rather than the bureaucracy, writes the rector of Ghent University, Rik Van de Walle.



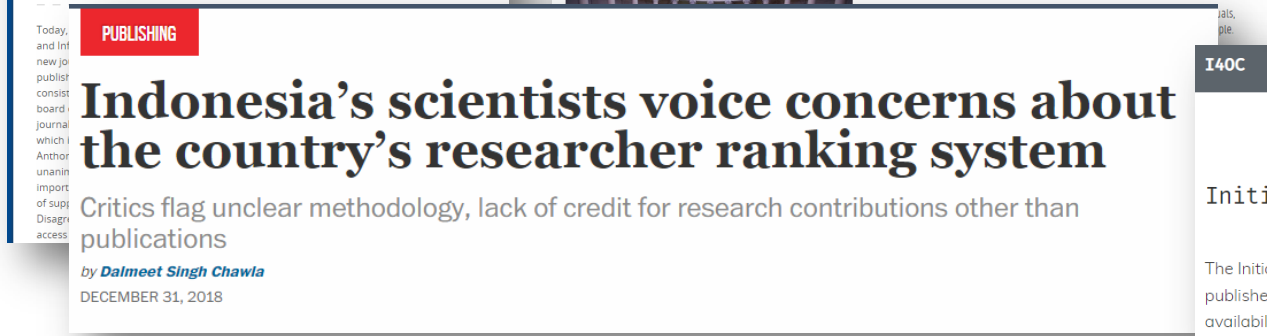
Projekt DEAL Bundesweite Lizenzierung von Angeboten großer Wissenschaftsverlage

About DEAL News

About DEAL

Breaking news:

15th of January 2019:
The Project DEAL is happy to announce the conclusion and signing of the first major "DEAL" with Wiley! The agreement based on the "Publish&Read" modell includes the most important goals of the Project: Publication of all future scientific articles in Open Access at no extra costs and permanent access for all participating institutions to the entire portfolio of e-journals of the publisher, as far back as 1997.



PUBLISHING

Indonesia's scientists voice concerns about the country's researcher ranking system

Critics flag unclear methodology, lack of credit for research contributions other than publications

by Dalmeeth Singh Chawla

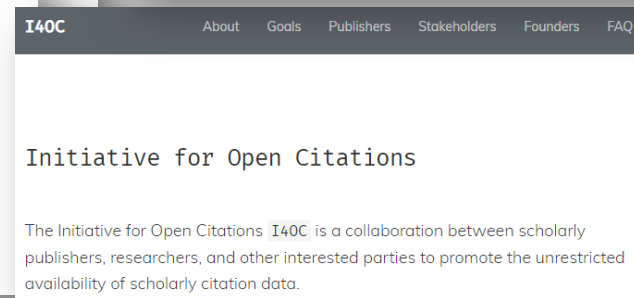
DECEMBER 31, 2018

<https://www.cwts.nl/news?article=n-r2v294&title=editorial-board-of-journal-of-informetrics-resigns-and-launches-new-journal>

<https://www.ugent.be/en/news-events/ghent-university-talent-rat-race-transformation-career-evaluation-model.htm>

<https://cen.acs.org/policy/publishing/Indonesias-scientists-voice-concerns-countrys/96/web/2018/12>

<https://www.projekt-deal.de/about-deal/>



I40C

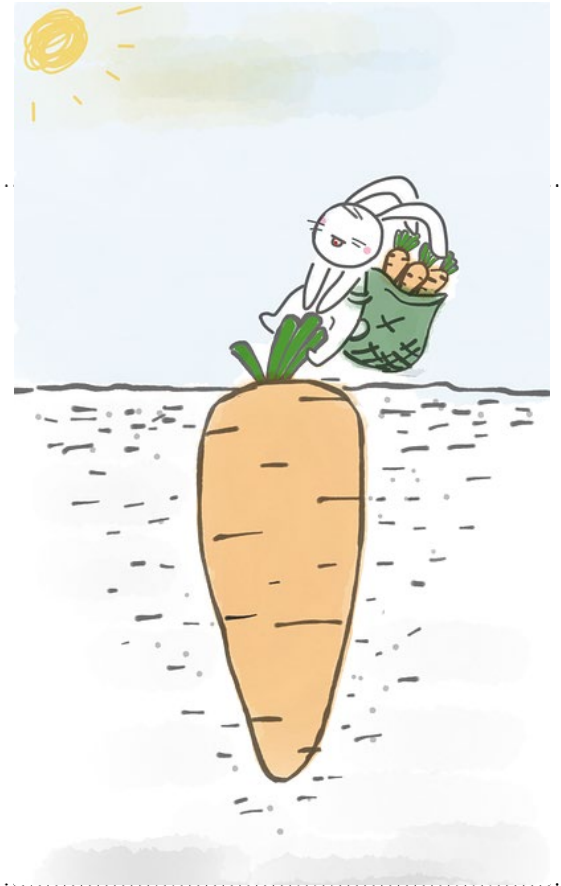
About Goals Publishers Stakeholders Founders FAQ

Initiative for Open Citations

The Initiative for Open Citations I40C is a collaboration between scholarly publishers, researchers, and other interested parties to promote the unrestricted availability of scholarly citation data.

Conclusion I

- Measure what matters
- What are good carrots?



Conclusion II



Toward context-sensitive openness: how understand...
ocsdnet.org



Virtues Lost – Openness | Lessons and Moments of...
donslifeandphilosophy.wordpress.com



Openness to Experience and Creative Achievem...
blogs.scientificamerican.com



Openness to Experience Personality Trait - Psycholo...
psychologistworld.com



The Era of Openness | AI3::Adaptive Information
mikbergman.com



The Art of Openness – Atomic.io – Medium
medium.com



How Aligning With Honesty and Openness Can Pres...
adweek.com



Openness To Experience Trumps Intellectual Curiosity F...
filinstitute



From dawn to dusk, from birth to death we rush to achieve our goals, pursuing our desires, and suffer from not having a free moment for ourselves, we are overburdened, and live in constant stress.

What are the reasons for that?

The Mystery of Attention:



Questions?

Measuring openness

Why measure openness
and how do we do it?

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