

Building a FAIR scientific system: current trends in open science

Paola Galimberti – Direzione Performance assicurazione qualità, valutazione e politiche di Open science

Why am I here?

Editor of the DOAJ for Italy and German speaking countries

Member of the presidio della Qualità

Task leader of the project 4eu+ University publishing

Member of the Osservatorio della ricerca

Founder of AISA and member of the steering board

Member of the cabina di regia per l'accreditamento

Member of the competence center ICDI (Italian Computing and Data Infrastructure)

Member of the cabina di regia sulla VQR


Member of the editorial board of Open-science.it and of ROARS

GDL on Open science of LERU and 4eu+

Member of the library advisory group of ORE (Open Research Europe)

Member of the Joint Research Unit of Operas Italia

Some questions to be answered



Your community is historically open access oriented. Is it also open science oriented?



What about FAIR data?



What about Research data management?



What about Open peer review?



What about preregistration?

What is open science?

Is the standard method of working under Horizon Europe. Is the policy priority for the EC as a key factor to improve the quality, efficiency, and responsiveness of research

Citizen
science

Open
Educational
resources

Open
Access

Open Data

Open Peer
Review

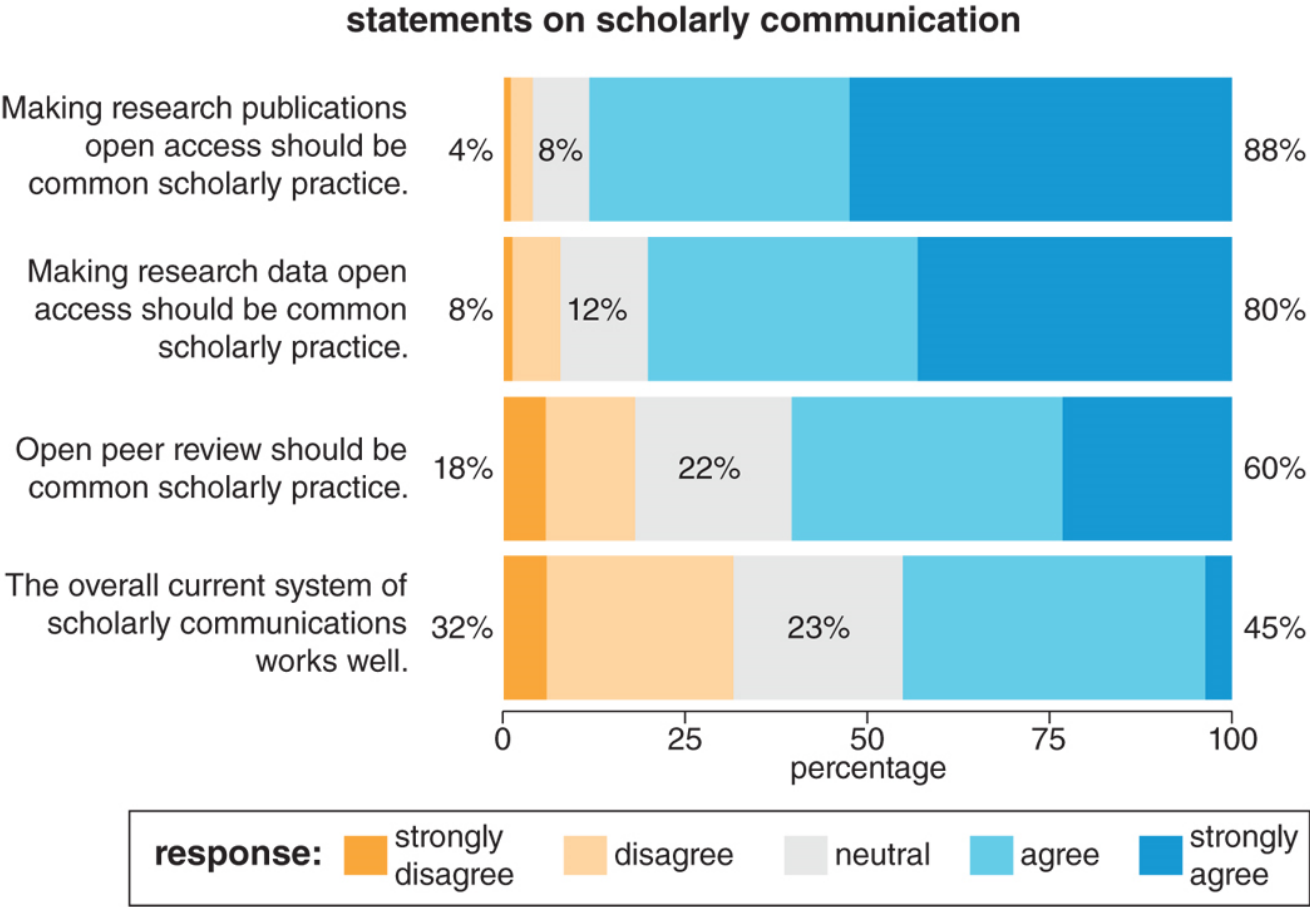
Open
Source

Open
Notebooks

Open
Software

Do we have a problem?

Probably yes!





ACCESSIBILITY



TRANSPARENCY



REPRODUCIBILITY

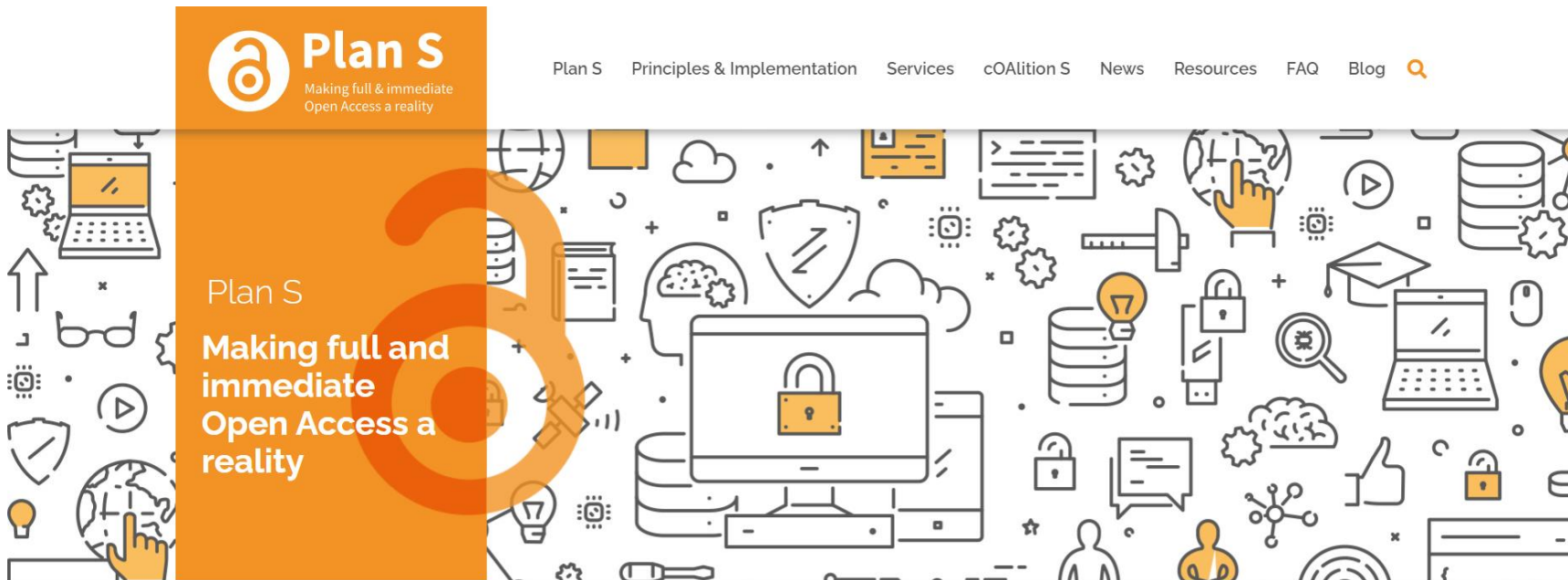
Accessibility

Not so relevant for
publications in
physics

Very relevant for
other disciplines
(high APCs or
Subscription prices)



COALITION S (Italy participates with INFN): Trials and errors



Transformative agreements were a big hoax and didn't reach the expected results.

Fortunately, Coalition S has recognized the error, and this measure will be discontinued in 2024

Rights retention strategy (RRS)

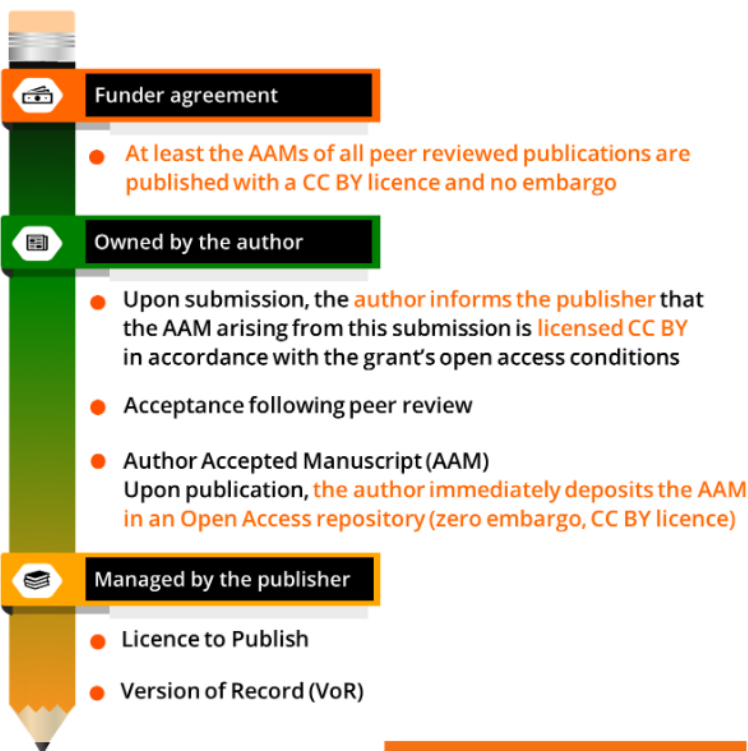
Plan S & Rights Retention

#RetainYourRights

www.coalition-s.org/rights-retention-strategy

Helping researchers retain their rights and share their work Open Access

Example where the Author Accepted Manuscript (AAM) is shared CC BY



cOAlition S

Hosted by the European Science Foundation
info@coalition-s.org • www.coalition-s.org

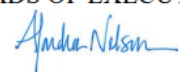
 Plan S
Making full and immediate Open Access a reality



EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
WASHINGTON, D.C. 20502

August 25, 2022

MEMORANDUM FOR THE HEADS OF EXECUTIVE DEPARTMENTS AND AGENCIES

FROM: Dr. Alondra Nelson 
Deputy Assistant to the President and Deputy Director for Science and Society
Performing the Duties of Director
Office of Science and Technology Policy (OSTP)

SUBJECT: Ensuring Free, Immediate, and Equitable Access to Federally Funded Research

This memorandum provides policy guidance to federal agencies with research and development expenditures on updating their public access policies. In accordance with this memorandum, OSTP recommends that federal agencies, to the extent consistent with applicable law:

1. Update their public access policies as soon as possible, and no later than December 31st, 2025, to make publications and their supporting data resulting from federally funded research publicly accessible without an embargo on their free and public release;
2. Establish transparent procedures that ensure scientific and research integrity is maintained in public access policies; and,
3. Coordinate with OSTP to ensure equitable delivery of federally funded research results and data.

1. Background and Policy Principles

Transparency

- The research processes should be transparent, evident, explained

Retraction Watch

Tracking retractions as a window into the scientific process

PAGES

[How you can support Retraction Watch](#)

[Meet the Retraction Watch staff](#)

[About Adam Marcus](#)

[About Ivan Oransky](#)

[Our Editorial Independence Policy](#)

[Papers that cite Retraction Watch](#)

[Privacy policy](#)

[Retracted coronavirus \(COVID-19\) papers](#)

[Retraction Watch Database User Guide](#)

[Retraction Watch Database User Guide Appendix A: Fields](#)

[Retraction Watch Database](#)

Physics publisher retracting nearly 500 likely paper mill papers

A physics publisher is retracting 494 papers after an investigation “indicated that some papers may have been created, manipulated, and/or sold by a commercial entity” – aka a paper mill.



The vast majority – 463 articles – are from the *Journal of Physics: Conference Series*, while 21 are from *IOP Conference Series: Materials Science & Engineering*, and 10 are from *IOP Conference Series: Earth & Environmental Science*. A bit less than a third – 142 – are appearing today.

In a statement, Kim Eggleton, Head of Peer Review and Research Integrity at IOP Publishing, tells Retraction Watch:

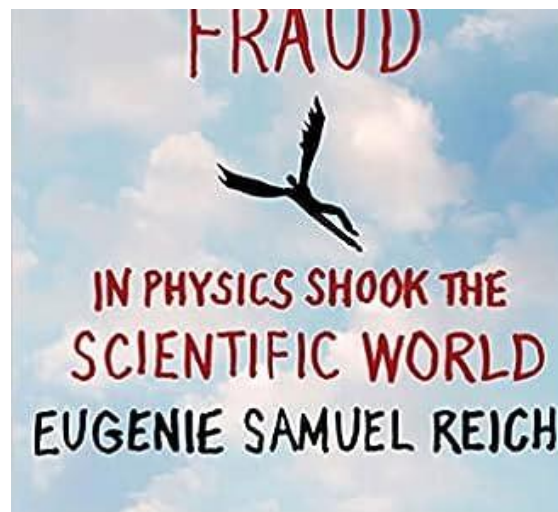
These articles are being retracted following an allegation that raised concerns regarding several manuscripts. IOP

Reproducibility

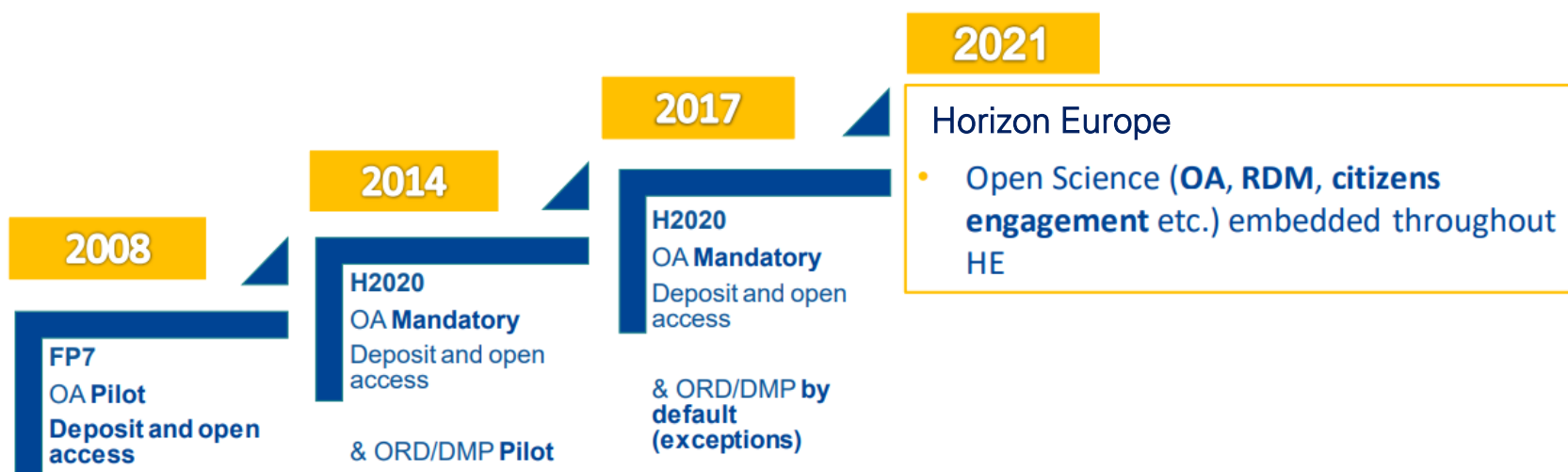
Jan Hendrik Schön (Verden, agosto 1970) è un ex fisico tedesco che salì velocemente alla ribalta dopo una serie di scoperte apparentemente rivoluzionarie che in seguito risultarono essere false.^[1]

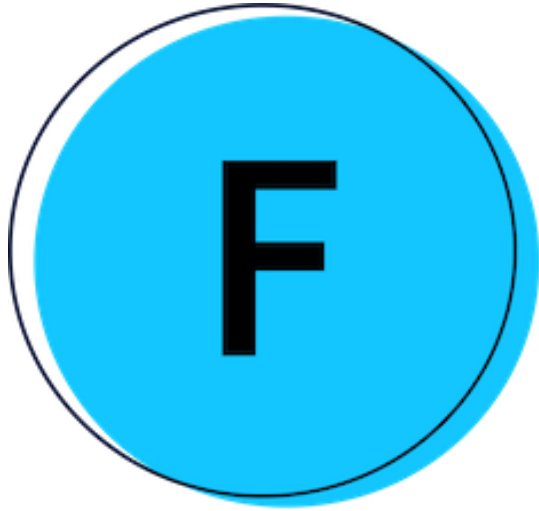
Prima della scoperta delle falsificazioni Schön aveva ricevuto il premio Otto-Klung-Weberbank per la fisica nel 2001, il premio Braunschweig nel 2001 e il premio Outstanding Young Investigator della Materia Research Society nel 2002, premi che in seguito gli furono ritirati.

Lo "scandalo Schön" provocò nella comunità scientifica un dibattito sul grado di responsabilità dei coautori e dei revisori degli articoli scientifici. Il nocciolo del dibattito era se il sistema della *peer review*, tradizionalmente inteso a individuare errori e determinare la rilevanza e l'originalità degli articoli, dovesse anche avere il compito di scoprire frodi intenzionali.

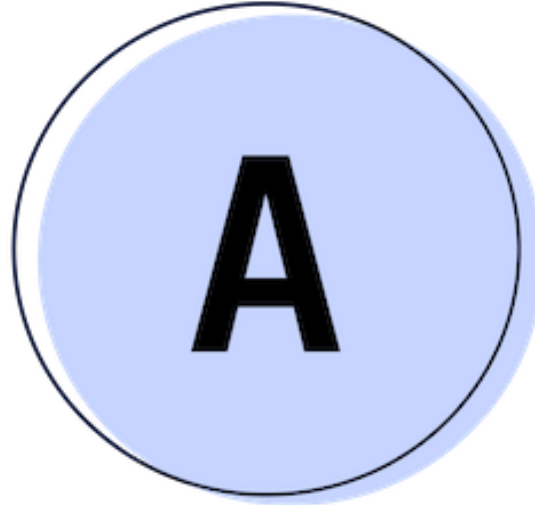


Evolution of open science policy across FPs

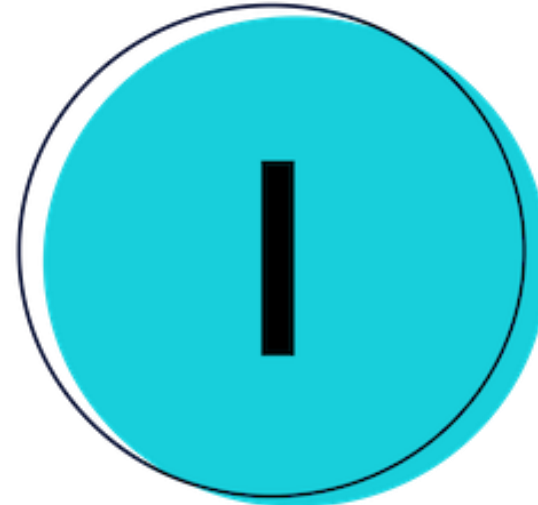
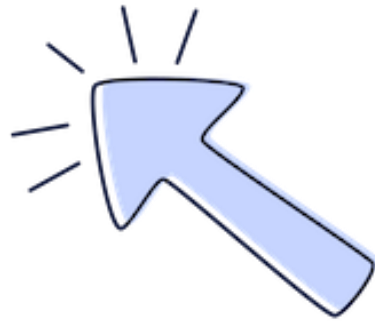




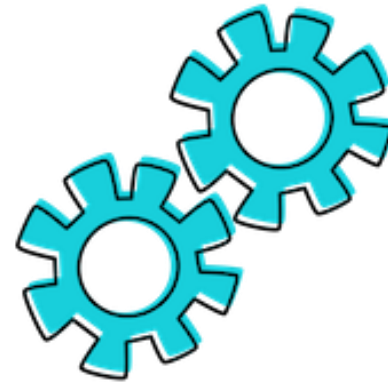
Findable



Accessible



Interoperable



Reusable



FAIR data

Findable

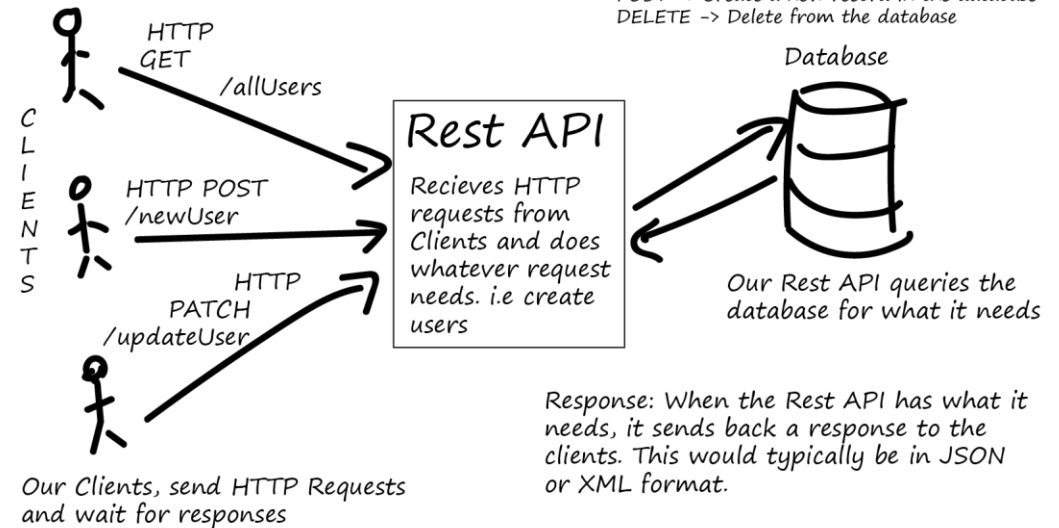
The data must be easily traceable by both humans and machines. This property is ensured through the [use of persistent identifiers](#) and [descriptive metadata](#), which must be recorded in "catalogs" or in repositories that can also be indexed by machines.

FAIR data

Accessible

The data must always be **accessible**, **persistent over time**, and **retrievable** on the web through standard protocols. If making the data "open" is not possible, authentication systems can be used, **provided that at least the metadata is always available**.

Rest API Basics



FAIR data

Interoperable

The data (and metadata) must be **interoperable**, meaning they should be able to be combined with other data and tools. This implies that **their format must be open** (a CSV is, an XLS is not), and the content and descriptive metadata must be represented in a standardized language (using **ontologies and controlled vocabularies**, where possible).



non-machine-
readable



machine-readable but non-
standard & proprietary format











machine-readable in an open,
standard format

FAIR data

Reusable

The data must be reusable, so it should be **clear how both the data and metadata can be reused** (replicated, used in different contexts, for different purposes, etc.). This also means providing the data with **one or more open licenses** that are clear, accessible, and preferably internationally recognized.

LICENSES	TERMS
	 Attribution Others can copy, distribute, display, perform and remix your work if they credit your name as requested by you
	
	
	 Share Alike Others can distribute your work only under a license identical to the one you have chosen for your work
	
	

5 ★ OPEN DATA

BY EXAMPLE

- ✓ It's still simple to publish.

What are the costs & benefits of ★★★ Web data?

As a consumer, you can do all what you can do with ★★ Web data and additionally:

- ✓ You can manipulate the data in any way you like, without the need to own any proprietary software package.

As a publisher ...

- ⚠ You might need converters or plug-ins to export the data from the proprietary format.
- ✓ It's still rather simple to publish.

Principles



1.

Open By Default



2.

**Timely and
Comprehensive**



3.

Accessible and Usable



4.

**Comparable and
Interoperable**



5.

**For Improved Governance
& Citizen Engagement**



6.

**For Inclusive Development
and Innovation**

ADOPT THE ODC PRINCIPLES

martedì 15 agosto 2023

What is a DMP

A **data management plan** or **DMP** is a formal document that outlines how data are to be handled both during a research project, and after the project is completed. The goal of a data management plan is to consider the many aspects of data management, metadata generation, data preservation, and analysis before the project begins; this may lead to data being well-managed in the present, and prepared for preservation in the future. [Wikipedia]

Legend:

DATA MANAGEMENT

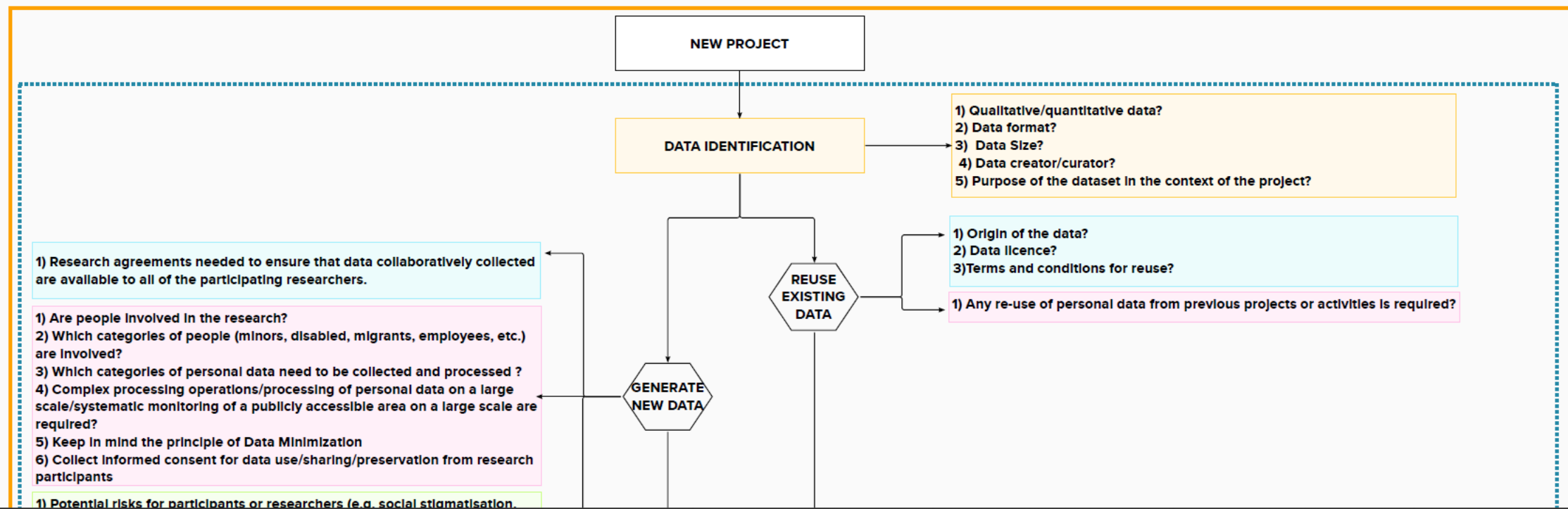
INTELLECTUAL PROPERTY RIGHTS

PRIVACY

ETHICS

DECISION TREE FOR DATA MANAGEMENT

Data management



4 main challenges for scientific communication

L Waltman The rise of preprinting, implication for research intelligence [10.5281/zenodo.7415220](https://doi.org/10.5281/zenodo.7415220)

Lack of openness
(publications,
data, protocols, methods,
code)



Delays and inefficiency



Excessive costs and
inequities



Lack of incentives



Double track

Preprint server



<48 hrs
screening
process

Public



Community feedback, ideas, discussion

Peer reviewed
paper



Months to
years

Private

Submit

Journal 1



Peer Review

Journal 2



Revise

Journal 3



Revise

Manuscript

URL: <https://arxiv.org/>

Platform description: Open access to...e-prints

Launch date: 1991-08

Ownership: Cornell University

For-profit or not-for-profit: Non-profit

Sustainability of the service: External financial support (grants and membership program: libraries, research labs, philanthropy, government funding)

Platform technology, openness of source code: SWORD, open source

Advisory board (and researcher representation): Yes (includes researchers)

Content language(s) accepted: Any language - abstract must be in English

Content types accepted: Research manuscripts only

Permitted submission formats: PDF, LaTeX, HTML

Machine-readable full-text content: Require full-text to be submitted in machine-readable format

Unique identifier type and versioning approach: Platform-specific ID (e.g. arXiv ID), each version receives its own non-DOI citable identifier

Versioning policy: Accepts any new versions

Commitment to FAIR principles: None as yet

Clear statement that content is not peer-reviewed on record page: No

Clear statement that content is not peer-reviewed on general server pages: Yes

Licensing options: Authors are provided with a choice of licenses: CC0, CC BY, CC BY-SA 4.0, CC BY-NC-SA 4.0, non-exclusive license to distribute, any other CC license as specified in manuscript text; with no preference for which license chosen

Required author declarations: Competing interest; all author consent to posting

Optional author declarations: Data, code, or materials availability

Other screening checks:

When screening occurs: Before posting

Screening conducted by: staff + Volunteers + automated

Time from submission to posting: <48h

Processing charges: No fee to author

Reader registration: No reader registration required

How old is peer review?

I had not authorized you to show [our manuscript] to specialists before it is printed. I see no reason to address the—in any case erroneous—comments of your anonymous expert. On the basis of this incident I prefer to publish the paper elsewhere [1936 Einstein to the Physical review]

Peer review as we know it today does not originate with the scientific journal but in the Cold War period and is first internal and then becomes external to journals

Presently, the dominant peer review model for the physical sciences is “**single blind**,” meaning that the referees are kept anonymous but the authors are not—their names are visible to the referees. Many scientists, however, say that this system is susceptible to **unfair bias**—papers may be judged, consciously or subconsciously, based on the pedigree of the authors, on their geographical information, and even on their ethnicity

More recently, peer review seems have faced its own moment of crisis. Critics have argued that **the peer review process is not doing a good job of distinguishing good science from bad**. Several high-profile papers have been published in top journals after having passed through peer review, only to be heavily criticized after publication or retracted amid allegations of fraud.³² Some studies have indicated that women and underrepresented minorities are more likely to receive unfavorable referee reports than their colleagues.³³ Other observers have argued that peer review suppresses innovative research and rewards more familiar, safer projects.³⁴ In 2011, Great Britain's House of Commons commissioned a report on the state of peer review, and concluded that while peer review "is crucial to the reputation and reliability of scientific research," many scientists believe the system stifles progress, is often biased, and that "there is little solid evidence on its efficacy."³⁵ In the 1970s, peer review was recast as the system that rewarded good science and corrected bad science; in the 2010s, scientists are now grappling with the fact that it doesn't seem to do either of those things particularly well. [

Melinda Baldwin, "Peer Review," *Encyclopedia of the History of Science* (January 2020) doi: 10.34758/srde-jw27]

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Melinda Baldwin, "Peer Review," *Encyclopedia of the History of Science* (January 2020) doi: 10.34758/srde-jw27]

Different forms of peer review: open reports and open identities

OPTIONS FOR PEER REVIEW AT PLOS		AUTHOR AGREES TO PUBLISH PEER REVIEW	REVIEWER AGREES TO SIGN PEER REVIEW
Anonymous peer review			
		X	X
Signed peer review			
		X	✓
Anonymous and published peer review			
 		✓	X
Signed and published peer review			
 		✓	✓

The dichotomy of peer-reviewed versus non-peer-reviewed science should also be subject to discussion. With more and more preprints becoming available, and increasing opportunities for **post-publication peer-review**, this dichotomy is increasingly scrutinized. Publications that have not yet been peer-reviewed are sometimes seen as less trustworthy than publications that are peer-reviewed, but this distinction is not absolute. Indeed, **differences in quality between preprints and published works seem to be small**. At the same time, in some domains, preprints with incorrect results may do harm when widely circulated, which needs to be considered. One possibility could be to allow a short embargo period where fellow researchers could provide quick initial reviews before a preprint is made publicly available, along with the reviews.



[Home](#) > [The European Physical Journal Plus](#) > [Article](#)

Retraction Note: A critical assessment of extreme events trends in times of global warming

[Retraction Note](#) | [Open access](#) | [Published: 23 August 2023](#) | **138**, Article number: 743 (2023)



[The European Physical Journal Plus](#)

[Aims and scope](#) →

What is interesting here is that the retraction was not the outcome of a scientific discussion, but something imposed by the publisher.
Something that should never happen

Regenerate response: what about peer review? (and most of all what are we paying for?)

Tracking retractions as a window
into the scientific process

PAGES

[How you can support Retraction Watch](#)

[Meet the Retraction Watch staff](#)

[About Adam Marcus](#)

[About Ivan Oransky](#)

[Our Editorial Independence Policy](#)

[Papers that cite Retraction Watch](#)

[Privacy policy](#)

[Retracted coronavirus \(COVID-19\) papers](#)

Signs of undeclared ChatGPT use in papers mounting

Last week, an environmental journal published a paper on the use of renewable energy in cleaning up contaminated land. To read it, you would have to pay 40 euros. But you still wouldn't know for sure who wrote it.

Ostensibly authored by researchers in China, “Revitalizing our earth: unleashing the power of green energy in soil remediation for a sustainable future” includes the extraneous phrase “Regenerate response” at the end of a methods section. For those unfamiliar, “Regenerate response” is a button in OpenAI’s ChatGPT that prompts the chatbot to rework an unsatisfactory answer.



Guillaume Cabanac

Prepublication peer review: should be abolished?

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Home > The British Journal for the Philosophy of Science > Volume 72, Number 3

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NEXT ARTICLE >

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FREE

Is Peer Review a Good Idea?

Remco Heesen and Liam Kofi Bright



PDF



PDF PLUS



Abstract



Full Text



Full Text



Full Text



Full Text



Search



Share

SECTIONS

Abstract

1. Introduction

2. Setting the Stage

3. Benefits of
Abolishing Peer Review

4. Where Peer Review
Makes No Difference

5. Difficulties for Our

Abstract

Prepublication peer review should be abolished. We consider the effects that such a change will have on the social structure of science, paying particular attention to the changed incentive structure and the likely effects on the behaviour of individual scientists. We evaluate these changes from the perspective of epistemic consequentialism. We find that where the effects of abolishing prepublication peer review can be evaluated with a reasonable level of confidence based on presently available evidence, they are either positive or neutral. We conclude that on present evidence abolishing peer review weakly dominates the status quo.



The British Journal for the
Philosophy of Science
Volume 72, Number 3
September 2021

Society: The British Society for the


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The ORE model

[Home](#) > [Articles](#) > Knowledge sharing and discovery across heterogeneous research ...

SOFTWARE TOOL ARTICLE 

REVISED

Knowledge sharing and discovery across heterogeneous research infrastructures [version 3; peer review: 2 approved, 1 not approved]

Siamak Farshidi , Xiaofeng Liao , Na Li, Doron Goldfarb, Barbara Magagna, Markus Stocker , Keith Jeffery , Peter Thijsse, Christian Pichot , Andreas Petzold , Zhiming Zhao 

This article is included in [Cloud-based Technologies](#) collection



This article is included in [Data Science](#) gateway



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Article

Authors

Metrics

Abstract




Research infrastructures play an increasingly essential role in scientific research. They provide rich data sources for scientists, such as services and software packages, via catalog and virtual research environments. However, such research infrastructures are typically domain-specific and often not connected. Accordingly, researchers and practitioners face

Open Peer Review

Approval Status   



	1	2	3
Version 3 (Revision) 06 Jun 23			 view
Version 2 (Revision) 22 Nov 21	 view		  view
Version 1 14 Jun 21	  view	 view	


1. **Robert Huber** , Swiss Federal Institutes of Technology Zurich ETHZ, Zürich, Switzerland
2. **Rebecca Koskela** , University of New Mexico, Albuquerque, NM, USA; Ronin Institute, Montclair, NJ, USA
3. **Giacomo Marzi** , University of Trieste, Trieste, Italy

Comments on this article

[All Comments](#) (1)

The PCI model

PCI
Peer Community in

[Home](#) [Current PCIs](#) [PCI Manifesto](#) [Partners & Supporters](#) [PCI and journals](#) [FAQs](#) [About](#) [PCI Webinar Series](#) [News](#) 

2000 RECOMMENDERS

17 PCIs

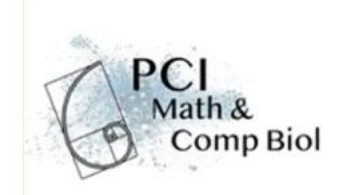
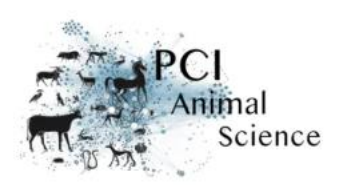
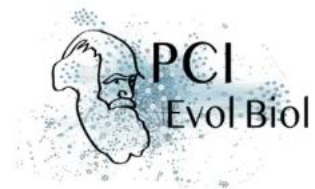
100 PCI FRIENDLY JOURNALS

PEER COMMUNITY JOURNAL

PCI MANIFESTO

150 SUPPORTING
ORGANISATIONS

+ FEEDBACK





PCI-recommended
article



Final, citable
article hosted
by preprint
server

Author's
choice to
submit to



Peer Community Journal
Direct publication in diamond open access

OR



PCI-friendly journals

- accept with no further peer review

OR

- fast response (≤ 5 days) to presubmission enquiry

OR

- use of PCI evaluation if appropriate

OR



Other journals


.....
If not satisfied by
the decision

.....
If not satisfied by
the decision





The open registries network

 Search registrations...

[See an example](#)

Browse Registrations [See more](#)

Promoting School Belongingness and Academic Performance: A Multisite Effectiveness Trial of a Scalable Student Mindset Intervention

Geoffrey Borman , Arnold Ventures Evidence-Based Policy Team

Pragmatic adaptation: testing whether inference judgments are susceptible to bias over the course of an experiment


Stephen Politzer-Ahles , Edward Matthew Husband

2016, Deutchman, The Role of Framing Effects, the Dark Triad, and Empathy in Predicting Behavior in a One-shot Prisoner's Dilemma

Paul Michael Deutchman , Jess Sullivan

Local predictors of variation in plant phenology

Some questions to be answered



Your community is historically open access oriented. Is it also open science oriented?



What about FAIR data?



What about Research data management?



What about Open peer review?



What about preregistration?
