Research Assessment & Open Science

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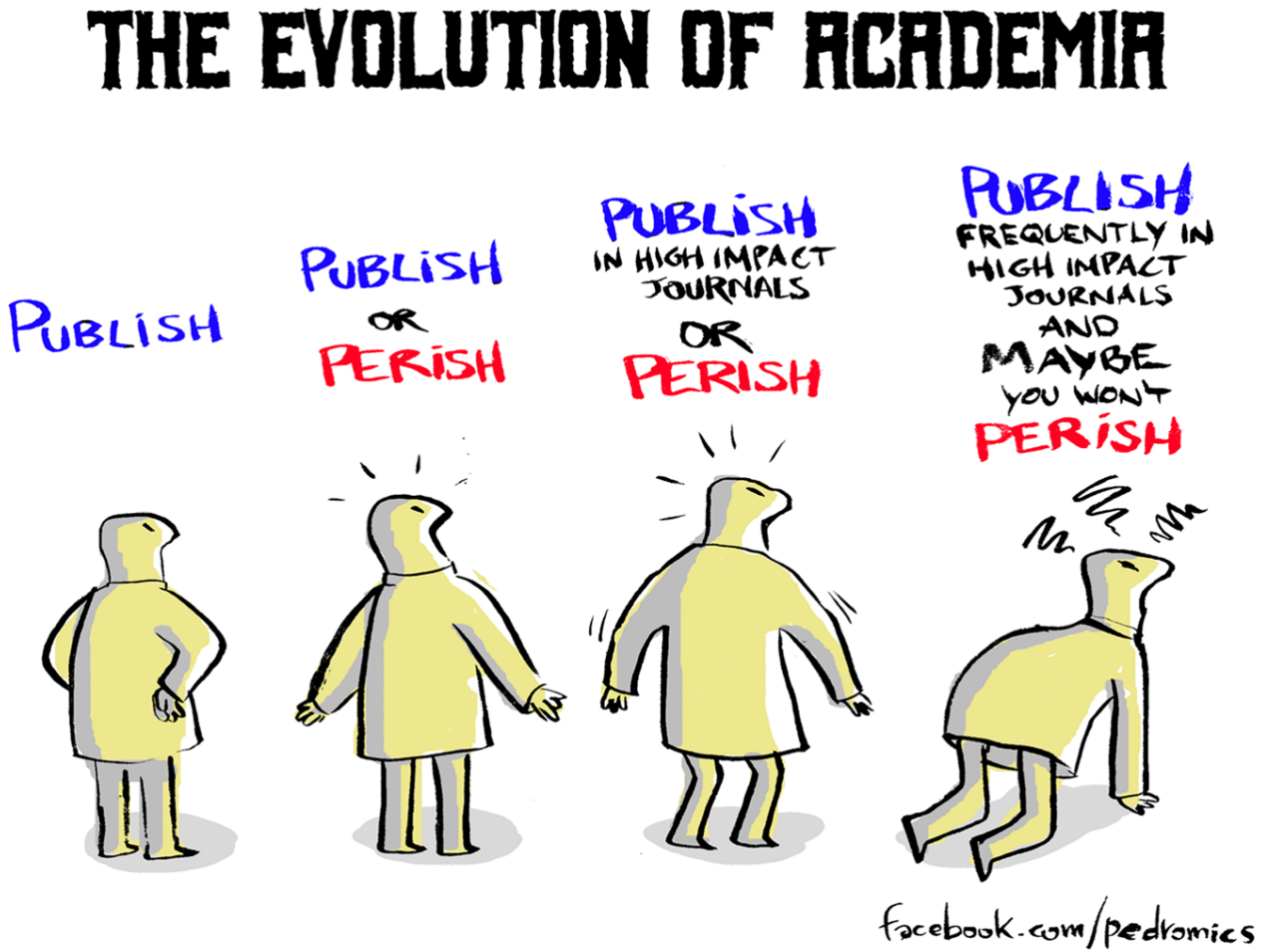
Assessing individuals

publication counts – how many articles an author published in his lifetime or specific period of time

citation counts – number of citations per article, per number of articles within a time period

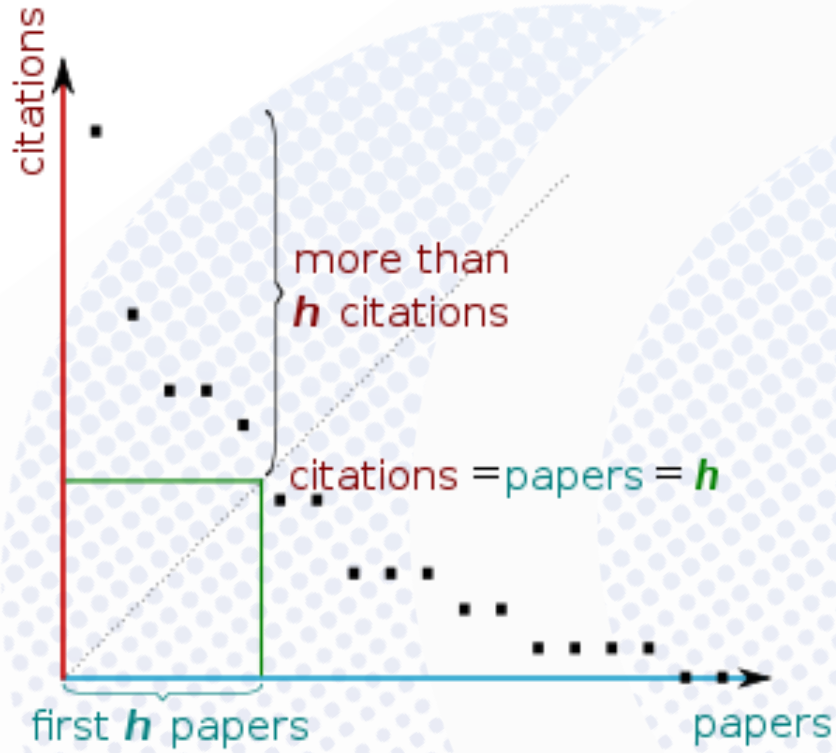
Quantity over quality?



Assessing individuals: H-index

H-index: A scientist has index h if h of his or her Np papers have at least h citations each and the other (Np - h) papers have ≤ h citations each." (Hirsch, 2005)

- h-index will vary based on the dataset (WoS/ Scopus/ Google scholar)
- there is no weighing an individual author's contribution to the articles
- citation counts do not equal quality of research



Halt the *h*-index

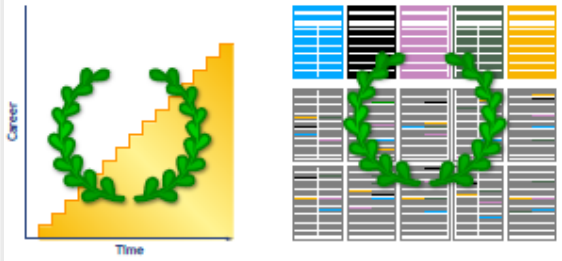
The need for alternative approaches for evaluating researchers

CWTS Meaningful metrics

Problems of the *h*-index*

*Other bibliometric indicators may have similar problems

Unfair comparisons



Favors researchers with longer careers

Favors researchers in publication- and citation-dense fields

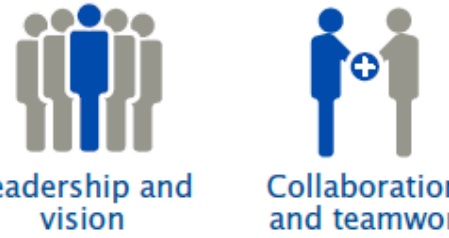
Rewards bad publishing and referencing behavior

Your name on many papers

Excessive self-citation

Ask colleagues to cite your papers

Renders important contributions invisible



Leadership and vision

Collaborations and teamwork

Teaching skills

Research quality

https://doi.org/10.5281/zenodo.4635648

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Journal Impact factor

The **Journal** Impact Factor is calculated by dividing citations to recent items by the number of recent items.

JIF was created by Eugene Garfield as a tool for management of library journal collections

Journal IFs were not intended to be used as a measure or proxy of performance for individual papers or authors

Calculation

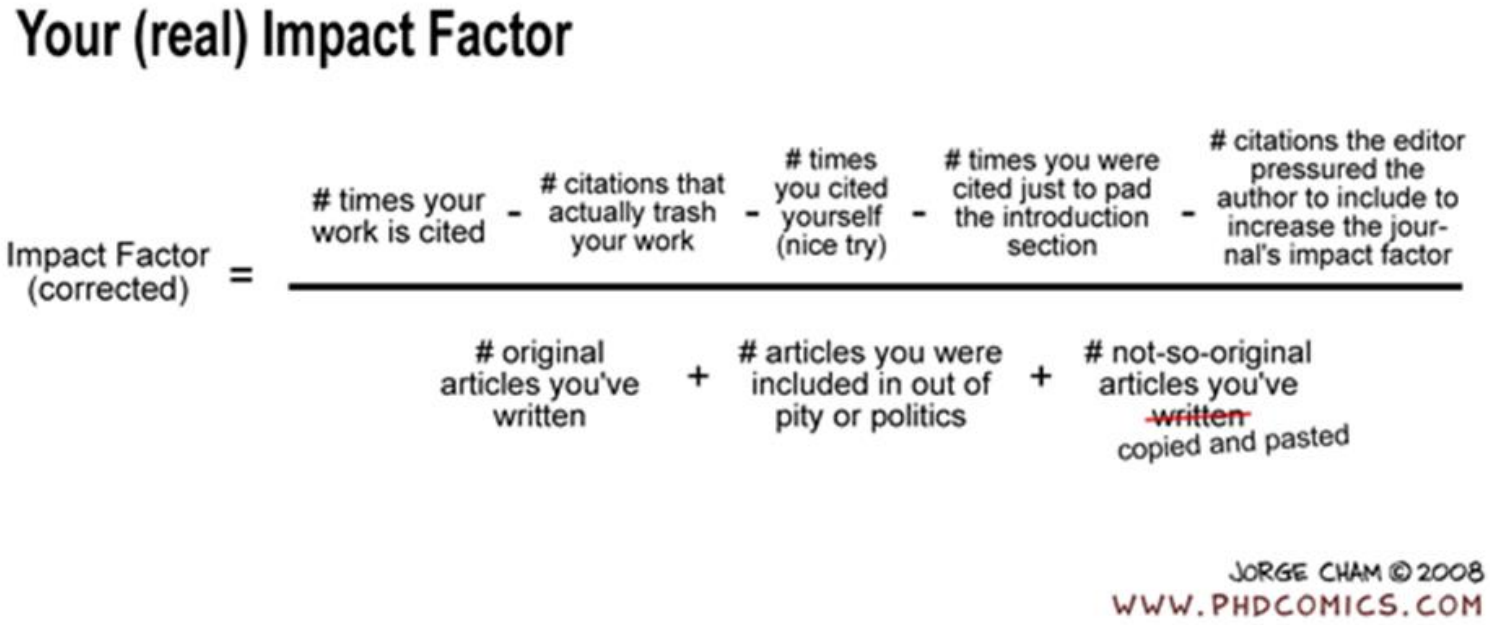
Journal Impact Factor ™ is calculated using the following metrics:

$$\frac{\text{Citations in 2021 to items published in 2019 } \mathbf{(111)} + 2020\ \mathbf{(147)}}{\text{Number of citable items in 2019 } \mathbf{(72)} + 2020\ \mathbf{(87)}} = \frac{\mathbf{258}}{\mathbf{159}} = 1.623$$

Example from Journal Citation Reports

https://clarivate.com/webofsciencegroup/essays/impact-factor/#T1

Limitations

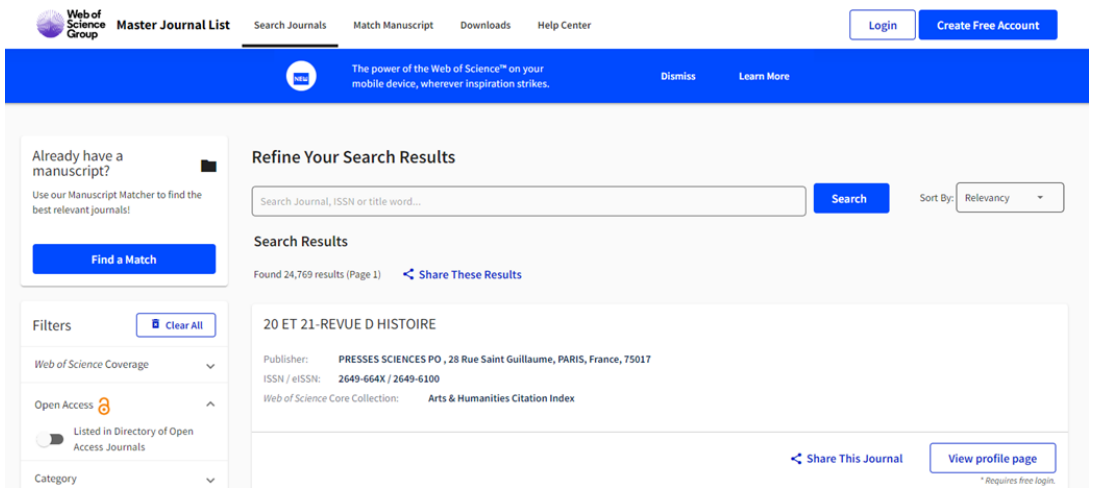


- Manipulation
- Self-citation
- lf-citation
- Authorship
- Splitting outputs into many articles
- Editorial policies favoring certain types of articles, cartelization, …

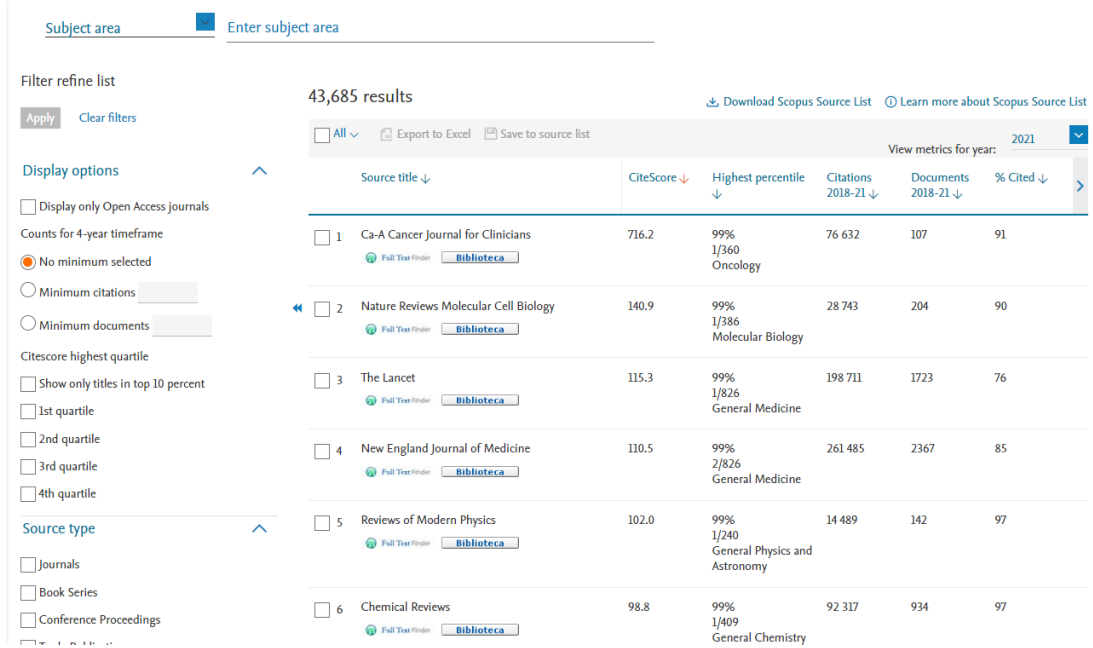
Publishing in indexed journals

Clarivate

Web of Science™



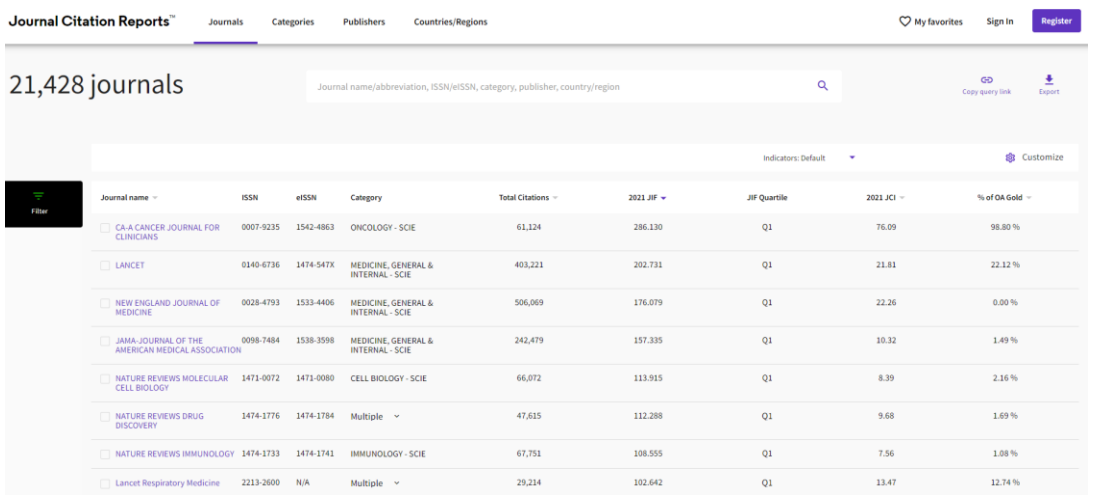
Scopus



Quartiles

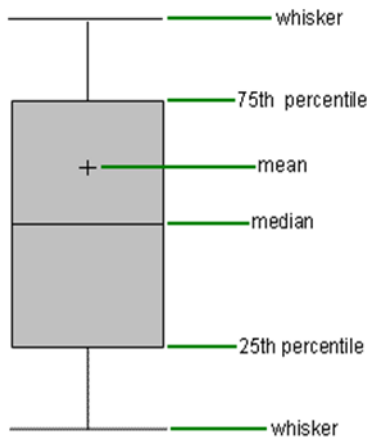
Clarivate

Journal Citation Reports™



SJR Scimago Journal & Country Rank

	Title	Type	SJR	H index	Total Docs. (2021)	Total Docs. (3years)	Total Refs. (2021)	Total Cites (3years)	Citable Docs. (3years)	Cites / Doc. (2years)	Ref. / Doc. (2021)	
1	Nature Reviews Molecular Cell Biology	journal	33.213 Q1	452	111	338	9025	13797	161	38.55	81.31	
2	Cell	journal	25.716 Q1	814	517	1727	33658	73240	1639	45.00	65.10	
3	Nature Medicine	journal	24.161 Q1	576	419	1161	12511	39532	656	35.09	29.86	
4	Nature Reviews Genetics	journal	23.027 Q1	384	123	323	8119	8039	158	24.80	66.01	
5	Nature Biotechnology	journal	20.120 Q1	463	356							

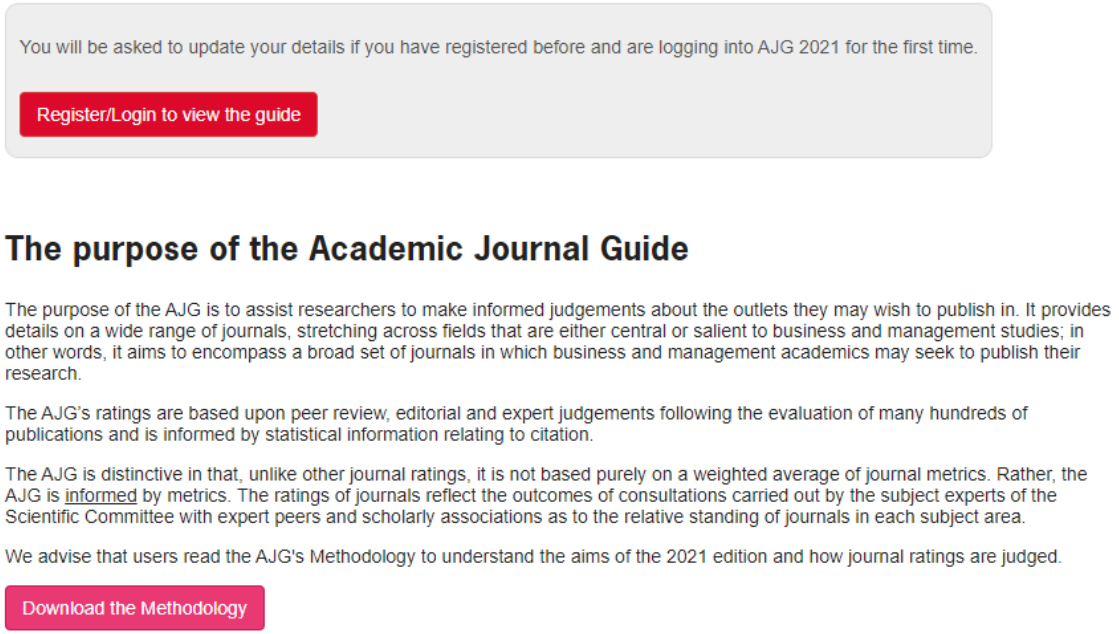


Quartiles within a category

Thematic Lists of journals

CABS
CHARTERED ASSOCIATION OF BUSINESS SCHOOLS

AJG 2021
ACADEMIC JOURNAL GUIDE



Advised lists of journals and/ or prizes for publication

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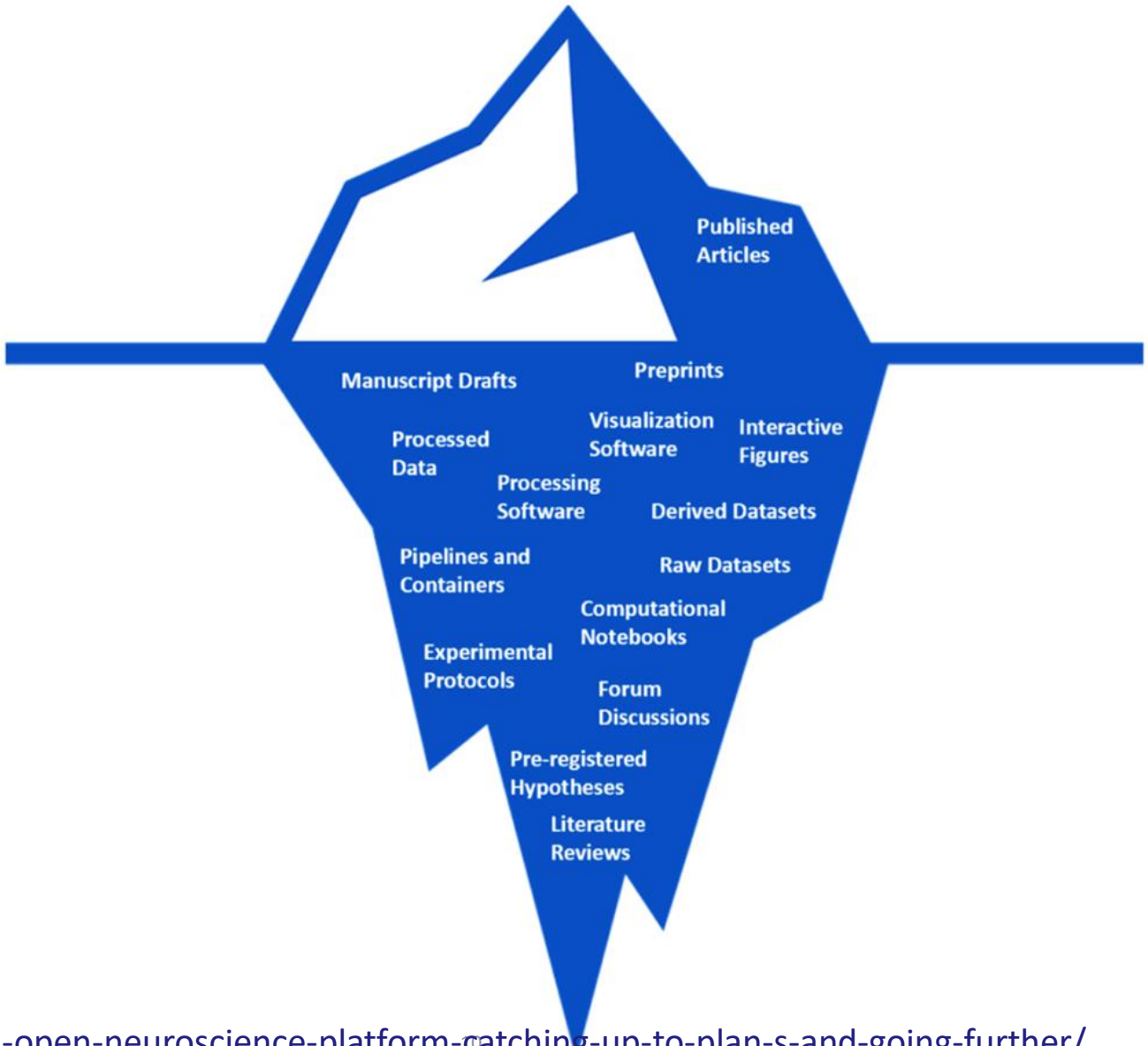
Discussion

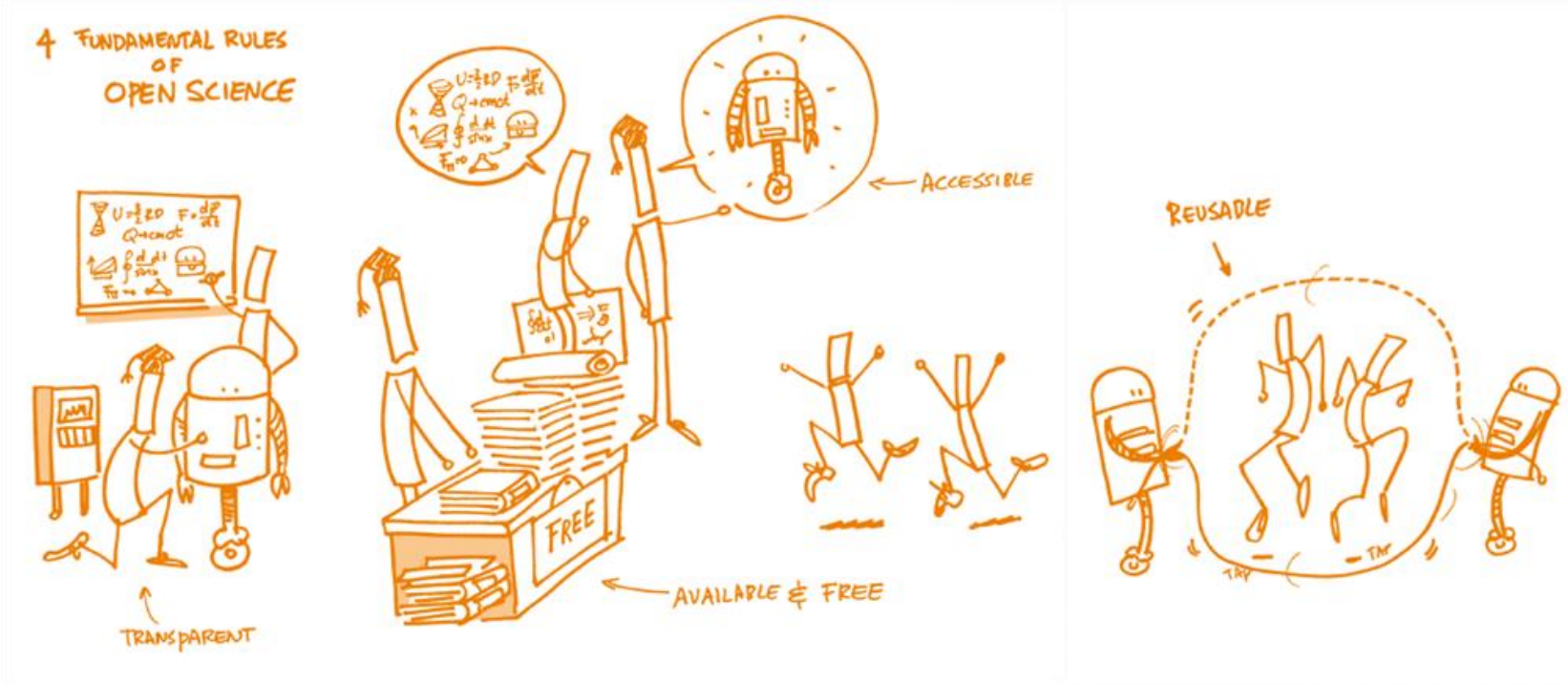
- Prevalence of **articles** above other types of publications (books,…)
- Distortion of metrics (cartelization, self-citation, …)
- Prevalence of some areas of knowledge over others (STEM/ SCH)
- Prevalence of **English** above other languages



https://theplosblog.plos.org/2019/08/the-canadian-open-neuroscience-platform-catching-up-to-plan-s-and-going-further/

Metrics versus OS Principles

- Accessibility vs Subscrition (closed) databases
- No reusability of datasets
- Lack of transparency
- Conflict of interest



San Francisco Declaration on Research Assessment

General Recommendation

Do not use journal-based metrics, such as Journal Impact Factors, as a surrogate measure of the quality of individual research articles, to assess an individual scientist's contributions, or in hiring, promotion, or funding decisions.

(2012)

More than 20,000 individuals and 2,800 institutions across 160 countries have signed DORA so far

For funding agencies / institutions

- Explicit criteria used in evaluating the scientific productivity; emphasis on content
- Value and impact of all research outputs

For publishers

- Reduced emphasis on the journal impact factor as a promotional tool
- Range of article-level metrics
- Responsible authorship practices
- No reuse limitations

For organizations that supply metrics

- Openess and transparency by providing data and methods used to calculate all metrics
- Provide the data under a licence that allows unrestricted reuse, and provide computational access to data
- Be clear that inappropriate manipulation of metrics will not be tolerated

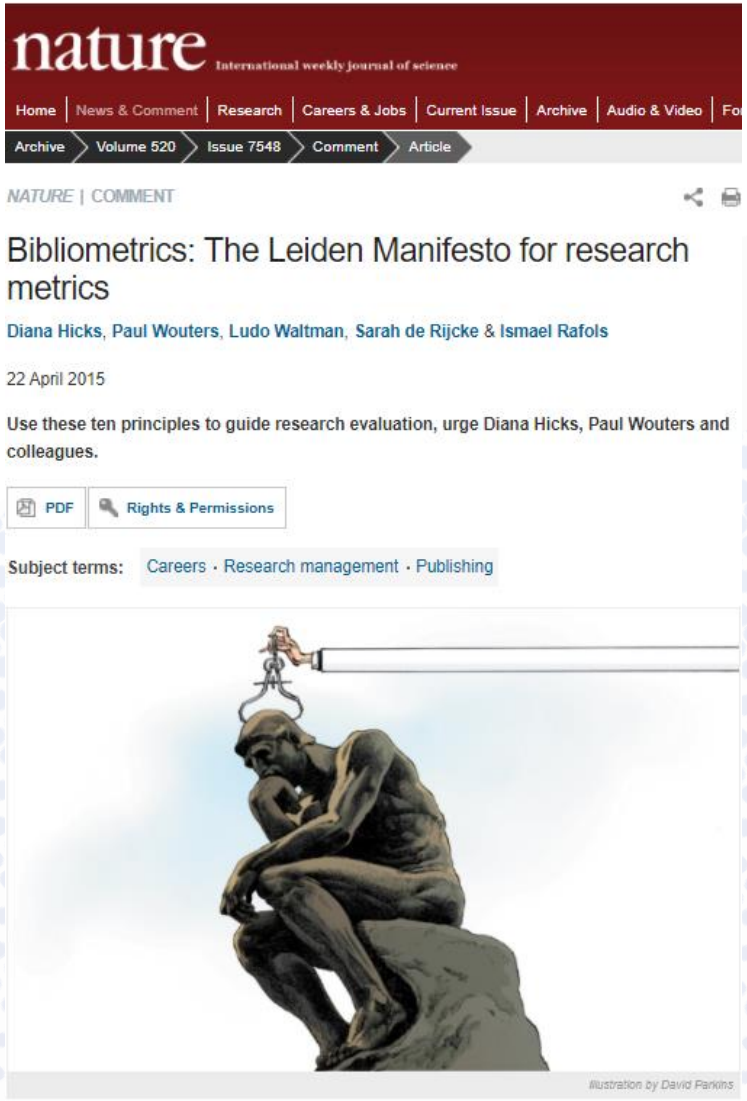
https://sfdora.org/read/

Leiden Manifesto

"As scientometricians, social scientists and research administrators, we have watched with increasing alarm the pervasive misapplication of indicators to the evaluation of scientific performance. (…)

- Universities: position in global rankings
- Researchers: citations and h-index
- PhDs facing pressure to publish in high-impact journals

http://www.leidenmanifesto.org/



https://www.nature.com/articles/520429a

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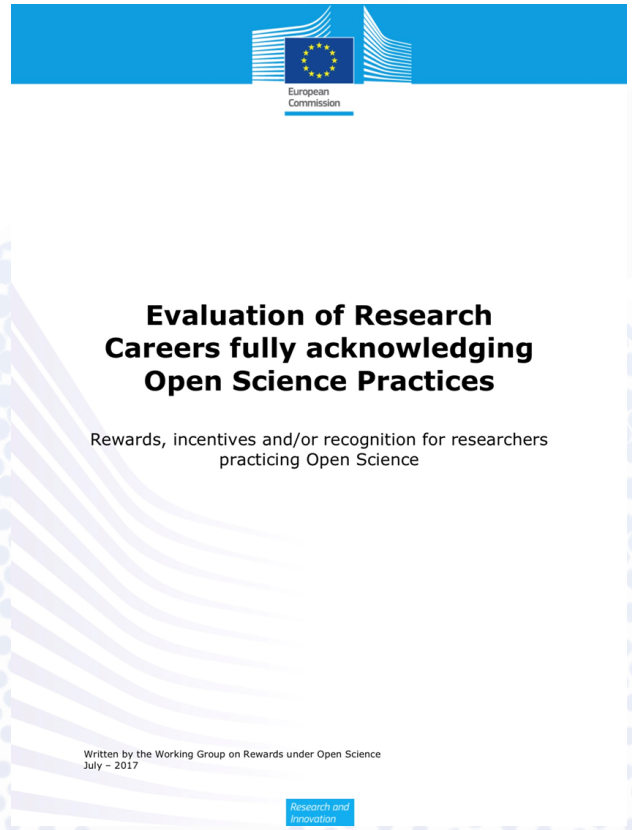
https://vimeo.com/133683418

Evaluation of research careers fully acknowledging open science practices (2017)

OS-CAM, a customised matrix

Slide de Bernard Rentier

Life Sciences	R1	R2	R3	R4
Research output	+	++	+++	++++
Research Process	+	+++	++++	++++
Service & Leadership		+	+++	++++
Research Impact	+	++	+++	++++
Teaching & supervision	(++)	+	++	++++
Professional Experience		+	+++	++++



https://op.europa.eu/pt/publication-detail/-/publication/47a3a330-c9cb-11e7-8e69-01aa75ed71a1

Open Science Career Assessment Matrix

1. Research output
- Research activity
- Publications
- Datasets
- Open source
- Funding

2. Research Process
- Stakeholder engagement/citizen science
- Collaboration & interdisciplinarity
- Research integrity
- Risk management

3. Service & Leadership
- Leadership
- Academic standing
- Peer review
- Networking

4. Research Impact
- Communication & dissemination
- IP (patents, licenses)
- Societal impact
- Knowledge exchange

5. Teaching and supervision
- Teaching
- Mentoring
- Supervision

6. Professional Experience
- Continuing professional development
- Project management
- Personal qualities

evaluation under a combination of criteria and research outputs and tasks

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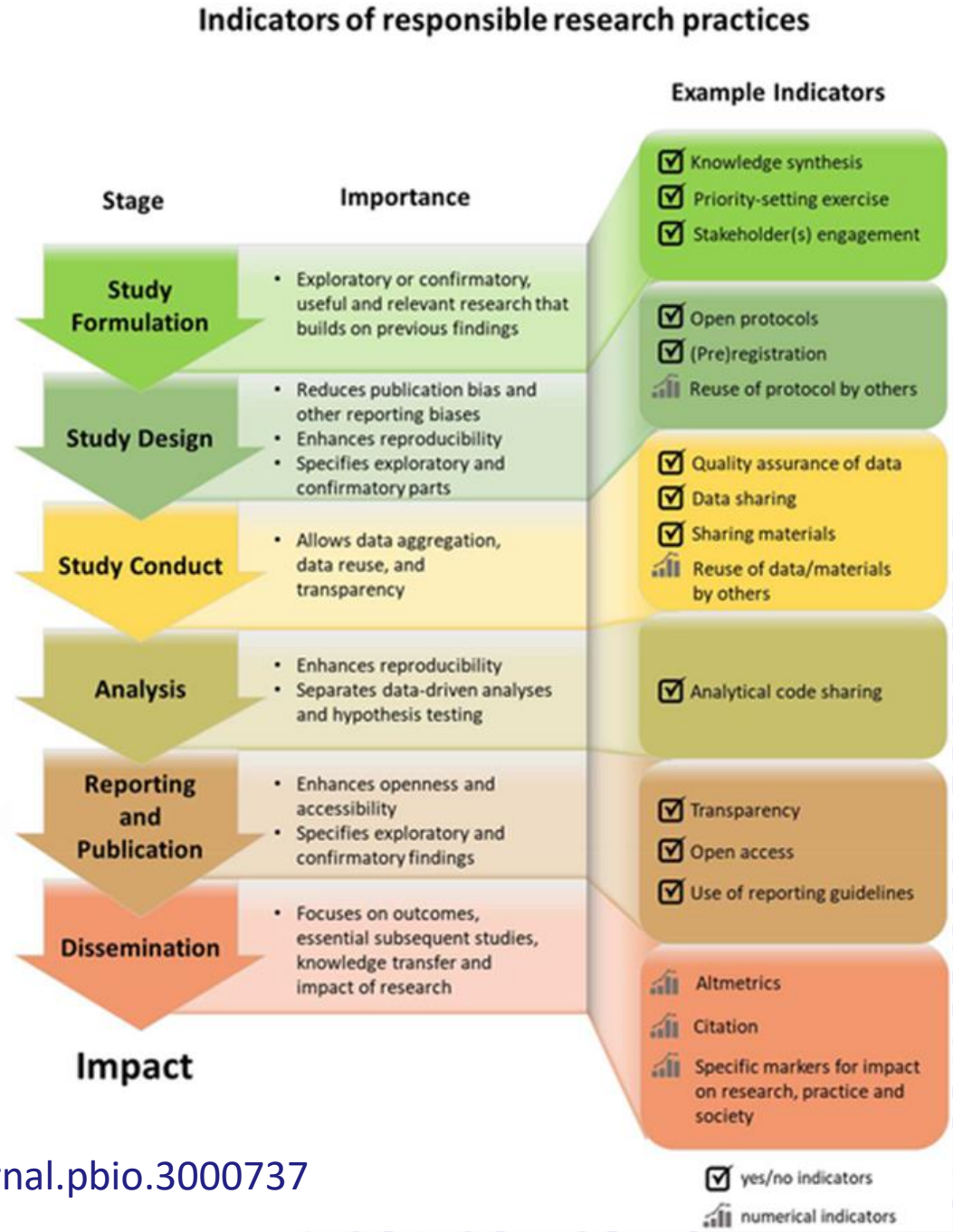
Hong Kong principles (2019)

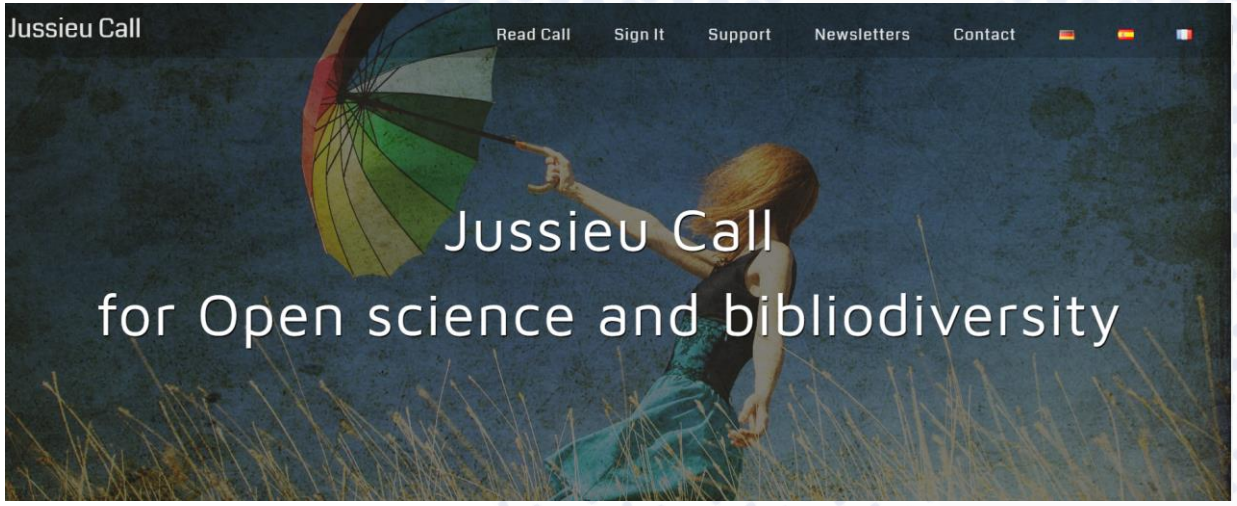
Principle 1: Assess researchers on responsible practices from conception to delivery
Principle 2: Value the accurate and transparent reporting of all research, regardless of the results
Principle 3: Value the practices of open science (open research)—such as open methods, materials, and data
Principle 4: Value a broad range of research and scholarship, such as replication, innovation, translation, synthesis, and meta-research
Principle 5: Value a range of other contributions to responsible research and scholarly activity, such as peer review for grants and publications, mentoring, outreach, and knowledge exchange



https://doi.org/10.1371/journal.pbio.3000737

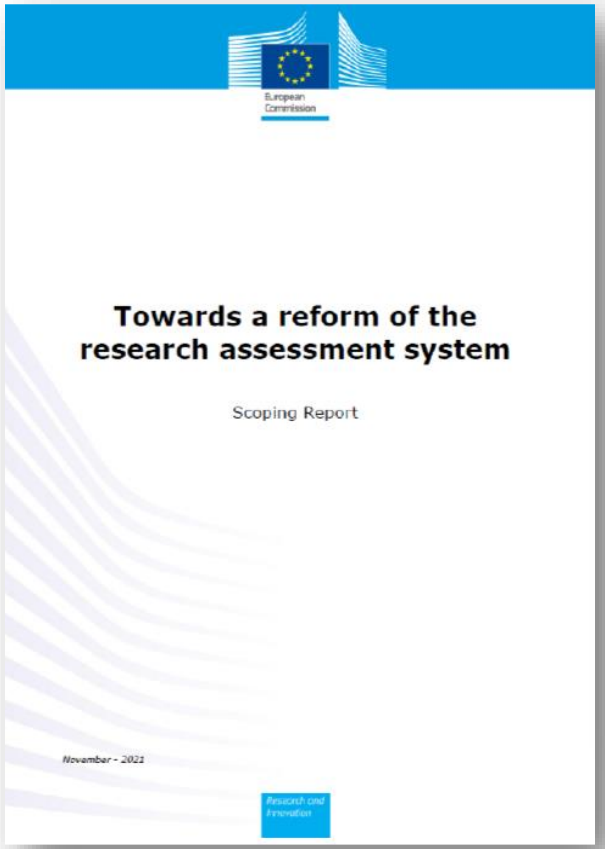
Fostering bibliodiversity in scholarly communications

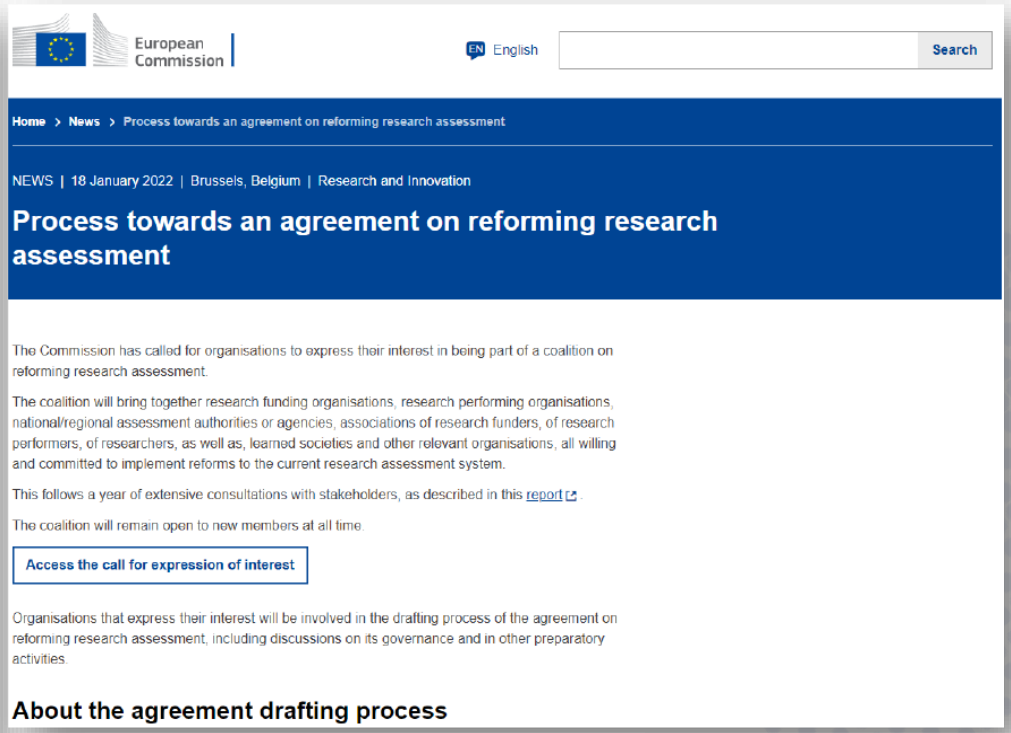
Diversity is an essential characteristic of an optimal scholarly communications system. Diversity in ***services and platforms, funding mechanisms, and evaluation measures*** *will allow the research communications to accommodate the different* ***workflows, languages, publication outputs, and research topics*** *that support the needs and epistemic pluralism of different research communities. In addition, diversity reduces the risk of vendor lock-in, which inevitably leads to monopoly, monoculture, and high prices.* Fostering Bibliodiversity in Scholarly Communications: a call for Action! (2020)



https://jussieucall.org/jussieu-call/#call

Reforming assessment





COARa

The 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

5. Commit resources to reforming research assessment as is needed to achieve the organisational changes committed to

Signatories commit to start the process of reviewing or developing criteria, tools and processes within a year of signing

6. Review and develop research assessment criteria, tools and processes

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

546 organisations have signed the agreement (as of may 2023)

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Discussion

Many criticism to research asessment as is, but…

How to change?

Main obstacles:

- Effort
- Inertia/ old habits
- Competition
- …

Resumé for Research/ Narrative CVs

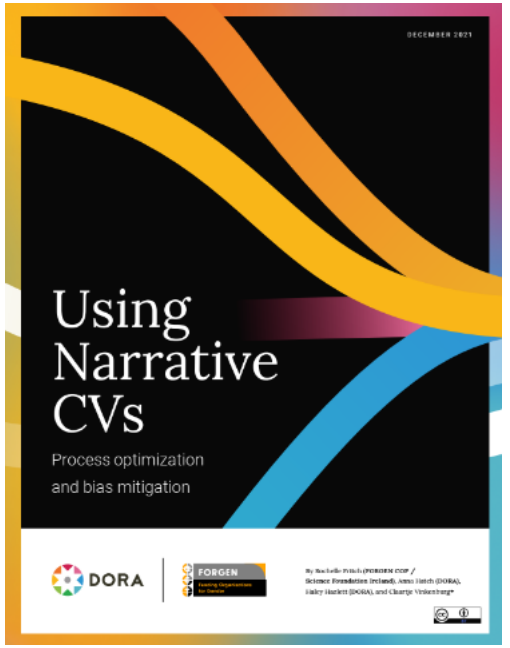
THE ROYAL SOCIETY

Home Fellows Events Grants, Schemes & Awards

1. How have you contributed to the generation of knowledge?
2. How have you contributed to the development of individuals?
3. How have you contributed to the wider research community?
4. How have you contributed to broader society?

Résumé for Researchers suggested template

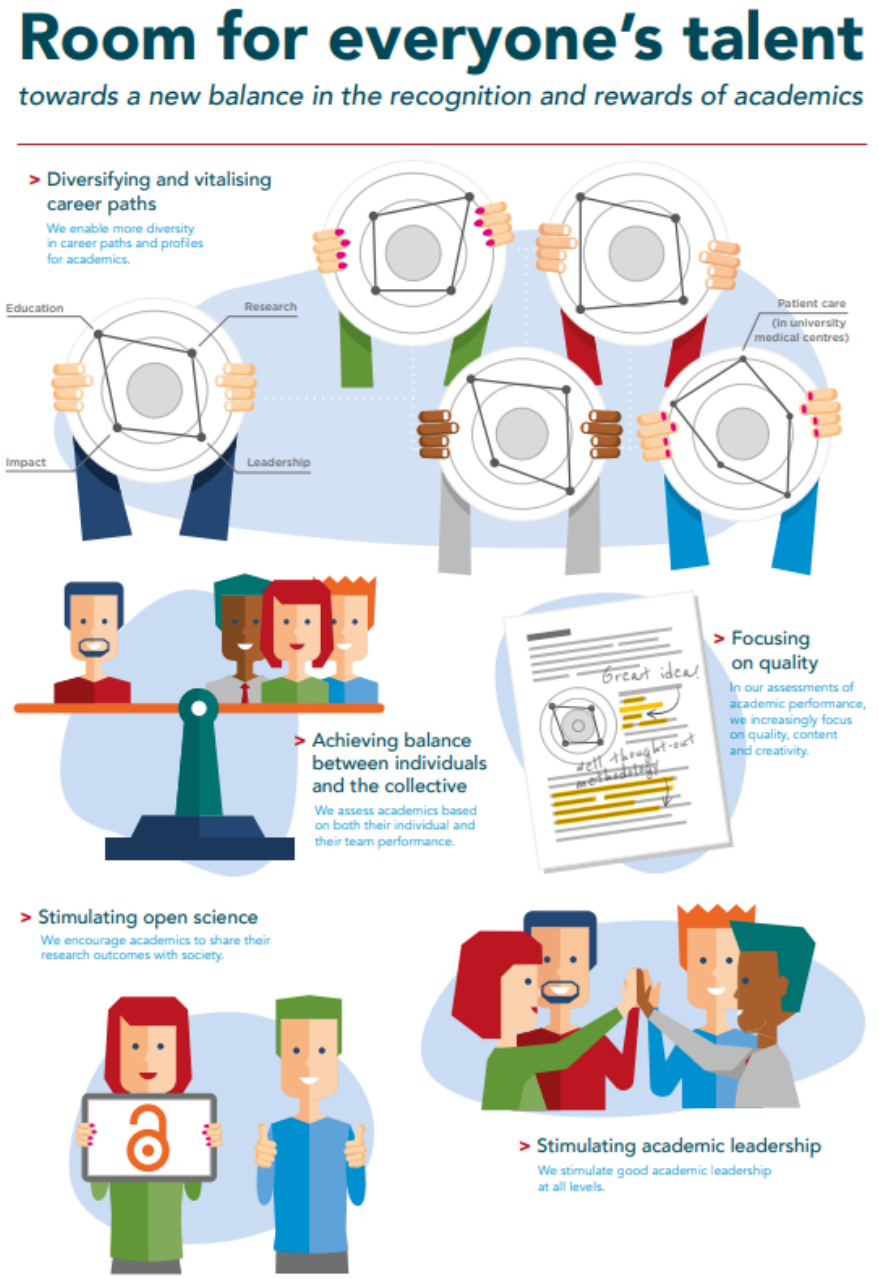
https://doi.org/10.5281/zenodo.5799413



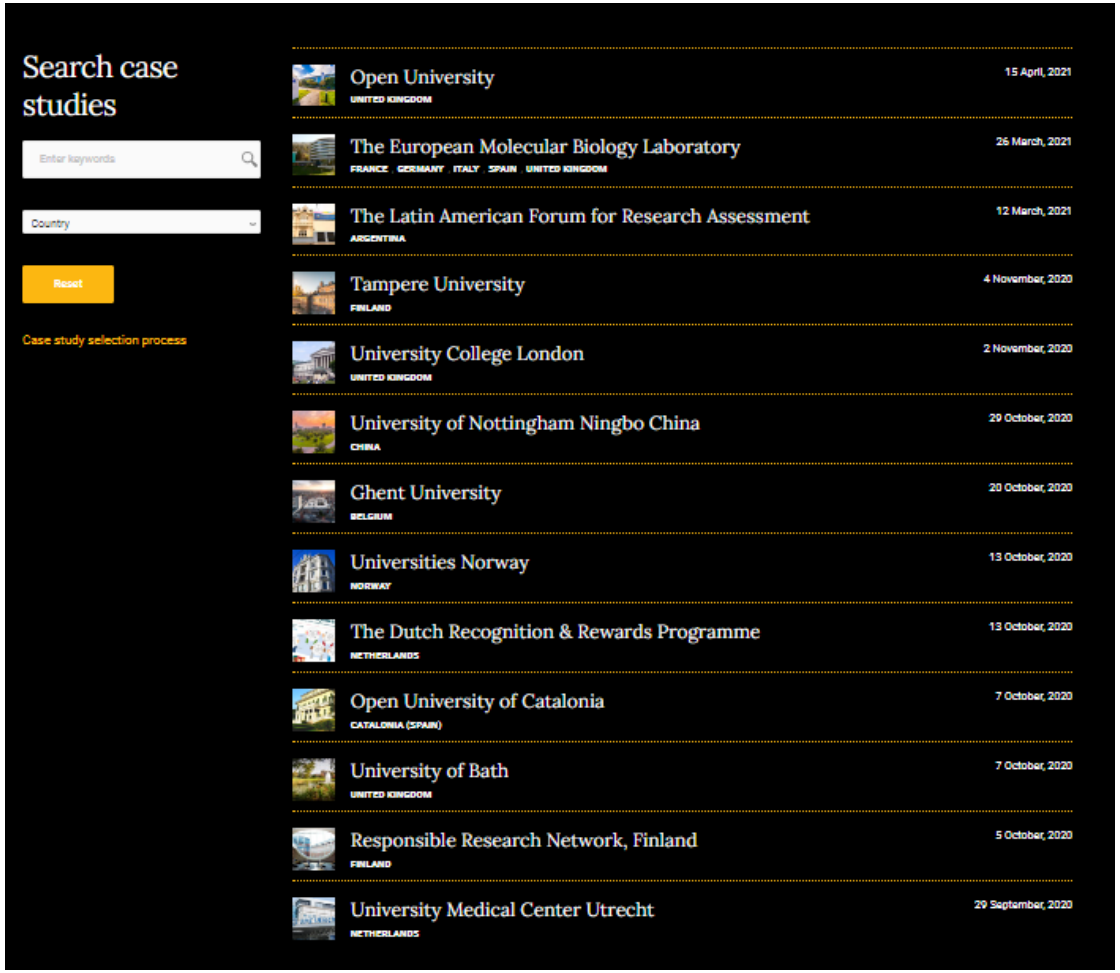
- Creation of shared definition of what Narrative CVs are and what objectives they aim to achieve
- Train reviewers, applicants and staff at funding organizations to improve consistency in the evaluation process
- Monitor the effectiveness of narrative CVs to continually optimize their utility as a tool for robust research assessment.

Good examples

- Diversifying carreer paths
- Focusing on quality
- Achieving balance between individuals and the collective
- Stimulating open science
- Stimulating academic leadership



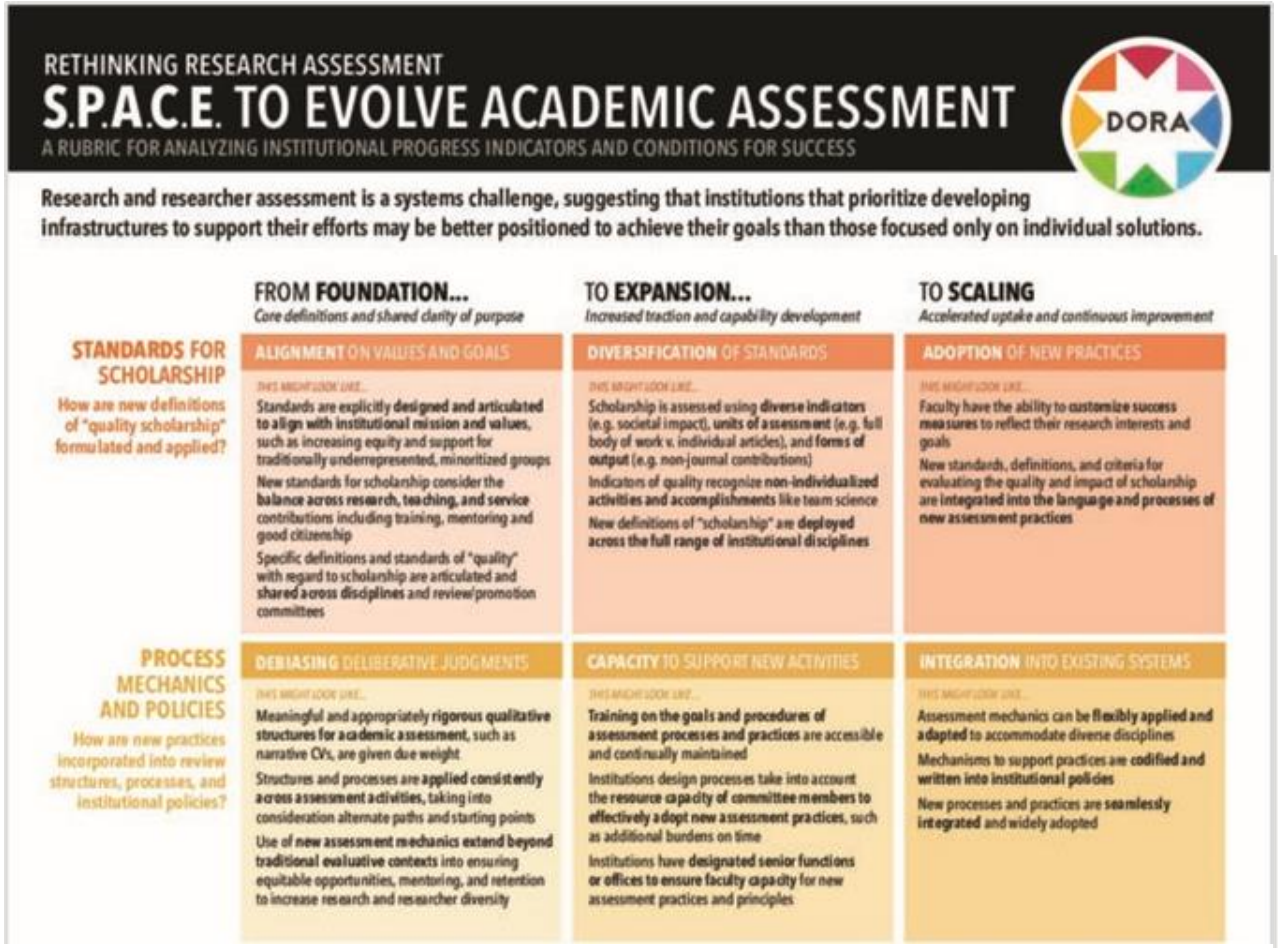
Room for everyone's talent

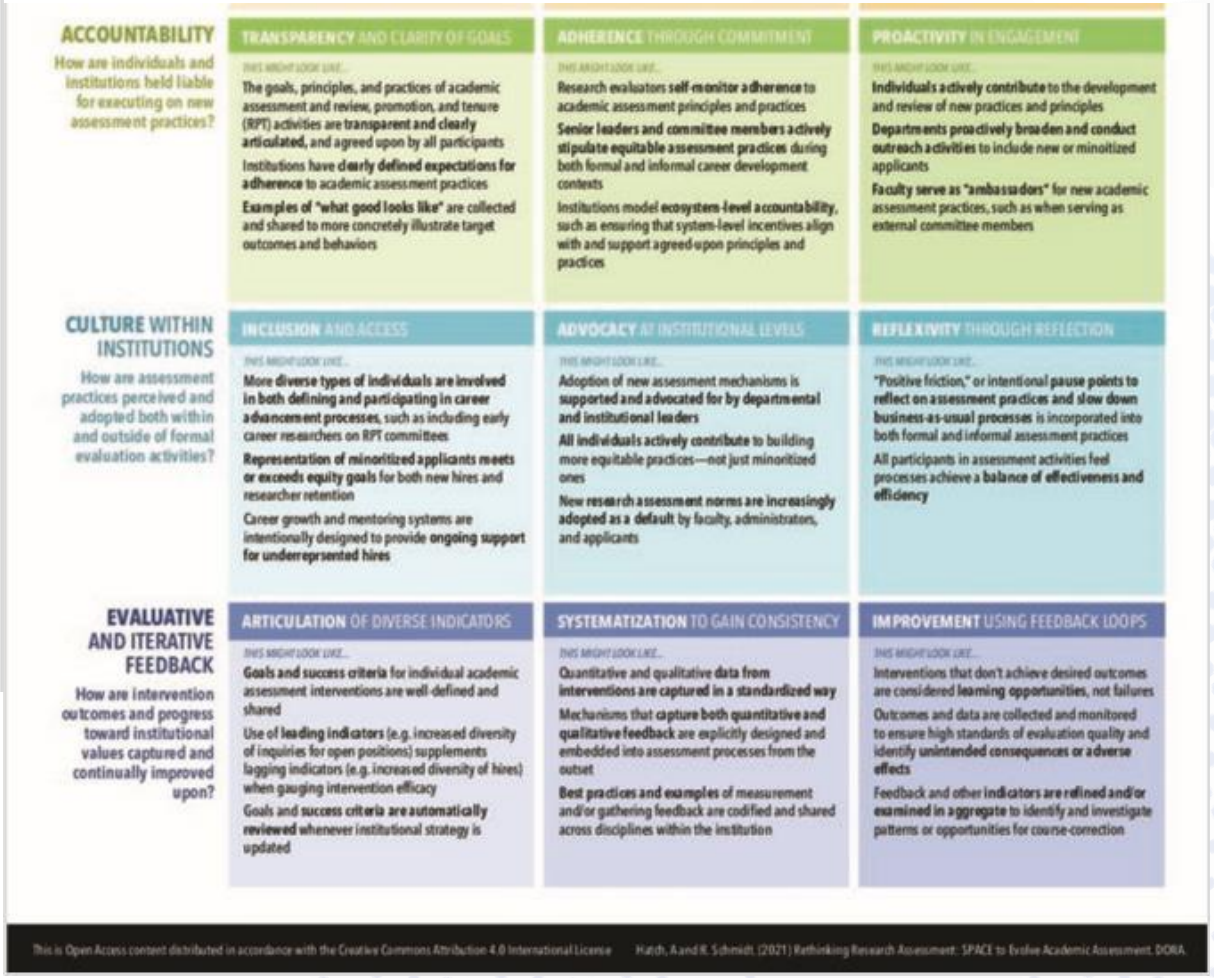


https://sfdora.org/dora-case-studies/

Reimagining academic career assessment stories of innovation and change

SPACE





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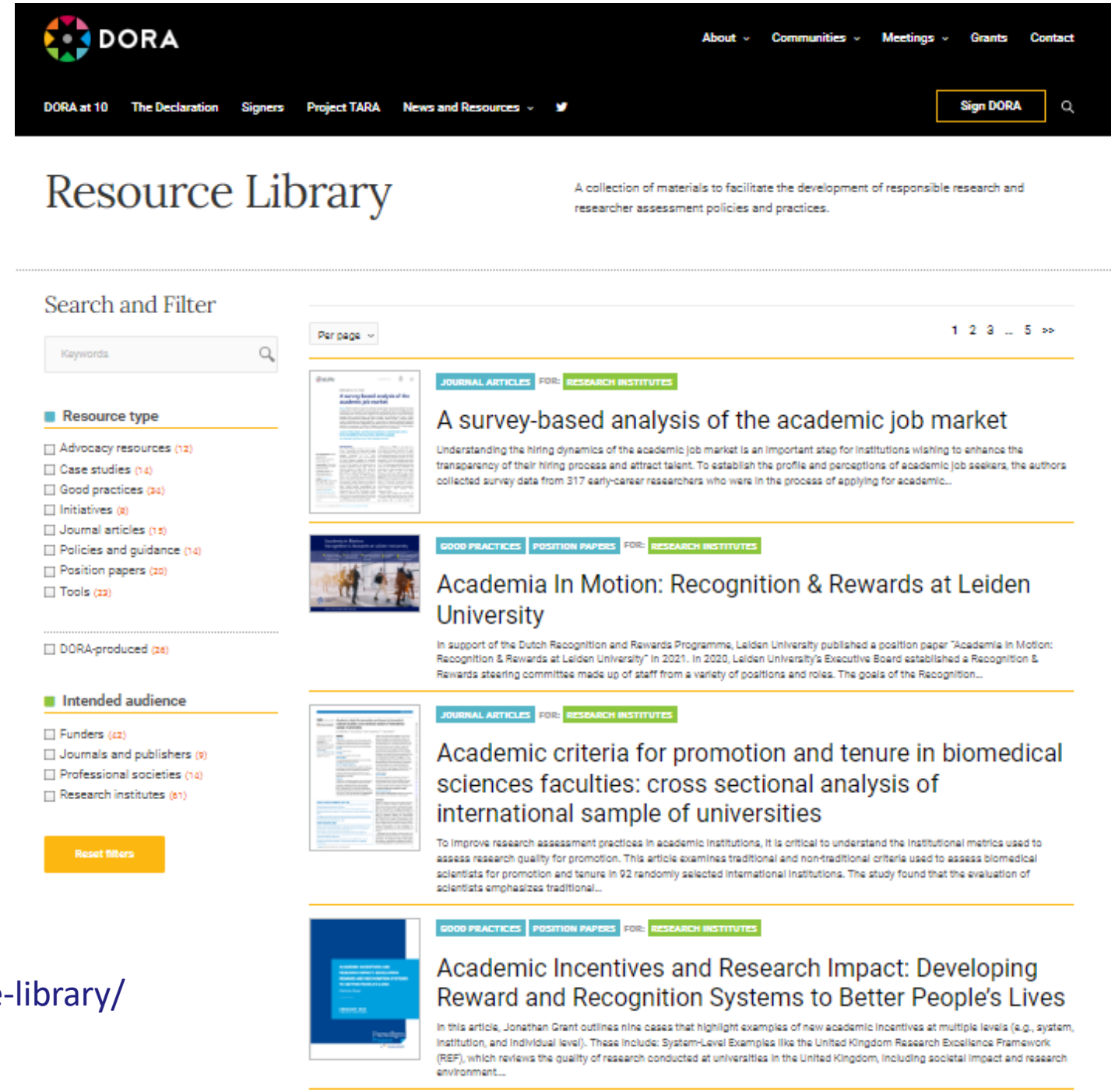

https://sfdora.org/resource-library/

Thank you

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