



# **Next-generation altmetrics: responsible metrics and evaluation for open science**

**EU Expert Group Altmetrics  
Rene von Schomberg**



# **Next-generation altmetrics: responsible metrics and evaluation for open science**

**EU Expert Group Altmetrics**  
**Judit Bar-Ilan**



## **EU expert group members**

*James Wilsdon, University of Sheffield (chair);*

*Judit Bar-Ilan, Bar-Ilan University;*

*Robert Frodeman, University of North Texas;*

*Elizabeth Lex, Graz University of Technology;*

*Isabella Peters, ZBW Leibniz Information Centre for  
Economics;*

*Paul Wouters, Leiden University*

*Team Leader-Open science policy coordination and  
development: Rene von Schomberg*



## Aims

- ✓ *assess role (alt)metrics in research evaluation*
- ✓ *consider how altmetrics can be developed for **open science***
- ✓ *engage stakeholders*
- ✓ *consider implications of metrics*
  - ✓ *Positive and negative*
- ✓ *explore altmetrics for impacts, research actions, in Horizon 2020 and in the next framework programme*

## Before starting to measure ...

- ✓ *Decide what matters and how to measure it*
- ✓ *Then decide if there are available indicators for the task*
- ✓ *If not develop new indicators*
- ✓ *Check validity and reliability !*
- ✓ *Take into account that measurements influence the measured processes*

**“Not everything that can be counted counts, and not everything that counts can be counted”**  
(attributed to Albert Einstein)

# Traditional metrics

**Based on citation and publication counts are not sufficient**

- ✓ *Citations take time to accumulate*
- ✓ *IF often used as a proxy for citation count*
- ✓ *h-index*
- ✓ *Disciplinary differences in publication and citation culture*
- ✓ *Ignore societal impact*

*(As expressed in DORA, Leiden Manifesto, Metric Tide)*

# Traditional metrics

**However this does not mean that they need to be abandoned, or that are useless for the assessing open science**

*Some examples*

- ✓ *Measuring citation advantage of open access publications*
- ✓ *Collaboration in open science projects*
- ✓ *Usage (downloads, views, reads)*

# Altmetrics

Intend to capture and measure additional aspects of scholarly information

✓ *Altmetric advantage*

✓ *Increased visibility of researchers/publications (showcasing)*

✓ *Expanding our view of what impact looks like*

✓ *Exposing research to the public*

✓ *Involving the public*

✓ *Discussion/commenting*

✓ *Including non-traditional sources (blogs, data, software, tools)*

✓ *Altmetric events can be measured/counted*

✓ *Altmetric events occur **fast***



# Altmetrics - challenges

- ✓ *Coverage*
- ✓ *Transparency*
- ✓ *Validity*
- ✓ *Dynamics*
- ✓ *Disciplinary differences*
- ✓ *Gaming*
- ✓ *Acceptance*
  - ✓ *Research community*
  - ✓ *Decision makers*



[http://blogs.biomedcentral.com/wp-content/image\\_archive/altmetric.png](http://blogs.biomedcentral.com/wp-content/image_archive/altmetric.png)

## Bibliometrics

**Peer review**



**Altmetrics**

[https://www.simpson.one/s/cc\\_images/cache\\_5223246.png?t=1480081323](https://www.simpson.one/s/cc_images/cache_5223246.png?t=1480081323)





# **Development of recommendations**

**EU Expert Group Altimetrics**  
**Isabella Peters**

# Development of recommendations



# Answers to Call for Evidence

Respondents N =20, 19 valid responses



companies: 1



individuals: 4



publishers: 4



research  
institutions: 4



associations, learned  
societies: 6

# Answers to Call for Evidence

Respondents N =19

## Countries

- 1 = Sweden, Switzerland, Poland, Romania, Belgium, Netherlands
- 3 = Germany, France
- 7 = UK



# Answers to Call for Evidence

## Reasons for not using altmetrics

no  
dynamics  
no substitute  
for peer review  
skewness  
of data  
biases  
misuse gaming  
flatten science  
limited uptake  
of social media  
no standards  
lack of  
reproducibility  
closed metrics  
no one-fits-all  
do not acknowledge  
diversity  
what to  
infer  
not well  
studied  
misleading  
term  
need to  
keep pace  
never neutral  
citations are  
gold-standard

# Answers to Call for Evidence

## Reasons for not using altmetrics

- “altmetrics are not seriously regarded as tools for assessment” (LERU)
- “researchers think that altmetrics are a fun way of seeing their impact” (VA Sweden)
- “citations are not fungible” (JISC)
- “open science doesn't change the view on metrics – all issues of metrics also apply on open science – all traditional metrics can be applied to open science” (Helmholtz Open Science Coordination Office)



# Answers to Call for Evidence

## Potential for altmetrics

research emergencies  
trending topics  
foresight vision  
addition to citations  
post-hoc assessment  
self-assessment  
information about users & beneficiaries  
acknowledge diversity  
options for text and data mining  
public engagement  
policy relevance  
interdisciplinarity  
track dissemination of concepts & results  
author-level metrics  
budget allocation  
impact on society & economy  
faster  
applicable to various research outputs & activities  
incentive for open science

# Answers to Call for Evidence

## How to make metrics work? Prerequisites





# Recommendations

**Report available now:**

**<https://tinyurl.com/nextgenmet>**

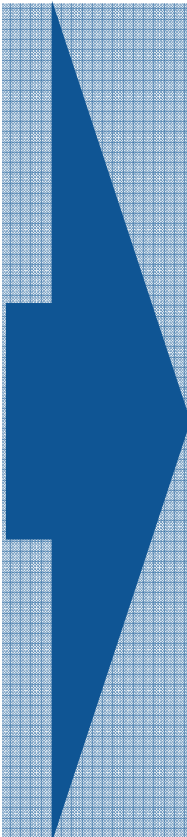
# Recommendations

- **5 headline findings**
- **12 targeted recommendations organised under four of the headings of the European Open Science Agenda:**
  - Foster open science
  - Remove barriers to open science
  - Develop research infrastructures for open science
  - Embed open science in society


## Headline findings

- No perfect metrics: neither alternative, nor traditional
- Responsible use of metrics is key
- Open science requires open metrics

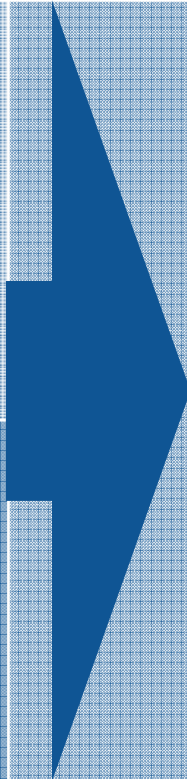
## Selected recommendations

Recommendations	Short Term Goals	Long Term Goal
Ground an open science system in a mix of expert judgement, quantitative, and qualitative measures	Provide guidelines for responsible metrics in support of open science	 <b>Fostering open science</b>

## Selected recommendations

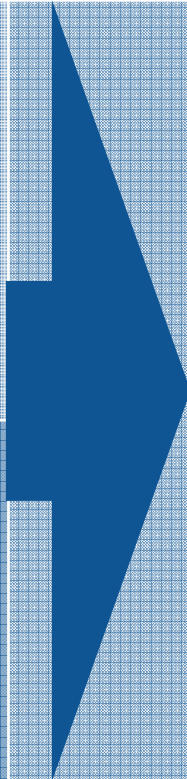
Recommendations	Short Term Goals	Long Term Goal
Ground an open science system in a mix of expert judgement, quantitative, and qualitative measures	Provide guidelines for responsible metrics in support of open science	 <b>Fostering open science</b>
Make better use of existing metrics for open science	Assess suitability of indicators, encourage development of new indicators	

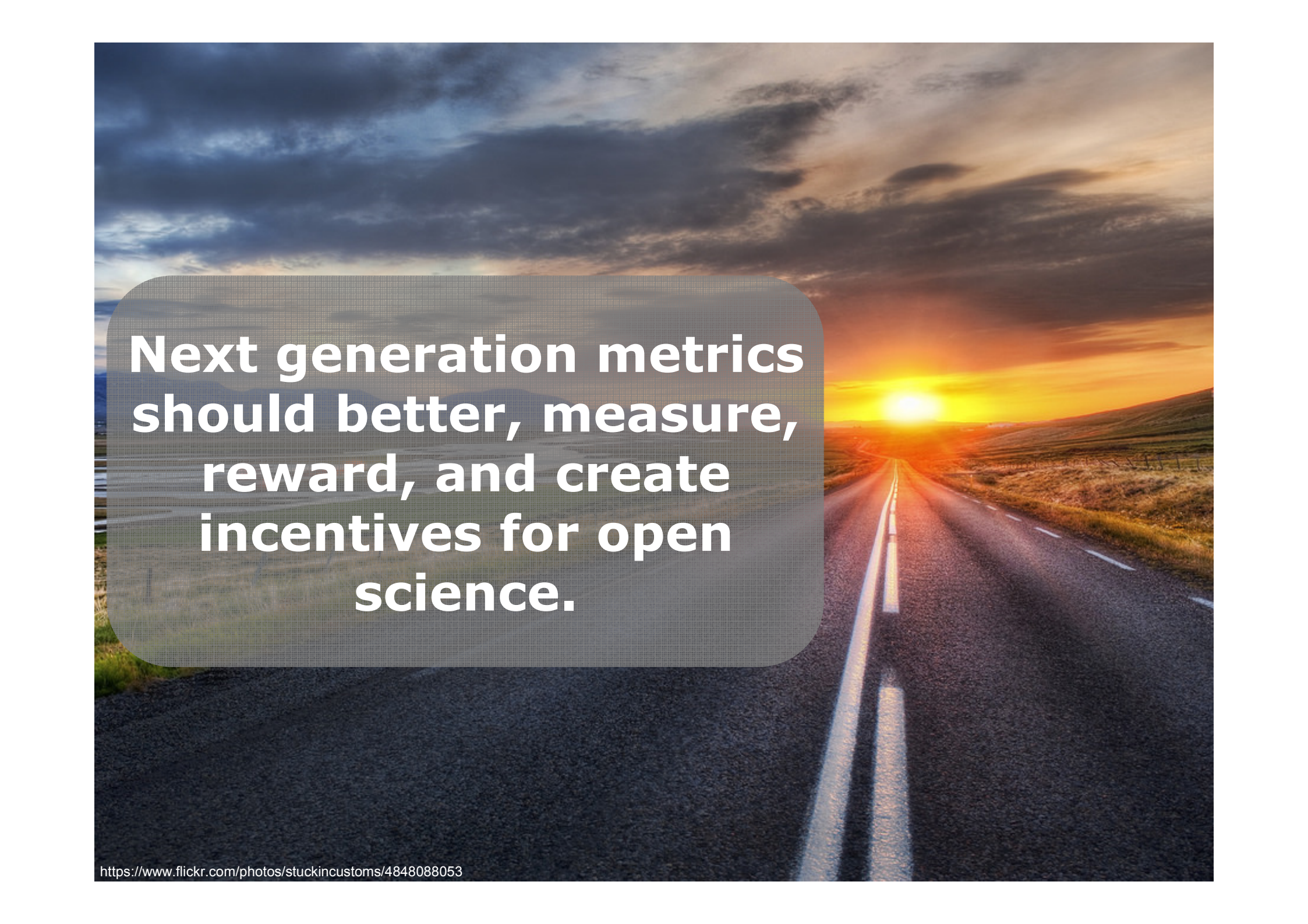
## Selected recommendations

Recommendations	Short Term Goals	Long Term Goal
Open, transparent and linked data infrastructure for metrics in open science	Use open metrics and reward adoption of open science principles and practices	 <b>Removing barriers to open science</b>



## Selected recommendations

Recommendations	Short Term Goals	Long Term Goal
Open, transparent and linked data infrastructure for metrics in open science	Use open metrics and reward adoption of open science principles and practices	 <b>Removing barriers to open science</b>
Measure what matters	Highlight how inappropriate use of indicators can impede open science	



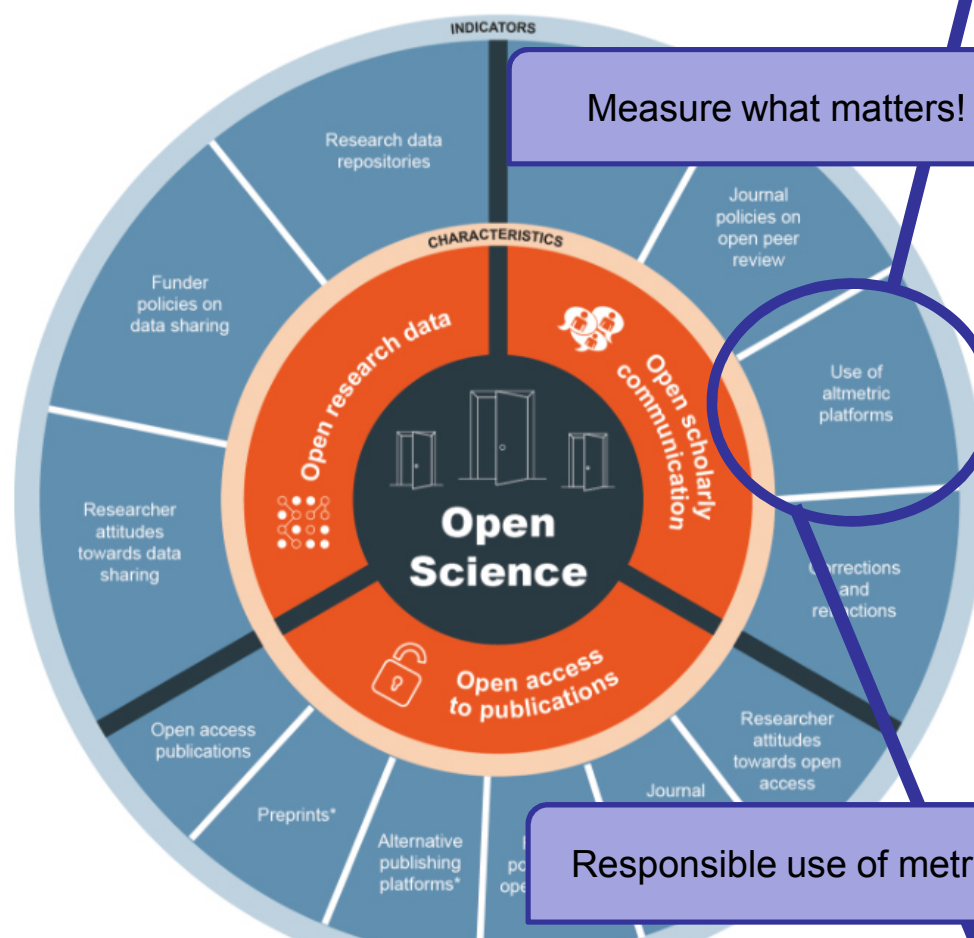
**Next generation metrics  
should better, measure,  
reward, and create  
incentives for open  
science.**





European  
Commission

# Handshake needed!



## Explore the indicators related to open scholarly communication

Select an indicator to see its description, visualise the data, understand its limitations, identify the data sources.

### Open peer reviews

- Percentage of peer reviews that are published
- Percentage of publications in PeerJ that use open peer review

### Journal policies on open peer review

- Journal policies on open peer review

### Use of altmetric platforms

- Number of mentions of publications in media and social media

### Corrections and retractions

- Corrections and retractions recorded in Web of Science

### Preprints

- Number of preprints

### Alternative publishing platforms

- Articles published before peer review

# Discussion

## **Discussants**

### **Prof. Dr. Stefan Hornbostel**

German Center for Higher Education Research  
and Science Studies, Berlin

### **Benedikt Fecher**

Alexander von Humboldt-Institute for Internet  
and Society, Berlin

## Altmetrics: Theories and Difficulties

Open Science Conference

EU Expert Group on Metrics

Berlin, 22. März 2017

Stefan Hornbostel

# New Data – New Concepts?

**No!**

Basic Idea:

Scientific Knowledge is socially constructed

Therefore we observe scientific communication

→ Analogies to traditional bibliometrics

# New Data – New Insights?

**Yes!**

New objects: Books, blogs, projects, discourses ...

New actors: Scientists, not visible in bibliometrics,  
interested citizens, user of scientific  
knowledge ...



# New Data – Old problems?

**Yes!**

Data driven indicator construction. We have a lot of process-produced data, but we don't know what they stand for

Who is participating (representativeness)?

And why (motives)?

→ Lack of theory and empirical knowledge  
(Indicator construction)

# New Data – Old problems?

more detailed information about user demographics and particularly their motivation to interact with scholarly contents on social media is, however, mostly lacking

(cf. Haustein, S. (2016): Grand challenges in altmetrics : heterogeneity, data quality and dependencies. In: Scientometrics, 4. doi: 10.1007/s11192-016-1910-9)

# New Data – New Quality?

**No!**

**Validity** (the degree to which the tool measures what it claims to measure)

**Reliability** (overall consistency of a measure)

**Robustness** (resistant to errors in the results, produced by deviations from assumptions)

**Transparency & Reproducibility** (Lack of free access to the underlying data (data collection algorithms are assets of the altmetric providers; Standards are not (yet) universally defined)

# New Data – More triangulation?

It is a commonplace since many years that a set of indicators should be used in assessments.

What does it mean if these indicators don't show correlations?

# New Data – New utilisation?

**Yes!**

If new indicators are used in evaluations, individuals and organisations alter their performance or behavior due to the awareness that they are being observed

→ Gaming

→ Falsifikation

→ Basless rumors

→ Indicator polishing

# New Data – New problems?

**Yes!**

We are producing more and more data (research data and meta-data)

An archive has two functions:

- **to remember**
- **to forget**

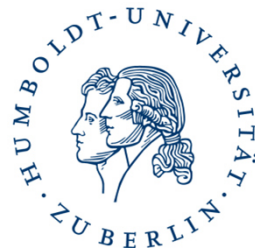
→ Need for indicators to organize oblivion

**Thank you for your attention!**

Prof. Dr. Stefan Hornbostel  
German Center for Higher Education Research and Science  
Studies (DZHW)  
Research Unit: Research System and Science Dynamics  
Schützenstr. 6a, 10117 Berlin  
Phone: 030/20641770, Mail: [hornbostel@dzhw.eu](mailto:hornbostel@dzhw.eu)  
[www.dzhw.eu](http://www.dzhw.eu)



Humboldt-Universität Berlin  
Institut für Sozialwissenschaften



BENEDIKT FECHER

# **ALTMETRICS TRENDS IN RESEARCH AND WAYS TO MEET THEM**

Open Science Conference 2017 – Berlin, 21. März  
2017



## WHY IS IT IMPORTANT THAT WE TALK ABOUT ALTERNATIVE IMPACT SCORES?

- Promotion
- Funding
- Signalling
- Reporting

### **3 DEMANDS**

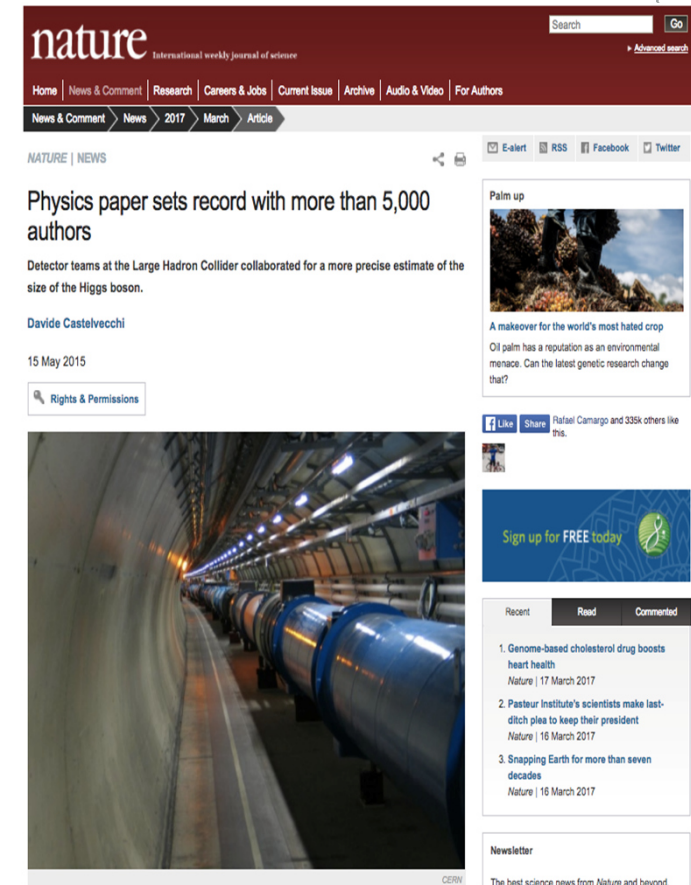
Impact scores should ...

1. ... reflect research practice.
2. ... benefit the community.
3. ... be able to tell attention and impact apart.

## 3 DEMANDS

Impact scores should ...

1. ... reflect research practice.
2. ... benefit the community.
3. ... be able to tell attention and impact apart.



## 3 DEMANDS

Impact scores should ...

1. ... reflect research practice.
2. ... benefit the community.
3. ... be able to tell attention and impact apart.



The screenshot shows the LSE Impact Blog homepage. At the top is the LSE logo and the title 'LSE Impact Blog'. Below the header is a navigation bar with links: Home, About, Latest, Our books, Series, Resources, LSE Comment, Popular, and a search icon. The main content area features an article titled 'Credit where credit is due: Research parasites and tackling misconceptions about academic data sharing' by Benedikt Fecher and Gert G. Wagner. The article text discusses criticism of researchers who use or build on previous datasets as 'research parasites' and argues for better mechanisms for credit and contribution. To the right of the article is a sidebar with social media icons (Twitter, Facebook, RSS), an email address field, a 'Subscribe to the Impact' button, a Creative Commons Attribution 3.0 Unported License logo, and a 'Tweets by @LSEImpact' section showing a tweet from @LSEImpactBlog about equal parts researcher advocate having an impact to reach communities.

**LSE** THE LONDON SCHOOL OF ECONOMICS AND POLITICAL SCIENCE

# LSE Impact Blog

Home About Latest Our books Series Resources LSE Comment Popular

## Credit where credit is due: Research parasites and tackling misconceptions about academic data sharing

**Benedikt Fecher** and **Gert G. Wagner** look at a recent editorial which faced considerable criticism for typecasting researchers who use or build on previous datasets as "research parasites". They argue that the authors appear to miss the point, not only of data sharing, but of scientific research more broadly. But as problematic as the editorial may be, it points to a wider issue for the scientific community, which is adequate mechanisms for credit and contribution. We could be doing more to provide proper recognition for researchers' data sharing, data production and data curation efforts.

In a recent editorial in the New England Journal of Medicine, the authors Longo and Drazen **critically assessed** the concept of data sharing in medicine. Their main concern is that a "new class of research person will emerge" that uses data for their own original research questions. The authors, although indirectly, later refer to this class of researcher as "research parasites". The label "research parasites" certainly does not reflect the zeitgeist of an increasingly collaborative research and initiatives towards openness and transparency. However, it does reflect many common misconceptions about academic data sharing.

This work is licensed under a Creative Commons Attribution 3.0 Unported License. See [https://creativecommons.org/licenses/by/3.0/deed.en](#) for more details.

Tweets by @LSEImpact

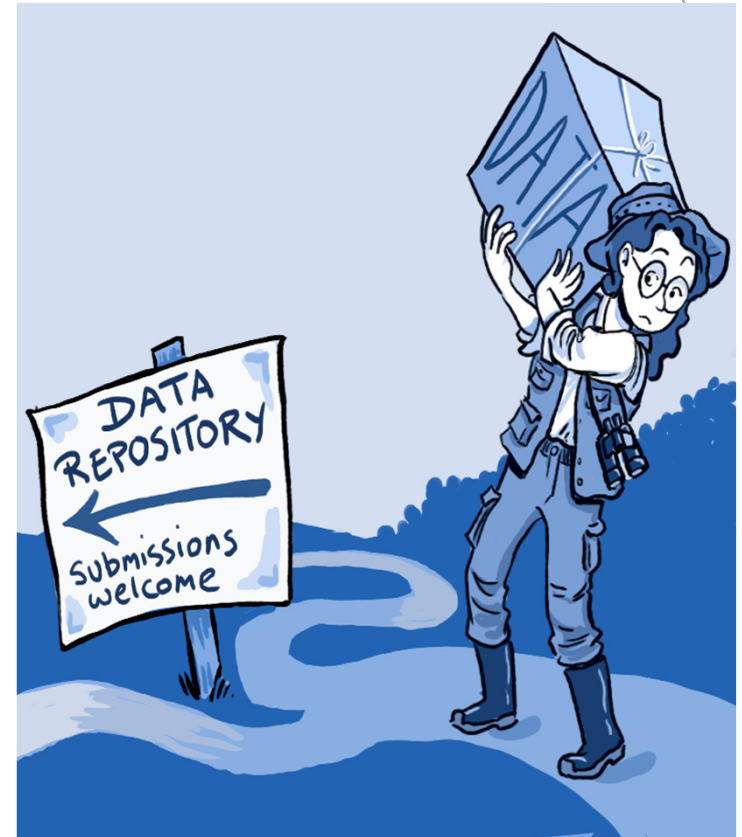
**LSE Impact Blog** @LSEImpactBlog

New: Equal parts researcher advocate - having an impact to reach communities

### 3 DEMANDS

Impact scores should ...

1. ... reflect research practice.
2. ... **benefit the community.**
3. ... be able to tell attention and impact apart.



Roche et al. (2014)

## 3 DEMANDS

Impact scores should ...

1. ... reflect research practice.
2. ... benefit the community.
- 3. ... be able to tell attention and impact apart.**



Sarah\_Ackerman

How will you make sure that intelligent Altmetrics will be adapted by funding agencies and research institutions?

**What about impact beyond the available data?**

## Discussion + questions

- Do we need metrics in open science? What role should metrics play in open science?
- Measure what matters: what matters in open science?
- Why should we evaluate the impact of science on society?
- What are the reasons for (possibly) limited impact of science?





# Thank you!