




Open Science and the reform of the research assessment system

Francesca Di Donato


Istituto di Linguistica Computazionale "A. Zampolli" - CNR

francesca.didonato@ilc.cnr.it


 orcid.org/0000-0003-0144-8934



This lesson: structure



Module 1.
Open evaluation



Module 2.
Lab: Your impact and your CV

Open evaluation

*Towards a reform of the research
assessment system*



Preliminary question:

How many papers/outputs have you published?



Join at menti.com use code **8370 0750**

Open Science – time to unlock the potential of the digital age



Rob Terry (TD...

Overview

The key is the internet – digitization

Open science requires systems thinking

The value is making new knowledge from connections

Standards to make (machine) interoperable

Minimize technical, legal, financial and linguistic barriers

Effective Ethical Equitable

Collaboration not Competition for Global Goods

A reset for scientific careers new incentive measures needed



[1] Towards a global consensus on open science: report on UNESCO's global online consultation on open science. UNESCO, 2020.
[2] FOSTER portal. <https://www.fosteropenscience.eu/>, accessed in March 2021.
[3] Science ouverte à l'échelle mondiale: feuille de route pour un partage de connaissances scientifiques 2020-2022.

The pandemic, and the urge to open up the research results (part 2)

Robert Terry (WHO): Less than 25% of the scientific material included in the WHO COVID Guidelines comes from traditional publications.

"They proved useless, just when we needed them most"

But who are THEY?

**We do have a
problem**

36%

margin of scholarly publishers

Source:

<https://www.theguardian.com/science/2017/jun/27/profitable-business-scientific-publishing-bad-for-science>

10 billions dollar

annual cost for the subscriptions to
scholarly publications (journals)
worldwide

Source: Schimmer, R., Geschuhn, K. K., & Vogler, A. (2015).
Disrupting the subscription journals' business model for the
necessary large-scale transformation to open access.
doi:10.17617/1.3

26 billions euro

lost every year in Europe because
research data are not properly managed

Source: Directorate-General for Research and Innovation (European Commission), PwC EU Services Cost of not having FAIR research data, 2019-01-16

A publish or perish system

Based on bibliometric indexes or, for non-bibliometric sectors, on selected «top class» list of journals

- many many publications
- high citation rate
- “important” venues (read: high IF)

But this does not in itself imply excellence in research!

Dr Maria van Kerkhove, WHO Covid-19 Technical Lead at HDR UK conference June 2021

'...publication in a high impact journal does not equal quality..... it is important we need to receive data from chemistry, engineering, architecture not just medicine...'

19th century
scientist

I must find the explanation for this phenomenon in order to truly understand Nature...



21st centurt
~~scientist~~
academic

I must get the result that fits my narrative so I can get my paper into Nature..



facebook.com/pedromics

A problem of method



Goodhart's law:

"when a measure becomes a target, it ceases to be a good measure"

“Researchers will do anything to publish papers in some journals, including even creating fake authors”

“ [...] publishing papers in certain journals is the only way to earn grants, tenure, and promotions”

But things are changing

Many funders are embracing OS


- European Commission
- European Research Council
- In Italy Mur with the National Open Science plan
- Many other across Europe and worldwide



The Declaration on Research Assessment (DORA)



[About DORA](#) ▾ [Meetings](#) [Contact](#)

[The Declaration](#) [Signers](#) [Case Studies](#) [Resources](#) [Blog](#) 

[Sign DORA](#) 

Our vision: To advance practical and robust approaches to research assessment globally.

[Read the Declaration](#)

“There is a **pressing need** to improve the ways in which the output of scientific research is evaluated by funding agencies, academic institutions, and other parties”.

Basic principles of DORA recommendations:



- the need to **eliminate the use of journal-based metrics**, such as Journal Impact Factors, in funding, appointment, and promotion considerations;
- the need to **assess research on its own merits** rather than on the basis of the journal in which the research is published;

Leiden Manifesto

LEIDEN MANIFESTO FOR RESEARCH METRICS

[Home](#) [Video version](#) [Translations](#) [Blog](#)

10 principles to guide research evaluation with 25 translations, a video and a blog

Research evaluation has become routine and often relies on metrics. But it is increasingly driven by data and not by expert judgement. As a result, the procedures that were designed to increase the quality of research are now threatening to damage the scientific system. To support researchers and managers, five experts led by Diana Hicks, professor in the School of Public Policy at Georgia Institute of Technology, and Paul Wouters, director of CWTS at Leiden University, have proposed 10 principles for the measurement of research performance: the Leiden Manifesto for Research Metrics published as a comment in Nature.

Hicks, Wouters, Waltman, de Rijcke, Rafols, Nature, April 23, 2015

Diana Hicks, Paul Wouters, Ludo Waltman, Sarah de Rijcke & Ismael Rafols, [Bibliometrics: The Leiden Manifesto for research metrics](#), 22 April 2015

- 1) Quantitative evaluation should support qualitative, expert assessment
- 2) Measure performance against the research missions of the institution, group or researcher
- 3) Protect excellence in locally relevant research
- 4) Keep data collection and analytical processes open, transparent and simple
- 5) Allow those evaluated to verify data and analysis
- 6) Account for variation by field in publication and citation practices
- 7) Base assessment of individual researchers on a qualitative judgement of their portfolio
- 8) Avoid misplaced concreteness and false precision
- 9) Recognize the systemic effects of assessment and indicators
- 10) Scrutinize indicators regularly and update them

Reforming research assessment is a global issue



19. We recognize that ICT developments, the digitisation and the vast availability of data, efforts to push the science frontiers, and the need to address complex economic and societal challenges, are transforming the way in which science is performed towards Open Science paradigms. We agree that an international approach can help the speed and coherence of this transition, and that it should target in particular two aspects. First, the incentives for the openness of the research ecosystem: the evaluation of research careers should better recognize and reward Open Science activities. Secondly, the infrastructures for an optimal use of research data: all researchers should be able to deposit, access and analyse scientific data across disciplines and at the global scale, and research data should adhere to the FAIR principles of being findable, accessible, interoperable, and reusable.

20. We support the work and results achieved so far by the G7 Open Science Working group. The OS Working Group has identified priorities that deserve and require common aligned actions, both in encouraging openness and data skills in scientific research practice, through workforce development and training. We encourage the OS WG to follow-up actions taken by G7 members according to the WG's recommendations and to collect good practices, in order to report to the next G7 Science Minister's Meeting. In particular, we support the OS WG deepening its efforts on the two topics identified above (paragraph 19), namely the incentives for openness of the research ecosystem, including the role of research indicators and metrics relevant to open science, and the infrastructures and standards for optimal use of research. The summary report of the OS working group is attached to this Communiqué.

[G7 Science Ministers Communiqué](#), Turin, 28 September 2017.

The screenshot shows the top navigation bar with links for Home, About, Contact, Content, and Research Integrity. A search bar and 'Log in' and 'Register' buttons are on the right. The main header is 'Scholarly Assessment Reports' with a 'Become a Reviewer' button. Below the header, the article title 'The New Research Assessment Reform in China and Its Implementation' is displayed, along with authors 'Lin Zhang, Gunnar Sivertsen' and an email icon. The abstract text is visible, starting with 'A radical reform of research assessment was recently launched in China...'. On the right side, there is a 'JUMP TO' menu with a 'DISCUSSIONS' tab, listing sections like Abstract, Introduction, and References.

Lin Zhang, Gunnar Sivertsen, [The New Research Assessment Reform in China and Its Implementation](#), Scholarly Assessment Reports, 2020.

.. the **G7 nations commit to work together to:**

“Explore incentives, including enhancements to research assessment that foster recognition and reward collaboration across all disciplines and topics to drive a culture of rapid sharing of knowledge, data, software, code and other research resources. Investigate how open science practices help achieve increasingly robust, reliable and impactful research outcomes;”

[G7 Research Compact](#), 2021



In Europe

Council Conclusions on the New European Research Area

December 2020

- vi. **Open Science:** HIGHLIGHTS that open science, including mainstreaming open access to publications and research data, has a crucial role in boosting impact, quality, efficiency, transparency and integrity of R&I, and brings science and society closer together whilst taking into account legitimate legal, security and privacy aspects.
- ENCOURAGES the Commission, Member States and stakeholders to support and implement open science practices in their reward and evaluation systems for research, researchers and institutions, including RIs, and strengthen their European coordination.
- WELCOMES the launch of the Open Research Europe publishing platform.
- RECOGNISES that bibliodiversity, multilingualism and the acknowledgement of all scientific productions are relevant elements of an ERA policy on open science.



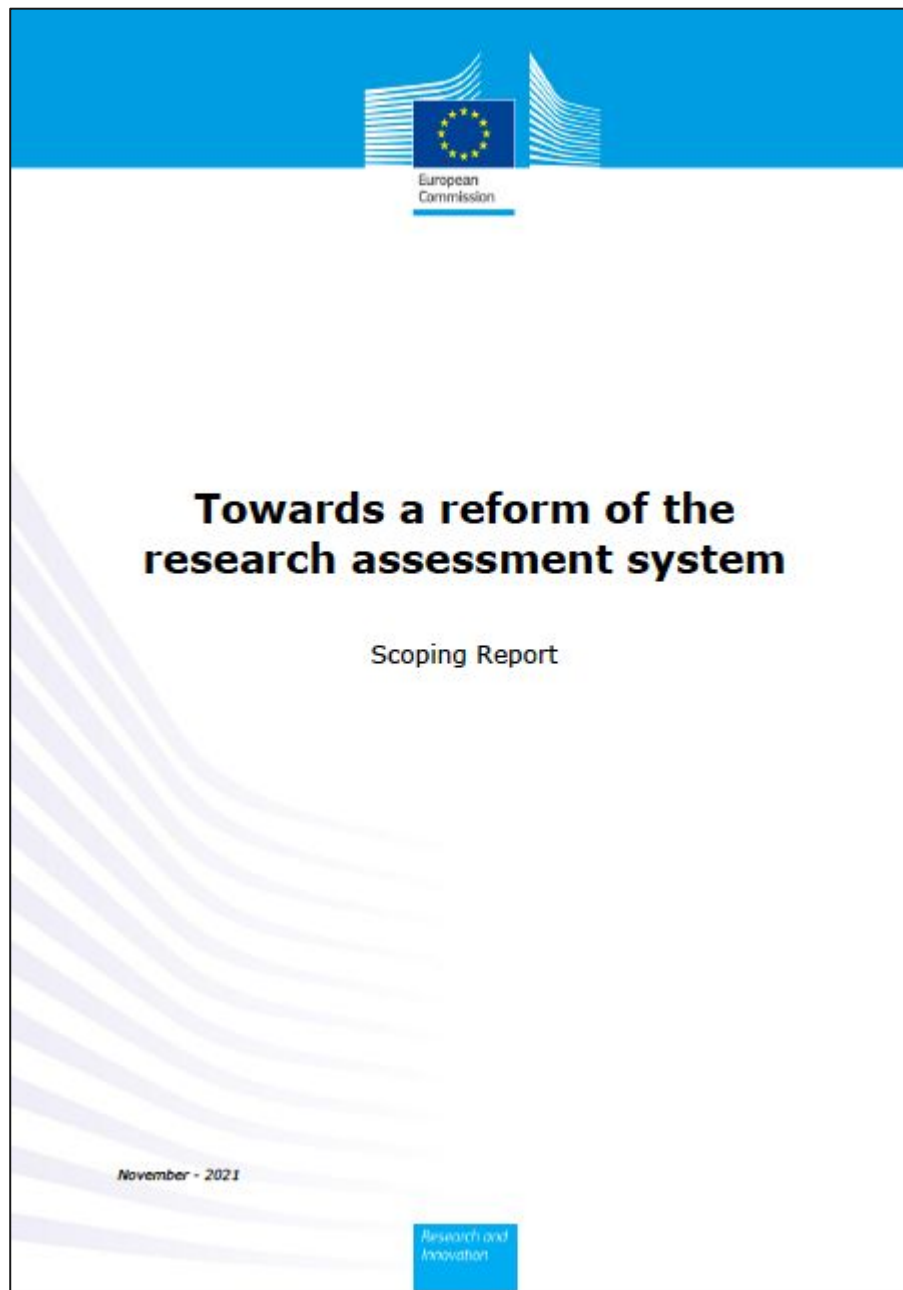
Photo by [Taisiia Shestopal](#) on [Unsplash](#)

1. **2016:** [Amsterdam call for actions for OS](#)
2. **2017:** [Evaluation of research careers fully acknowledging Open Science practices.](#)
3. **2017:** [Rewards, incentives and/or recognition for researchers practicing Open Science](#)
4. **2017:** [Responsible metrics and evaluation for open science](#)
5. **2017:** [EOSC Declaration](#)
6. **2018:** [COMMISSION RECOMMENDATION \(EU\) 2018/790 of 25 April 2018 on access to and preservation of scientific information](#)
7. **2019:** [Indicator frameworks for fostering open knowledge practices in science and scholarship](#)
8. **2019:** [Future of Scholarly Publishing and Scholarly Communication](#)
9. **2019:** Report: [Research Assessment in the Transition to Open Science](#)
10. **2020:** [Open Science Policy Platform final report](#)
11. **2020:** [EOSC Strategic Research and Innovation Agenda](#)
12. **2020:** Science Europe, [Position statement and recommendations on research assessment processes](#)
13. **2020:** [Commission Communication COM\(2020\) 628 of 30 September 2020 on a new European Research Area for R&I](#)
14. **2020:** [Council Conclusions on the new ERA of December 1st 2020](#)
15. **2020:** [Digital skills for FAIR and open science. Report from the EOSC Executive Board Skills and Training Working Group:](#)
16. **2021:** RDA: [Rewards and Incentives for Open Science](#)
17. **2021:** [Conclusions for the Competitiveness Council of 27-28 May on attractive and sustainable researchers' careers and working conditions](#)
18. **2021:** [Proposal for a Council Recommendation on a "Pact for Research and Innovation in Europe", as a first key achievement of the new European Research Area](#)
19. **2021:** [G7 Research Compact](#)

A radical reform of research assessment, in terms of rewards and incentives for researchers, is desired at multiple levels, and many experts agree that **a crucial factor to accelerate the uptake of open Science is to establish a system of rewards and incentives for it.**

In fact, the Achilles heel of Open Science is the lack of recognition of such work at researchers' level, and has cascading effects to the other levels: institutions, national and international.

Towards a common reform process



The research process is changing

Less linear, more open and collaborative, multiplicity of outputs, "team science"

The traditional valuation system is not suited to reflect this change

It is the Achilles heel of the OS, quantitative aspects and publications are evaluated, collaborative processes and different types of results remain outside

A process of reform, which increases the efficiency, impact, and social responsibility of research, was needed

The Council conclusions on the new ERA and on research careers go in this direction

A cultural change is needed

NB: Sant'Anna School adhered to this process.

Published on July 20th 2022

28 Sept. 2022:
Launched and opened
to signatures

[European Commission](#) > [Research and innovation](#) > [News](#) > [All research and innovation news](#) > [Reforming research assessment: The Agreement is now final](#)

NEWS ARTICLE | 20 July 2022 | Directorate-General for Research and Innovation

Reforming research assessment: The Agreement is now final

Launched in January 2022 as a co-creation exercise, the [process](#) { EN | ... } of drafting an agreement for reforming research assessment has reached an important milestone. On 8 July, the final version of the agreement was presented at a Stakeholder Assembly bringing together the [350+ organisations from 40+ countries](#) { EN | ... } having expressed interest in being involved in the process. Today, the final Agreement is made public with this news.

Organisations involved include public and private research funders, universities, research centres, institutes and infrastructures, associations and alliances thereof, national and regional authorities, accreditation and evaluation agencies, learned societies and associations of researchers, and other relevant organisations, representing a broad diversity of views and perspectives. They have provided feedback to the evolving drafts of the agreement, as prepared by a team composed of representatives from the European University Association (EUA), Science Europe, the European Commission, and Dr Karen Stroobants, in her individual capacity as researcher with expertise in research on research. A core group of 20 research organisations, representing the diversity of the research community across Europe, also contributed to the drafting process, while EU Member States and Associated Countries have been consulted on the agreement in the framework of the ERA Forum and the European Research Area Committee (ERAC).

The Agreement on Reforming Research Assessment sets a shared direction for changes in assessment practices for research, researchers and research performing organisations, with the overarching goal to maximise the quality and impact of research. The Agreement includes the principles, commitments and timeframe for reforms and lays out the principles for a Coalition of organisations willing to work together in implementing the changes.

[Final version of the Agreement](#) { EN | ... }

The process towards the agreement

- **2021:** consultation of the EC with stakeholders and publication of the scoping report.
- **December 2021:** publication of a call for expressions of interest to join the coalition that helped drafting the agreement.
- **Jan -July 2022:** Drafting by drafting team + meetings with core group and stakeholder assembly to discuss the elements of the agreement + member states consultation process (ERAC and ERA Forum). June: Council conclusions.



The Council Conclusions of June 2022



Brussels, 10 June 2022
(OR. en)

10126/22

RECH 371
TELECOM 267
COMPET 491
IND 227
MI 468
EDUC 245

OUTCOME OF PROCEEDINGS

From:	General Secretariat of the Council
On:	10 June 2022
To:	Delegations
No. prev. doc.:	9515/22
Subject:	Research assessment and implementation of Open Science - Council conclusions (adopted on 10 June 2022)

Delegations will find in annex the Council conclusions on “Research assessment and implementation of Open Science”, adopted by the Council at its 3877th meeting held on 10 June 2022.

- Direct **connection** between the research assessment reform and the Open Science implementation
- The **principles** for a reform of RA are the same as in the Scoping report
- **WELCOMES** the **European initiative** which aims to facilitate the establishment of a broad coalition of stakeholders willing to develop and implement change through an **agreement** to foster concrete actions to reform research assessment systems;
- UNDERLINES that **researchers themselves should be at the core of this evolution**

Agreement: Content

1. Principles

It establishes a **common direction** for a research evaluation reform, based on 10 commitments, respecting the autonomy of organizations.

2. Commitments

3. CoARA

In particular, it includes the principles, commitments and timeframe for reforms and establishes the principles for a coalition of organizations willing to work together in implementing such reform.

4. Timeframe

Annexes

1. The need for a research assessment reform
2. Glossary
3. Reform journey
4. Toolbox

Vision

Our vision is that the assessment of research, researchers and research organisations recognises the diverse outputs, practices and activities that maximise the quality and impact of research. This requires basing assessment primarily on qualitative judgement, for which peer review is central, supported by responsible use of quantitative indicators.

Goal

To facilitate and to accelerate a research assessment reform that:

- Promotes **qualitative assessment** based on peer review, supported by a more responsible use of quantitative indicators
- Considers the value and impact of a **plurality of research outputs** (bibliodiversity) and of multilingualism
- Recognizes the **diversity of a researcher's activities**, and supports collaborative science (team science) and interdisciplinary research.
- Encourages **open collaboration and the sharing of preliminary results and data**

Core commitments

- 1. Recognise the diversity of contributions to, and careers in, research in accordance with the needs and nature of the research*
- 2. Base research assessment primarily on qualitative evaluation for which peer review is central, supported by responsible use of quantitative indicators*
- 3. Abandon inappropriate uses in research assessment of journal- and publication-based metrics, in particular inappropriate uses of Journal Impact Factor (JIF) and h-index*
- 4. Avoid the use of rankings of research organisations in research assessment*

Supporting commitments

5. *Commit resources to reforming research assessment as is needed to achieve the organisational changes committed to*
6. *Review and develop research assessment criteria, tools and processes
(For units and institutions - promoting interoperability - and for individuals and projects, with the direct involvement of researchers)*
7. *Raise awareness of research assessment reform and provide transparent communication, guidance, and training on assessment criteria and processes as well as their use*
8. *Exchange practices and experiences to enable mutual learning within and beyond the Coalition*
9. *Communicate progress made on adherence to the Principles and implementation of the Commitments*
10. *Evaluate practices, criteria and tools based on solid evidence and the state-of-the-art in research on research, and make data openly available for evidence gathering and research*

Coalition for Advancing Research Assessment

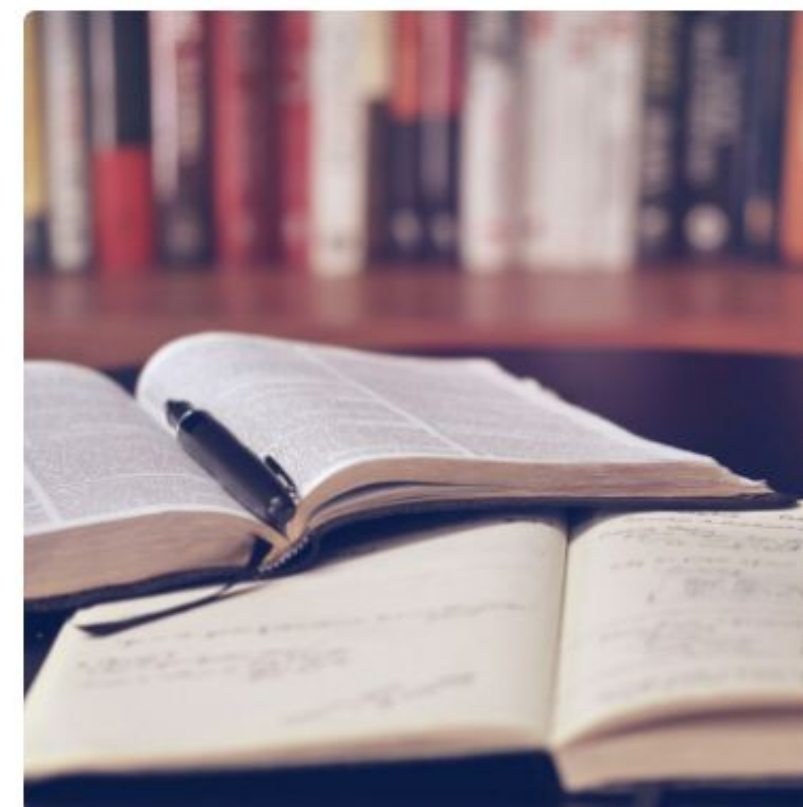
...ion is that the assessment of research, researchers and research organisations recognises the diverse outputs, practices and ...ies that maximise the quality and impact of research. This requires basing assessment primarily on qualitative judgement, for which peer review is central, supported by responsible use of quantitative indicators.

In practice...

51 early signatories:



Signatories



<http://coara.eu>

First assembly: **1st December 2022**

CoARA will work to **enable systemic reform** based on common principles within an agreed timeframe and to **facilitate information exchange and mutual learning** among all who wish to improve research evaluation practices.

CoARA

Reporting of individual members' progress in implementing the Commitments will primarily be based on a **publicly shared self-assessment**.

What does joining the Coalition entail?

Timeframe

By the end of 2023 (or one year after signing), Coalition members publish a **Roadmap and an action plan with milestones** to be respected in the reform plan.

Periodically, they publish and showcase their progress and **participate in Working Group** activities.

After 5 years (end of 2027) they undertake to have carried out at least one review and development cycle of the new evaluation criteria, processes and tools.

Lab: What about your impact (and your CV)



Interaction:

Describe the (possible) impact of one of your publications without using h-index and JIF

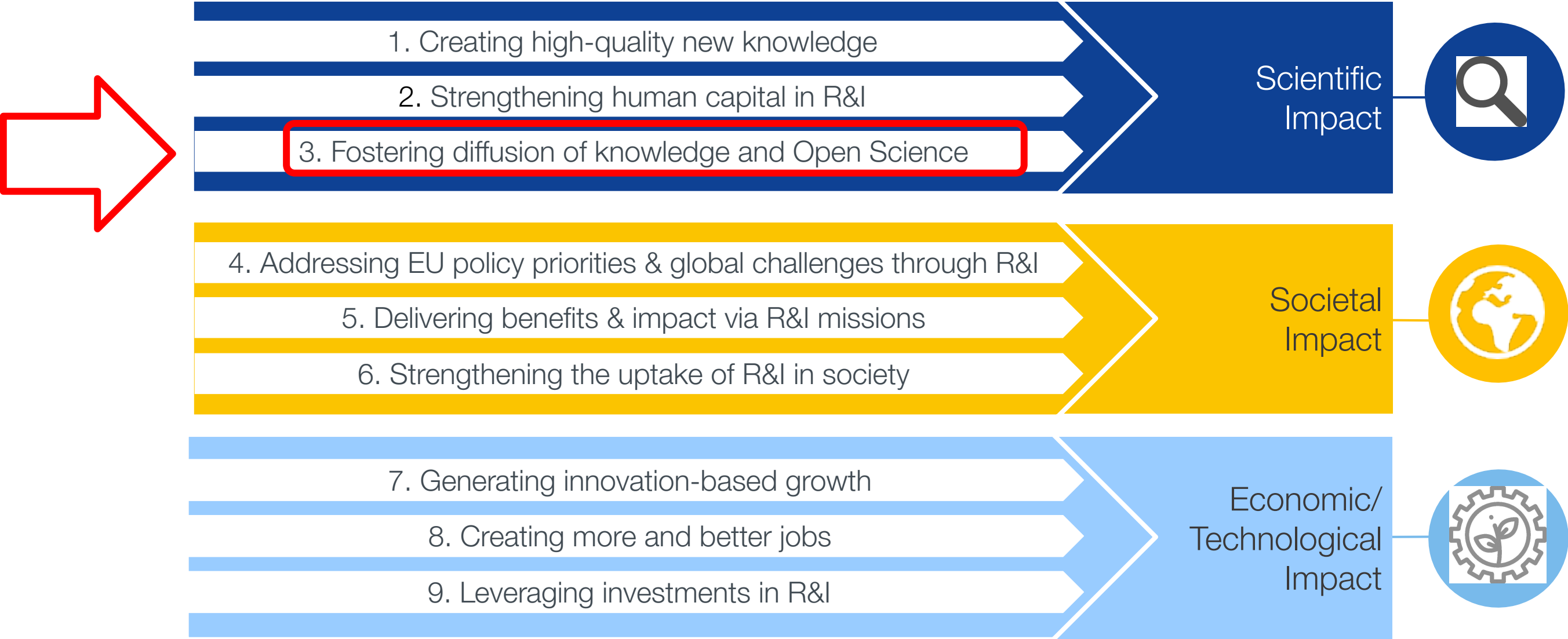


Join at menti.com use code 8370 0750



What do we mean by
impact?

HORIZON EUROPE **LEGISLATION** defines three types of impact, tracked with Key Impact Pathways



Article 50 & Annex V 'Time-bound indicators to report on an annual basis on progress of the Programme towards the achievement of the objectives referred to in Article 3 and set in Annex V along impact pathways'



What about your CVs - have you ever described your impact?

Open discussion: describe your experiences

How do you demonstrate your impact in your CV?

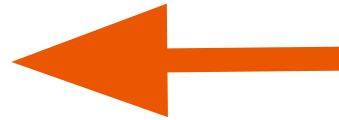


1. The structure: make all your activities transparent

1. Narrative CV: give your reader a (pleasant to understand) your research path(s) and their context

Some examples. Royal Society CV

Education
and Professional
experience



Résumé for Researchers

Below is the suggested structure for the Résumé for Researchers tool.

Personal details

Provide your personal details, your education, key qualifications and relevant positions you have held.

Explain:

- Communication, fundings, output selection, explaining why they are relevant.
- Include their DOI when available



Module 1 – How have you contributed to the generation of knowledge?

This module can be used to explain how you have contributed to the generation of new ideas and hypotheses and which key skills you have used to develop ideas and test hypotheses. It can be used to highlight how you have communicated on your ideas and research results, both written and verbally, the funding you have won and any awards that you have received. It can include a small selection of outputs, with a description of why they are of particular relevance and why they are considered in the context of knowledge generation. Outputs can include open data sets, software, publications, commercial, entrepreneurial or industrial products, clinical practice developments, educational products, policy publications, evidence synthesis pieces and conference publications that you have generated. Where outputs have a DOI please only include this.

Module 2 – How have you contributed to the development of individuals?

This module can be used to highlight expertise you provided which was critical to the success of a team or team members including project management, collaborative contributions, and team support. It can include your teaching activities, workshops or summer schools in which you were involved (for undergrads, grads and post-grads as well as junior colleagues), and the supervision of students and colleagues. It can be used to mention mentoring of members in your field and support you provided to the advancement of colleagues, be it junior or senior. It can be used to highlight the establishment of collaborations, from institutional (maybe interdisciplinary) to international. It can be used to describe where you exerted strategic leadership, how you shaped the direction of a team, organisation, company or institution.

Explain:

- Team development and early career researcher supervision/training;
- Collaborations

Module 3 – How have you contributed to the wider research community?

This module can include various activities you have engaged in to progress the research community. It can be used to mention commitments including editing, reviewing, refereeing, committee work and your contributions to the evaluation of researchers and research projects. It can be used to mention the organisation of events that have benefited your research community. It can highlight contributions to increasing research integrity, and improving research culture (gender equality, diversity, mobility of researchers, reward and recognition of researchers' various activities). It can be used to mention appointments to positions of responsibility such as committee membership and corporate roles within your department, institution or organisation, and recognition by invitation within your sector.

Explain:

- Peer-reviewing; committee membership (engagement with the scientific community)

Module 4 – How have you contributed to broader society?

This module can include examples of societal engagement and knowledge exchange. It can include engagement with industry and the private sector. It can be used to mention engagement with the public sector, clients and the broader public. It can be used to highlight positive stakeholder feedback, inclusion of patients in processes and clinical trials, and other impacts across research, policy, practice and business. It can be used to mention efforts to collaborate with particular societal or patient groups. It can be used to highlight efforts to advise policy-makers at local, national or international level and provide information through the press and on social media.



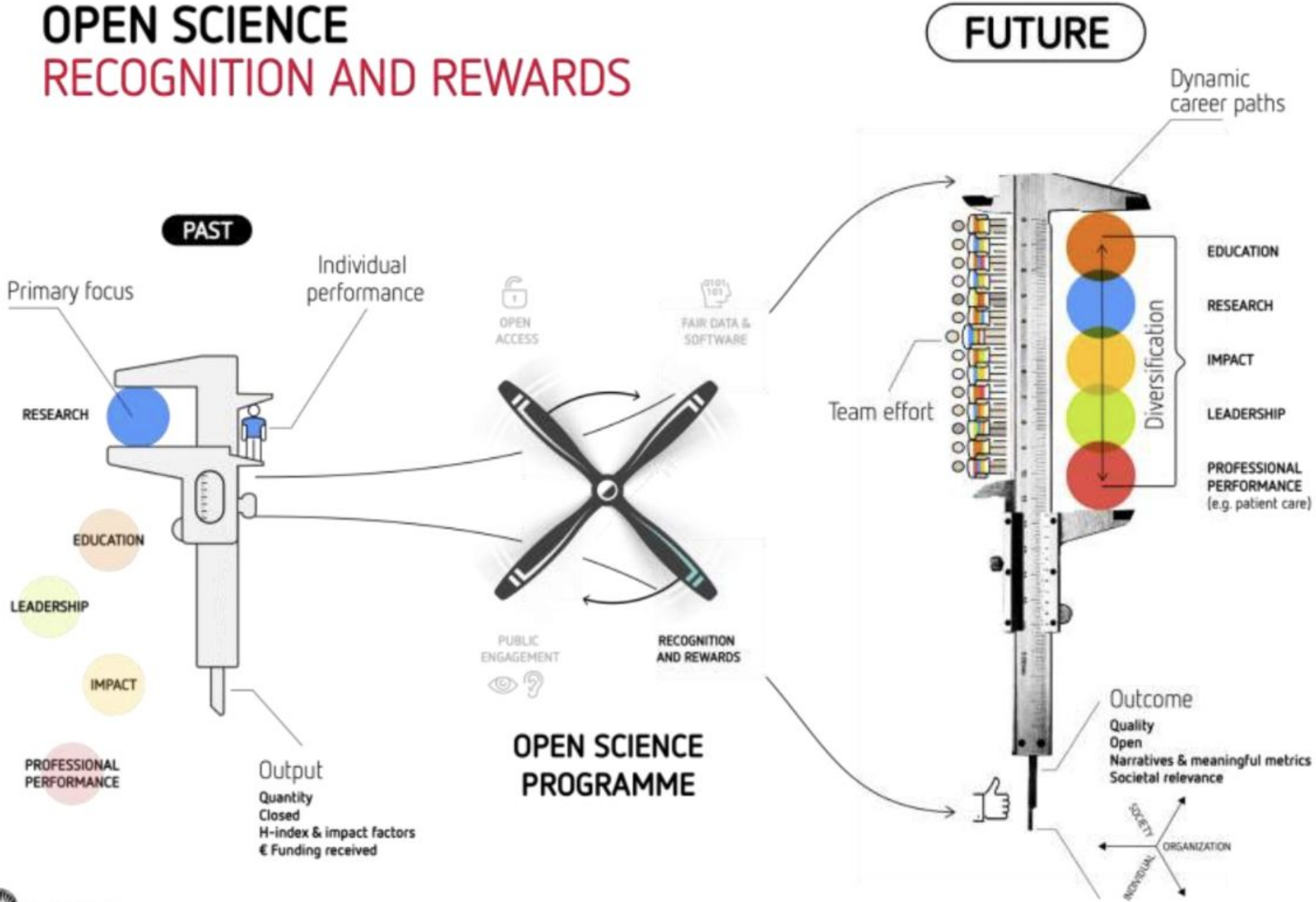
Explain:

- Societal engagement at different levels

Some examples. The Utrecht evaluation framework



OPEN SCIENCE RECOGNITION AND REWARDS



Five Pillar/assets

- 1) Education
- 2) Research
- 3) Impact
- 4) Leadership
- 5) Professional Performance



National funders (NWO, ZonMW)



- Narrative CV:
 - Academic profile
 - Key outputs (not limited to publications)
- Indicate the importance of each output, how it is related to the project, and/or how it shows the applicant's abilities
- No aggregate indicators; provide context for indicators used: why is it a good measure? What does it imply?

<https://sfdora.org/2019/11/14/quality-over-quantity-how-the-dutch-research-council-is-giving-researchers-the-opportunity-to-showcase-diverse-types-of-talent/>





Possible structures: 1

Personal data

Narrative description

Education

Professional experience

Teaching

Publications

Conferences

Projects

Other/ Outreach activities?



Possible structures: 2

Personal data

Research areas

Academic qualifications

Major academic courses

Relevant Training programs

Relevant key competencies

Computing and technical skills

Field data collection (survey) experience

Field data collection (survey) skills

Work experience

Publications and write ups

References



Possible structures: 3

Personal data

Education

Educational Activities

Research Activities

Management Assignments and other relevant activities



Possible structures: 4

PERSONAL INFORMATION

POSITION

WORK EXPERIENCE (with a narrative)

EDUCATION AND TRAINING

PERSONAL SKILLS

ADDITIONAL INFORMATION

Publications Projects

Conferences Seminars Honors
and awards Memberships

Technical Courses/Workshops



Open discussion

Similarities and differences

Why should I choose one CV format of another?



Thank you!
Questions?

Homework

Mandatory readings:

[Agreement on Reforming Research Assessment](#)

Recommended readings:

Frank Miedema, Transition to Open Science: Rethinking Recognition and Rewards, 2021, [Slides](#), [video](#).

EC, [Towards a reform of the research assessment system](#), Scoping report, 29 novembre 2021.

R. Terry, [Time to unlock the potential of the digital age](#), OpenScienceFair2021, settembre 2021, [slides](#)

Readings

R. Terry, [Time to unlock the potential of the digital age](#), OpenScienceFair2021, settembre 2021, [slides](#)

[Agreement on Reforming Research Assessment](#)

Francesca Di Donato, Una questione di qualità o una formalità? L'Agreement on Reforming Research Assessment e il processo di riforma della valutazione della ricerca in Europa, in «Bollettino telematico di filosofia politica», 2022, pp. 1-30, <https://commentbfp.sp.unipi.it/francesca-di-donato-una-questione-di-qualita-o-una-formalita-lagreement-on-reforming-research-assessment-e-il-processo-di-riforma-della-valutazione-della-ricerca-in-europa/> . Zenodo: <https://zenodo.org/record/7433048#.Y6BZxezMJfW>

Schimmer, R., Geschuhn, K. K., & Vogler, A. (2015). Disrupting the subscription journals' business model for the necessary large-scale transformation to open access. doi:10.17617/1.3

[Directorate-General for Research and Innovation \(European Commission\)](#), [PwC EU Services Cost of not having FAIR research data](#), 2019-01-16

S. Buranyi, Is the staggeringly profitable business of scientific publishing bad for science? The Guardian, 27/06/2017, <https://www.theguardian.com/science/2017/jun/27/profitable-business-scientific-publishing-bad-for-science>

J.-C. Guédon, [In Oldenburg's long shadow](#), 2002;

ISI Presents - Putting Scientific Information to Work - Part 1, <https://www.youtube.com/watch?v=YwPRI9ug6BY>

DORA, 2013, <https://sfdora.org/read/>

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Diana Hicks, Paul Wouters, Ludo Waltman, Sarah de Rijcke & Ismael Rafols, Bibliometrics: The Leiden Manifesto for research metrics
22 April 2015, <https://www.nature.com/articles/520429a>

Lin Zhang, Gunnar Sivertsen, The New Research Assessment Reform in China and Its Implementation, Scholarly Assessment Reports, 2020
<https://www.scholarlyassessmentreports.org/articles/10.29024/sar.15/>

[G7 Science Ministers Communiqué](#), Turin, 28 September 2017.

[Council Conclusions on the new ERA of December 1st 2020](#)

EC, [Towards a reform of the research assessment system](#), Scoping report, 29 novembre 2021.

Frank Miedema, Transition to Open Science: Rethinking Recognition and Rewards, 2021, [Slides](#), [video](#).

EUA (2021), [Report. Reimagining Academic Career Assessment: Stories of innovation and change](#).

EUA, [2020-2021 EUA Open Science Survey results / From principles to practices: Open Science at Europe's universities](#)

[Royal Society Résumé for researchers](#)

Health Research Board (Ireland), [Research career path for academic researchers](#)

Swiss National Science Foundation, [SciCV](#)

Luxembourg national Research Fund, [Evolution of FNR funding policies in 2021](#)

Readings

McKiernan, et al, 2019. <https://elifesciences.org/articles/47338>

Niles, et al, 2019. <https://www.biorxiv.org/content/10.1101/706622v1>

Alder, et al, 2008. <https://www.mathunion.org/fileadmin/IMU/Report/CitationStatistics.pdf>

Strathern, Marilyn (1997). "'Improving ratings': audit in the British University system". *European Review*. John Wiley & Sons. 5 (3): 305–321. doi:10.1002/(SICI)1234-981X(199707)5:3<305::AID-EURO184>3.0.CO;2-4.

Further references

These slides are the reworking of teaching materials produced in the course of the past 15 years, and especially in 2021 in collaboration with Emma Lazzeri for the ICDI Competence Center on EOSC and Open Science, and in 2022. See in particular:

- Di Donato, Francesca (2020): Methodology of Bibliographical Research on the Internet. figshare. Presentation. <https://doi.org/10.6084/m9.figshare.12936272.v1>
- Di Donato, Francesca (2018): The Web as a Research Environment. Definitions, tools and best practices. figshare. Presentation. <https://doi.org/10.6084/m9.figshare.5966926.v1>
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