

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

Call for evidence

As a contribution to its Open Science Policy Platform¹, the European Commission has recently established an expert group to advise on the role of metrics and altmetrics in the development of its agenda for open science and research.

This group is keen to consult widely and draw on the knowledge and experience of a range of stakeholders. This call is an invitation for you to contribute evidence, insights and analysis that can inform the group's work, and strengthen its findings and recommendations, which will be published towards the end of 2016.

This note sets out a brief rationale for the expert group's work, within the context of the Open Science agenda, details its members and terms of reference, and highlights some specific questions and topics, on which it would welcome input.

Please send responses to RTD-Open-Science@ec.europa.eu by **16:00 on 13 July 2016**. We will consider all responses received by this deadline. Evidence should be provided in the form of a short position statement (3 pages maximum). Please make it clear whether you are responding as an individual or on behalf of an organisation, and your role within the open science agenda.

If you have any queries about the work of the group, please also contact us at RTD-Open-Science@ec.europa.eu. Thank you for any contribution you can make to our deliberations.

Yours sincerely,



Professor James Wilsdon
Chair, European Commission Expert Group on Altmetrics

¹ <http://ec.europa.eu/research/openscience/index.cfm?pg=open-science-policy-platform>

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Introduction

1. The qualities and diverse impacts of scientific and scholarly research are commonly assessed using a combination of peer review and a variety of quantitative metrics. The use of metrics has developed rapidly as a potential method of measuring qualities and impacts in some fields, though how best to do this is still the subject of considerable debate.
2. Metrics includes the analysis of journal articles and their citations using a range of bibliometric methods, and has expanded over the past decade to include analysis of a more diverse range of research outputs. A growing array of social media and web-based alternative metrics have developed with potential to capture relevant dimensions of quality or impact. With the increasing capacity for real-time analysis based on large, linked datasets ('big data'), some argue that metrics could play an increasing role in the assessment of research.

Definitions of metrics²

3. Bibliometrics focuses on the quantitative analysis of scientific and scholarly publications, including patents. Bibliometrics is part of the field of scientometrics: the measurement of all aspects of science and technology, which may encompass information about any kind of research output (data, reagents, software, researcher interactions, funding, research commercialisation, and other outputs).
4. The emergence of the Internet and World Wide Web has led to webometrics, or cybermetrics, which measure the features and relationships of online items. The rise of social media has created a further stream of activity under the heading of altmetrics, as a potential complement to more traditional metrics. Altmetrics are non-traditional metrics that cover not just citation counts but also downloads, social media shares and other measures of impact of research outputs. The term is variously used to mean 'alternative metrics' or 'article level metrics', and it encompasses indicators derived from social websites, such as Twitter, Academia.edu, Mendeley, and ResearchGate.

Context for this work

5. Over the past twenty years, researchers have come under growing pressure to measure and demonstrate the value they contribute to society. This pressure takes a variety of forms: greater demands for audit and evaluation of public investment in higher education and research; requests from policymakers for more strategic intelligence on research impacts; institutional needs to manage and develop research strategies;

² Definitions adapted from 'Encyclopedia of Science Technology and Ethics' (2014) Macmillan, 2nd edition (ISBN: 0028661966)

competition within and between institutions for prestige, students, staff and resources; and more availability of real-time 'big data' on research uptake, and the capacity of tools for analysing them.

6. Wider use of quantitative indicators, and the emergence of altmetrics, can be seen as part of the transition to a more accountable and transparent research system. But this shift has been accompanied by a backlash against the inappropriate weight being placed on particular indicators – such as journal impact factors (JIFs) – within the research system, as reflected by initiatives such as the San Francisco Declaration on Research Assessment (DORA), the Leiden Manifesto and The Metric Tide.³ As DORA states, “The outputs from scientific research are many and varied...It is thus imperative that scientific output is measured accurately and evaluated wisely.”

7. In the Competitiveness Council of May 2015, EU Member States recognised “the need for a reflection on current science metrics, as well as incentives for researchers to publish articles and data through open access.”⁴ In July 2015, Commissioner Moedas set out an agenda for Open Science (as one of his “Three O’s”: Open Innovation; Open Science; and Open to the World).⁵ This vision has been developed in a new book, published in May 2016, which brings together key conceptual insights behind the “Three Os” and highlights actions now taking place or being prepared.⁶

8. The Open Science agenda is now developing rapidly under five action lines: fostering and *creating incentives* for open science; *removing barriers* for open science; mainstreaming and further *promoting open access policies*; developing an *open science cloud*; and open science as a *socio-economic driver*. To support and advise on the direction and implementation of this agenda, an Open Science Policy Platform has been established, with 25 members drawn from a range of stakeholder groups.⁷

9. In May 2016, the Competitiveness Council agreed a set of conclusions on the transition towards an open science system. It noted the establishment of the Open Science Policy Platform with a remit to include “issues such as adapting reward and evaluation systems, alternative models for open access publishing and management of research data (including archiving), altmetrics....and other aspects of open science.”⁸

The Expert Group on Altmetrics

10. The Expert Group on Altmetrics will contribute to this wider agenda, by informing and advising the Open Science Policy Platform and EC policymakers on

³ www.ascb.org/dora; <http://www.nature.com/news/bibliometrics-the-leiden-manifesto-for-research-metrics-1.17351>; <http://www.hefce.ac.uk/pubs/rereports/Year/2015/metrictide/Title.104463.en.html>

⁴ <http://data.consilium.europa.eu/doc/document/ST-8970-2015-INIT/en/pdf>

⁵ http://europa.eu/rapid/press-release_SPEECH-15-5243_en.htm

⁶ <http://ec.europa.eu/research/openscience/index.cfm>

⁷ <http://ec.europa.eu/research/openscience/index.cfm?pg=open-science-policy-platform>

⁸ <http://www.consilium.europa.eu/en/meetings/compet/2016/05/26-27/>

specific issues, opportunities and challenges in the development and responsible use of metrics and altmetrics to support open science and research.

11. The Expert Group will be chaired by *James Wilsdon*, Professor of Research Policy at the University of Sheffield (UK).⁹ Its other members include: *Judit Bar-Ilan*, Professor of Information Science at Bar-Ilan University (IL)¹⁰; *Robert Frodeman*, Professor of Philosophy at the University of Texas (US)¹¹; *Elizabeth Lex*, Assistant Professor at Graz University of Technology (AT)¹²; *Isabella Peters*, Professor of Web Science at the Leibniz Information Centre for Economics (DE)¹³; and *Paul Wouters*, Professor of Scientometrics and Director of the Centre for Science and Technology Studies at Leiden University (NL)¹⁴.

12. The Expert Group will produce its final report by the end of 2016, and expects to input informally to the Open Science Policy Platform before that. Its terms of reference are as follows:

- To assess the role of altmetrics in measuring and evaluating the qualities and impacts of research, and their relationship to established scientometrics;
- To consider how altmetrics can be developed and used responsibly to support the development of open science;
- To engage stakeholders and identify their needs in terms of research metrics, and associated indicators of qualities and impacts;
- To consider the implications of altmetrics for diversity and equality; interdisciplinarity; research cultures; gaming and other strategic responses.
- To examine the implications of emerging social networks for scientists; research information and management systems; and citation profiles;
- To explore possible uses of altmetrics in tracking impacts, research actions and deliverables under Horizon 2020, and within the next framework programme (including the ERC), in support of open science;
- To consider the data infrastructure required to underpin robust, responsible, transparent and interoperable uses of metrics and altmetrics in open science.

⁹ <https://www.sheffield.ac.uk/politics/people/academic/james-wilsdon>

¹⁰ <http://is.biu.ac.il/en/judit/>

¹¹ <http://philosophy.unt.edu/people/faculty/robert-frodeman>

¹² <http://www.elisabethlex.info/>

¹³ <http://www.zbw.eu/de/forschung/web-science/isabella-peters/>

¹⁴ <https://www.cwts.nl/people/paulwouters>

Call for evidence

13. Through this call for evidence, the Expert Group wishes to draw on evidence and insights from a wide range of stakeholders, including: universities; researchers; learned societies; publishers; developers and practitioners of altmetrics;

14. We would particularly welcome input on the following themes and questions:

TOPIC	SUB-THEMES & QUESTIONS
1. Next generation metrics for open science	How do metrics, altmetrics & 'responsible metrics' fit within the broader EC vision & agenda for open science? What are the key policy opportunities and tensions in this area? What leadership role can the EU play in wider international debates?
2. Altmetrics: the emerging state of the art	How can we best categorise the current landscape for metrics and altmetrics? How is that landscape changing? How robust are various leading altmetrics, and how does their robustness compare to more 'traditional' bibliometrics? What new problems and pitfalls might arise from their usage? What are some key conclusions and unanswered questions from the fast-growing literature in this area?
3. Altmetrics in policy and in practice	How are altmetrics being used by governments, funders, universities, institutes and other key actors in EU member states? How are they used in H2020? What role are they playing in systems of research evaluation and assessment across the EU? How are individual researchers using emerging social networks (ResearchGate, Academia, Mendeley); research information and management systems (e.g. Pure, Academic Analytics, Scival, Insights) and citation profiles (Google Scholar) . Practical examples/examples of good practices are requested
4. Data infrastructure and standards for next generation metrics	What data infrastructure is required to support a 'responsible metrics' framework across Europe? How can we navigate challenges over openness, transparency & ownership? What more can be done to develop and improve standards for altmetrics (building on e.g. NISO's work in this area)? What role might the EC and EU play in these areas?
5. Cultures of counting: metrics, ethics & research	How are new metrics changing research cultures (in both positive and negative ways)? What are the implications of different metrics and indicators for equality and diversity (of people, career paths & discipline/field). What new dynamics of gaming and strategic response are being incentivized? To what extent will next generation metrics inhibit or encourage interdisciplinary research and wider societal impacts?

6. Next generation metrics: the way forward	Can we identify emerging best practices in this area? What recommendations might we as a group make, and to which actors in EU research systems? What can the EC do specifically to advance responsible metrics and altmetrics in the design of the successor framework to H2020? What wider links can we draw across the EC open science agenda, and how can these be advanced? Practical examples/examples of good practices are requested

Submission of evidence

15. We welcome responses from any person or organisation with an interest in these issues. Please send responses to RTD-Open-Science@ec.europa.eu by **16:00 on 13 July 2016**. We will consider all responses received by this deadline. Evidence should be provided in the form of a short position statement (3 pages maximum). Please make it clear whether you are responding as an individual or on behalf of an organisation, and your role within the open science agenda.

16. We will commit to read, record and analyse the views of every response to this call for evidence in a consistent manner. For reasons of practicality, a fair and balanced summary of responses, rather than the individual responses themselves, will inform the review. In most cases, the merit of the arguments made is likely to be given more weight than the number of times the equivalent point is made.

17. We intend to publish the names of all organisations and individuals who submitted evidence. Please inform on whether you can your consent. We will also publish an explanation of how the evidence was considered in the expert group's discussions. We may also publish evidence submitted in response to the call within the expert group's final report.