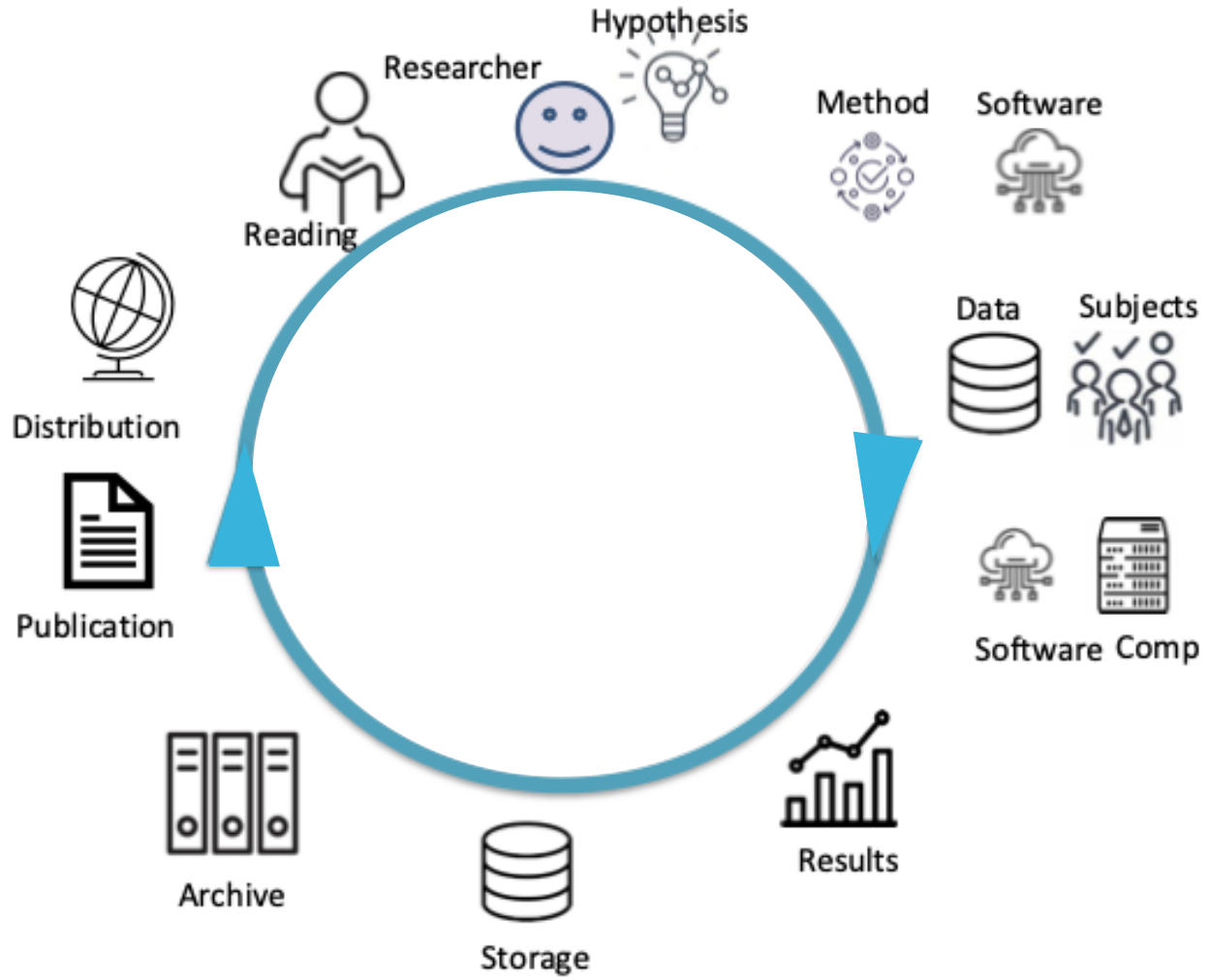
Publications' Process and Ethics Challenges and Guidelines

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Materials from a Gene Spafford essay and from the CLEAR taskforce draft report

The science cycle



Elaboration of an image from Y. Ioannidis, Open Science: A New Paradigm for the Research Lifecycle, presented at ECSS 2025
https://www.informatics-europe.org/images/ECSS/ECSS2025/slides/ECSS25-Ioannidis.pdf

Professional publishing: brief history

- 1665: Henry Oldenburg, the first secretary of the English Royal Society, founded Philosophical Transactions, goals
  - Define a citable and archivable record for each claim
  - Expose the claims to expert scrutiny
  - Disseminate knowledge to others
- After the second world war
  - The notion that all papers published in a serious journal must be reviewed by independent specialists
  - The growth of publication volume and the increase of the number of journals
- 1964: Eugene Garfield created Science Citation Index from where the impact factor was defined
- Decades later: Jorge Hirsch defined the h-index for individual ranking

Why we publish and we review?

- We add verifiable claims to a cumulative scientific record
  - What is in the record will be used in the future for further research
  - What is not in the record remains invisible
- By publishing we establish priority and credits
- By peer reviewing before publishing, we introduce a quality gate for the cumulative scientific record
- The quality of the cumulative scientific record is fundamental for
  - Educating the next generation of researchers
  - Informing practitioners, regulators and the society in general

Why the quality of the cumulative scientific record is essential

- **Correctness**: cases of fabricated results published in various disciplines required years for retracting follow up publications and results
- **Safety**: when used in other disciplines an incorrect approach can cause critical injury
- **Trust**: the cost of erroneous/fabricated results is not only for the author but for the whole reference academic community
- **Fair allocation of resources**: a scientific record distorted by non-ethical behavior may result in an unfair allocation
- **Pedagogy**: a corrupted literature teaches corrupted content and normalizes corrupted practice

Informatics-specific aspects of the publication process

- Fast evolution of the field
- Very significant increase in the size of the community
- Acceleration in the research progress
- High emphasis on conference publications
- Effects
  - Dramatic increase in the number of submitted and accepted papers
  - Increased pressure to publish on each researcher
  - Limited time for peer reviewing
  - Evaluation of researchers reduced from reading to counting

The CLEAR task-force

- CLEAR: Community-Led Ethics for Accountability in Research https://clear-computing.org/
- Goals
  - Map the landscape of violations
  - Identify the root causes of the explosion of violations
  - Devise mechanisms to increate our ability to detect violations
  - Explore solutions to address the problem

The CLEAR taxonomy of violations

- Establish a shared vocabulary for integrity problems
- Four categories
  - Research record and submission integrity
  - Review and editorial process integrity
  - Venue, events and proceedings integrity
  - Reporting, investigation and eligibility process integrity

Research record and submission integrity

1.1 Unattributed or unauthorized use of others' work

1.2 Undisclosed or unauthorized self-reuse of prior work

1.3 Prohibited concurrent or evasive submission

1.4 Fabrication, falsification, or materially misleading reporting

1.5 Research ethics or safety noncompliance

1.6 Reference and citation misrepresentation

1.7 Authorship and contributor misrepresentation

1.8 Prohibited or undisclosed automated-tool/AI use in authoring

Review and editorial process integrity

2.1 Review process manipulation

2.2 Confidentiality and identity-protection breach

2.3 COI misrepresentation or mismanagement in evaluation

2.4 Editorial authority misuse

2.5 Review-content integrity and reviewer-role misrepresentation

2.6 Publication-related coercion, intimidation, or retaliation

2.7 Prohibited automated-tool/AI use in review or editorial handling

Venue, events and proceedings integrity

3.1 Venue, special issue, or organizer identity and sponsorship misrepresentation

3.2 Publication service and authorship market fraud

3.3 Event participation and proceedings condition misrepresentation

Reporting, investigation and eligibility process integrity

4.1 Investigation obstruction or manipulation

4.2 Identity falsification

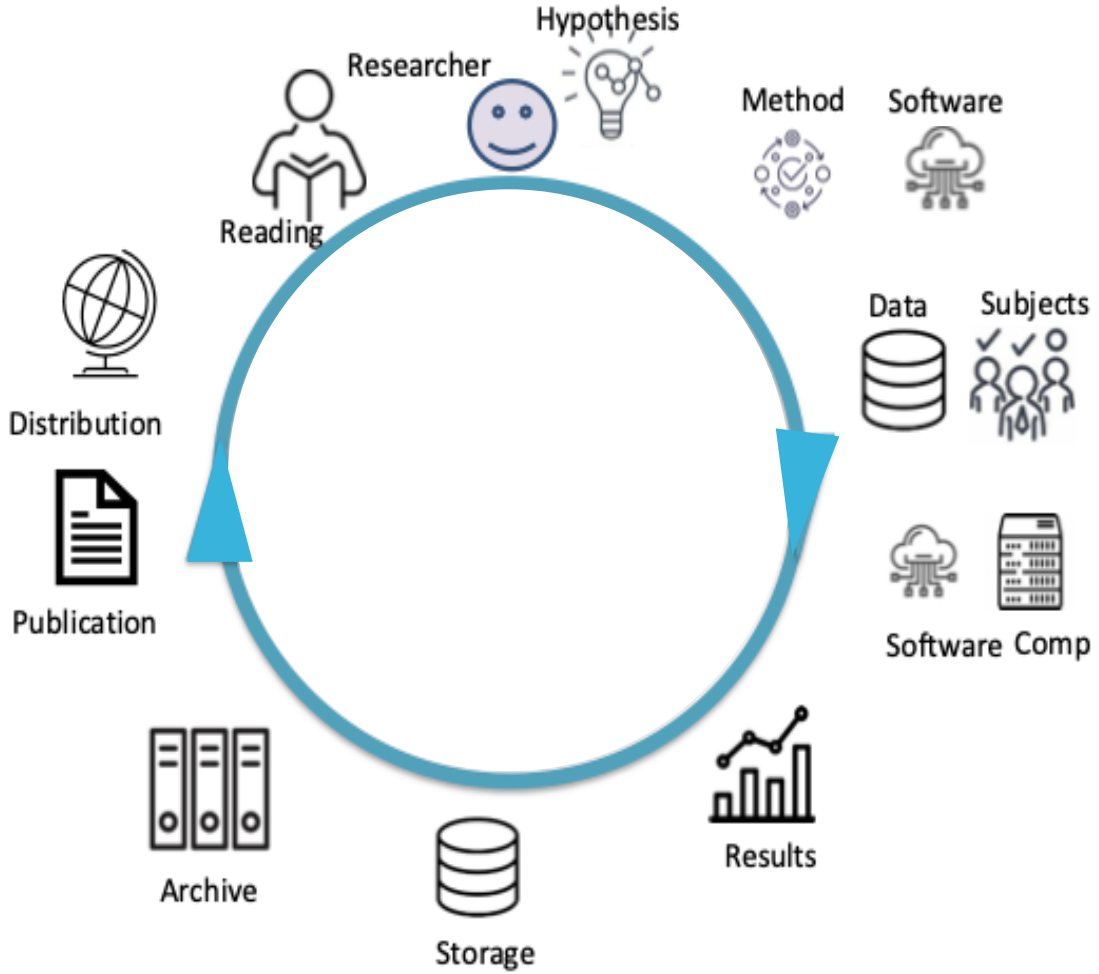
4.3 Eligibility verification evasion

Identified motivations for violations

- Prestige and its connection to funds

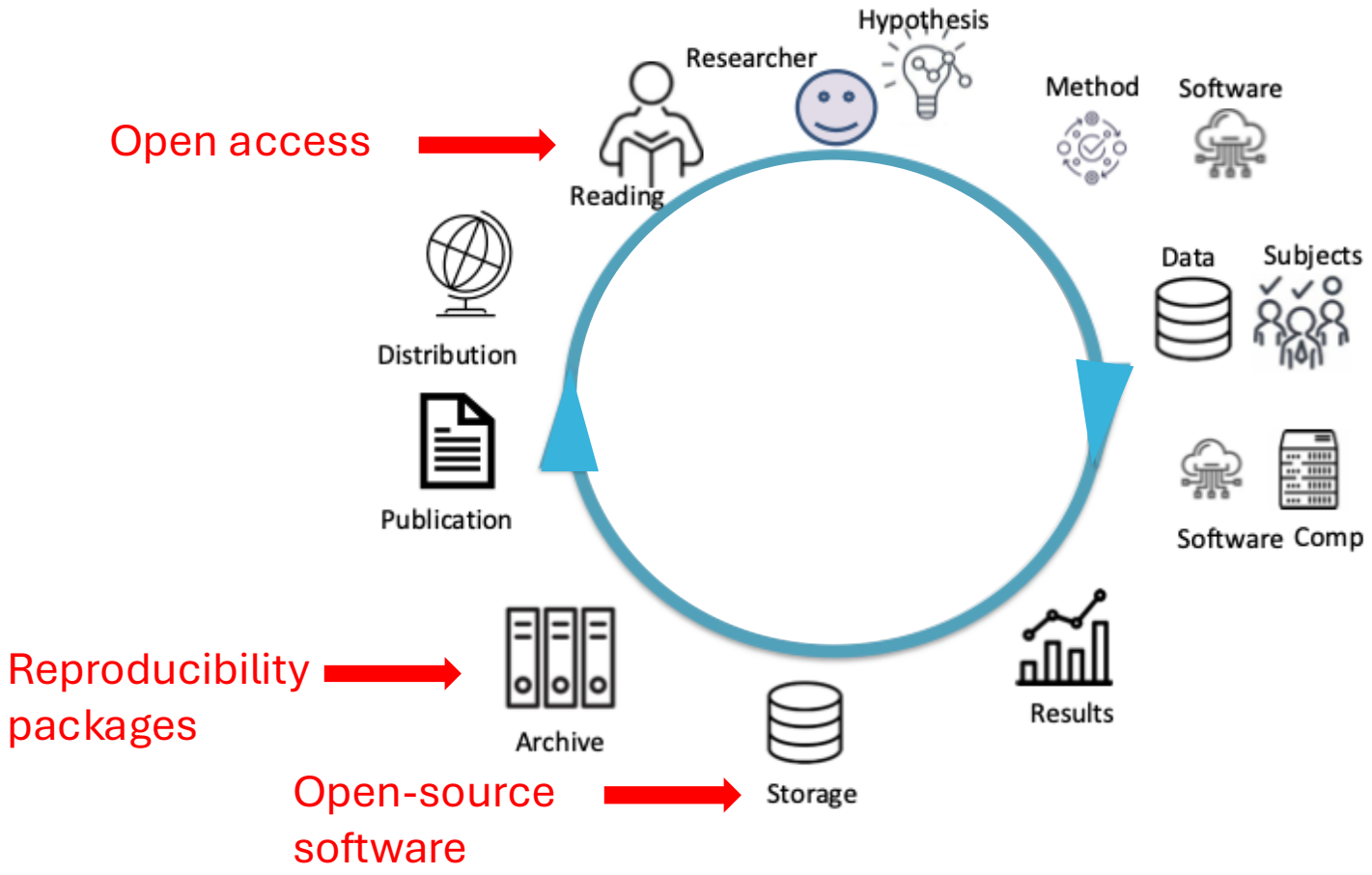
Incentive	Intended effect	Actual effect
Higher number of publications increases prestige and reputation	Increase research productivity; provide a means of evaluation	Self-reinforcing trap
Higher number of citations increases prestige and reputation	Increase the production of research that has impact	Citation counts become a target rather than a signal of influence
Receiving external funding provides prestige and resources	Ensure that research is funded, promote growth, and generate overhead	Oversell positive results, and downplay negative results
The number of graduated PhD students and their placement leads to prestige	Identify the institutions and individuals who contribute to sustaining the field	Lower admission standards and lower standards for the quality of work produced
Direct payments or salary increases directly tied to publication counts	Stimulate research productivity and international visibility	Large increases in submissions without matching gains in accepted work
Greater likelihood of acceptance and prestige for being first to publish novel work	Keep research in step with rapid changes in technology	Pressure to publish early, quickly, and as preprints in order to be first in a new area
Serve the field as peer reviewers as this is expected by the home institution	Reviewing brings researchers into a community of practice and demonstrates membership to others	Overloaded reviewers accept and delegate reviews

Other issues: archives and the cumulative scientific record



Can a paper on Axiv or Zenodo replace a scientific publication?

Other issues: openness in the science cycle



- Who pays for the open access?

Open access

- Free access to scientific information and unrestricted use of electronic data for everyone [UNESCO]
- A publication is considered in Open access if [Berlin declaration]:
  - its content is universally and freely accessible;
  - the author or copyright owner irrevocably grants to all users;
  - it is deposited, immediately, in full and in a suitable electronic form, in at least one widely and internationally recognized open access repository committed to open access.

Types of open access



- Green = authors make papers available on an open archive
- No cost for the authors nor for the readers
- The readers are not guaranteed of the paper quality
- If the paper is published in a traditional venue, the authors must pay attention not to infringe copyrights

Types of open access



- Gold = the publisher makes papers available to the readers adopting an open license
- Authors pay for the cost of publication
- Readers are guaranteed that the papers are peer reviewed
- The publisher provides the information needed for proper citations of the paper

Types of open access



- Diamond = as gold but authors do not pay
- The cost of publication is on public entities, scientific societies, other donors

Conclusion

- We must be aware of our community rules…
  - … work for achieving our goals…
  - … without distorting the intended objectives of the incentives defined by the community
- At the same time, we should …
  - … keep asking ourselves whether the rules and habits in the community shouldn’t be corrected…
  - … conceive and propose a new vision