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

EU Expert Group Altmetrics
Rene von Schomberg

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Judit Bar-Ilan

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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)*

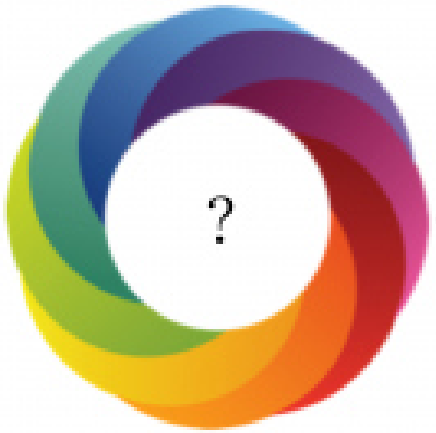
Altmetrics

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

European Commission

Bibliometrics

Peer review

Altmetrics

https://www.simpson.one/s/cc_images/cache_5223246.png?t=1480081323

Development of recommendations

EU Expert Group Altmetrics
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

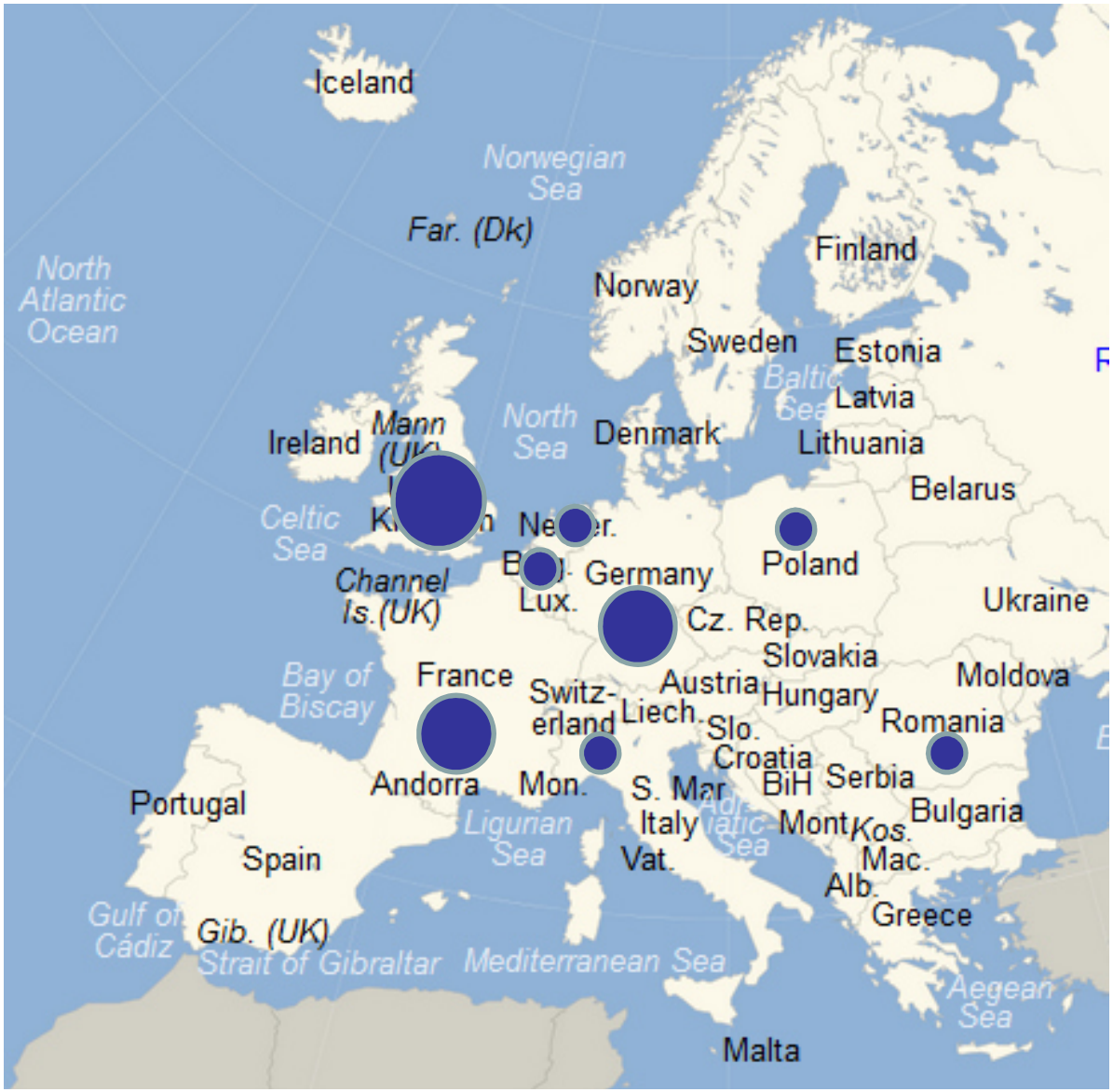
associations, learned societies: 6

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

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

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	Fostering open science

Selected recommendations

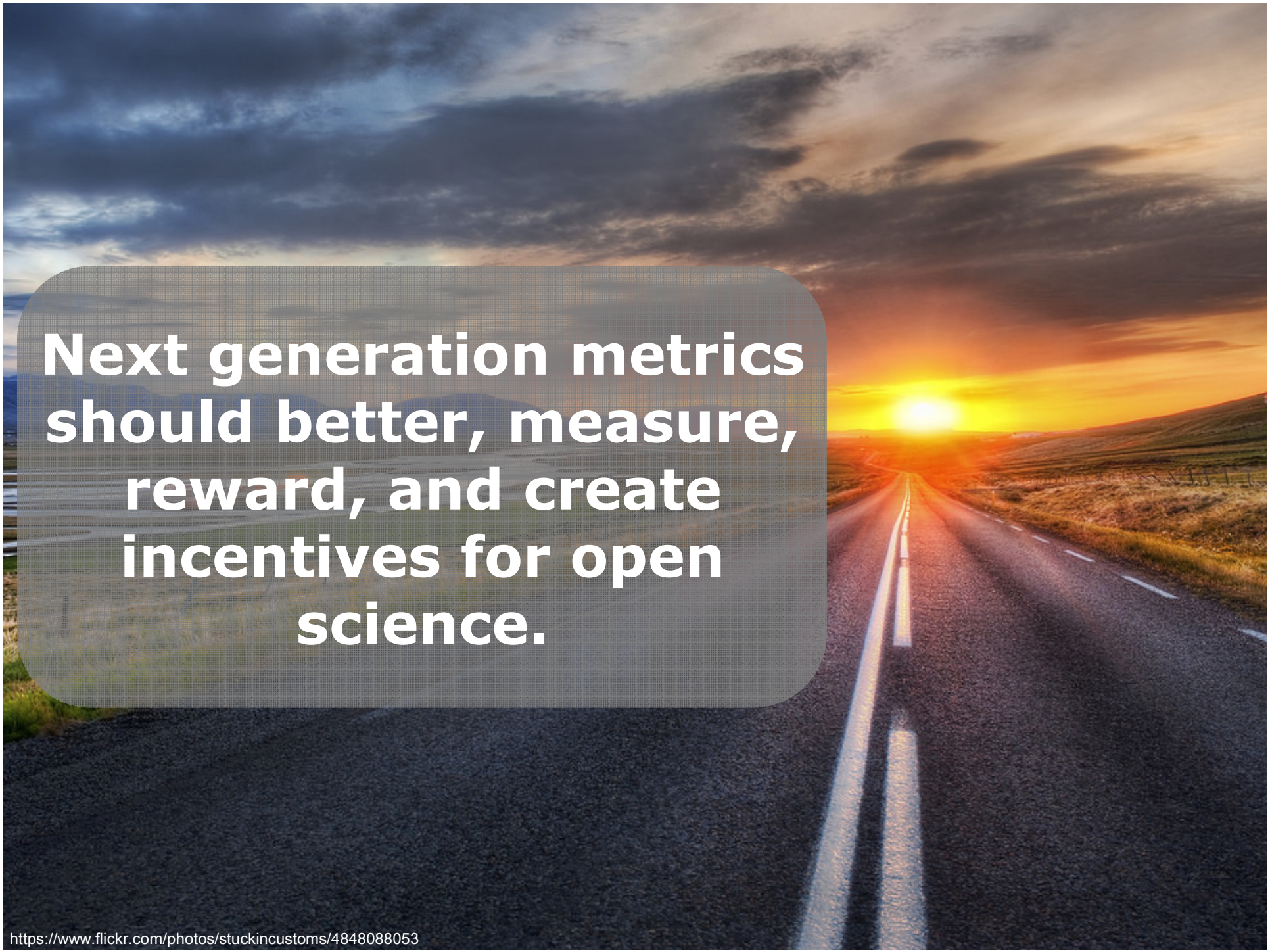
Recommendations	Short Term Goals	Long Term Goal
Ground an open science system in a mix of expert judgement, quantitative, and qualitative measures	Provide guidelines for responsible metrics in support of open science	Fostering open science
Make better use of existing metrics for open science	Assess suitability 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	Removing barriers to open science

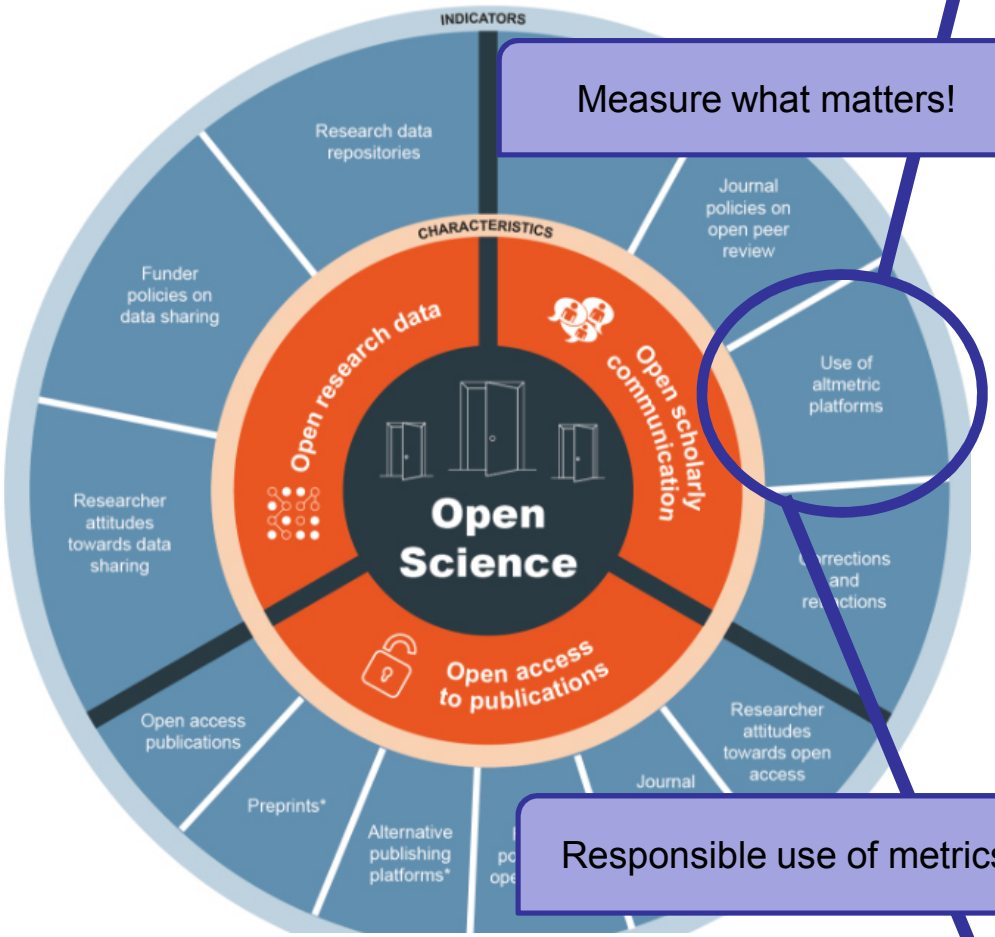
Selected recommendations

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	Removing barriers to open science
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.
https://www.flickr.com/photos/stuckincustoms/4848088053

European Commission

Handshake needed!



Measure what matters!

Responsible use of metrics

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

https://ec.europa.eu/research/openscience/index.cfm?pg=home&section=monitor

Opinion of the author IP does not necessarily reflect the opinion of the European Commission and/or the EC Expert Group on Altmetrics.

Discussion

Discussants

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Alexander von Humboldt-Institute for Internet and Society, Berlin

DZHW

Deutsches Zentrum für
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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:

Scietific Knowledge is socially constructed

Therefore we observe scientific communication

→ Analogies to traditional bibliometrics

New Data – New Insights?

Yes!

New objects: Books, blogs, projects, discurses …

New actors: Scientists, not visible in bibliometrics, interested cititizens, 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)

Transparancy & 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 assesments.

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 date (research data and meta-data)

An archiv has two functions:

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

→ Need for indicators to organize oblivion

Thank you for your attention!

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ALEXANDER VON HUMBOLDT
INSTITUT FÜR INTERNET
UND GESELLSCHAFT

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.

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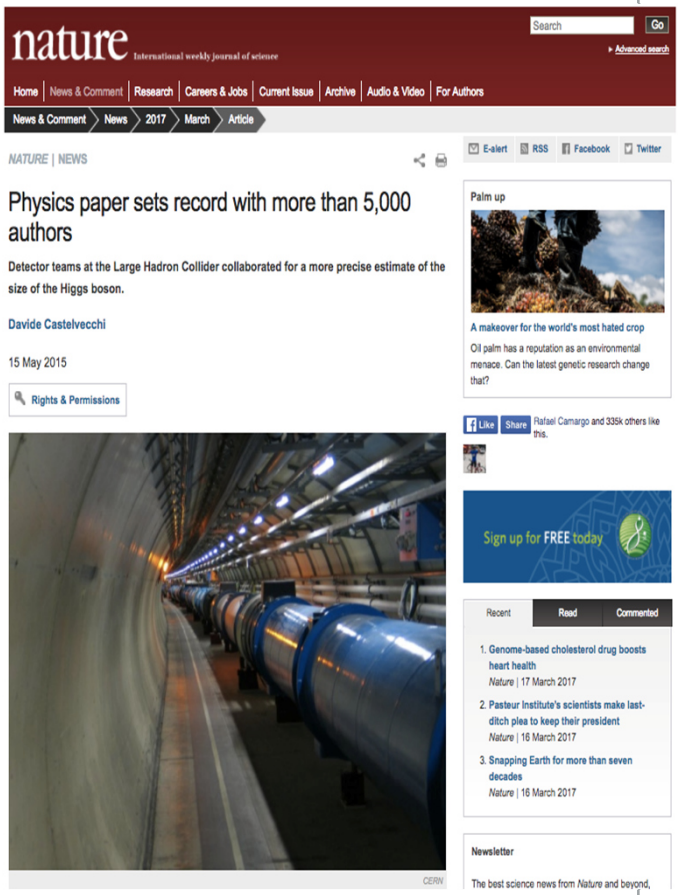

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Roche et al. (2014)

3 DEMANDS

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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!