

Open Science: A New Paradigm for the Research Lifecycle

Yannis Ioannidis



University of Athens



ACM President

Athena Research Center

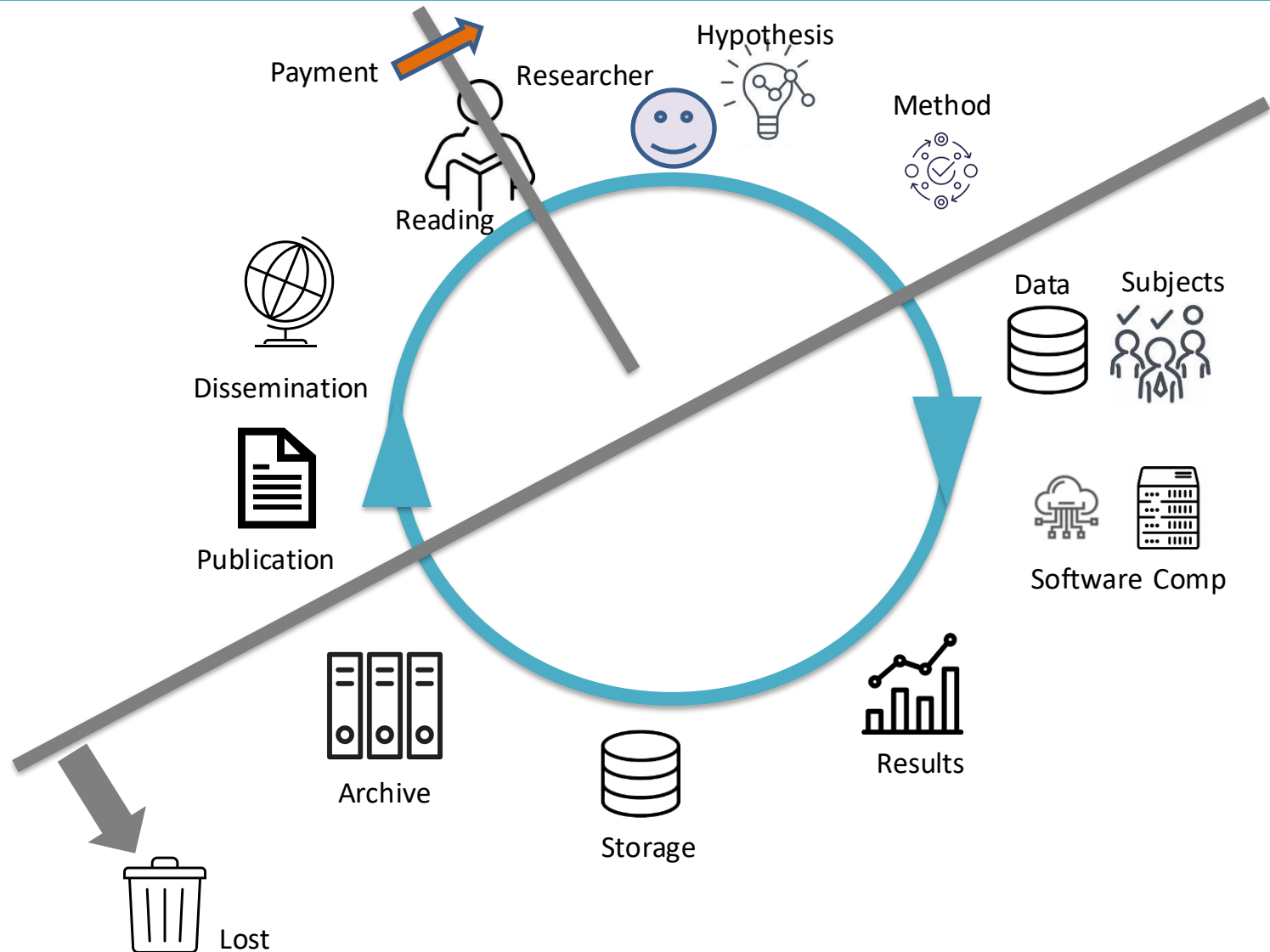


Outline

- Open Science Definition
- Why Open Science
- How Open Science
 - Open Research Evaluation
 - ACM Open
- What Open Science
 - EOSC / OpenAIRE / ...

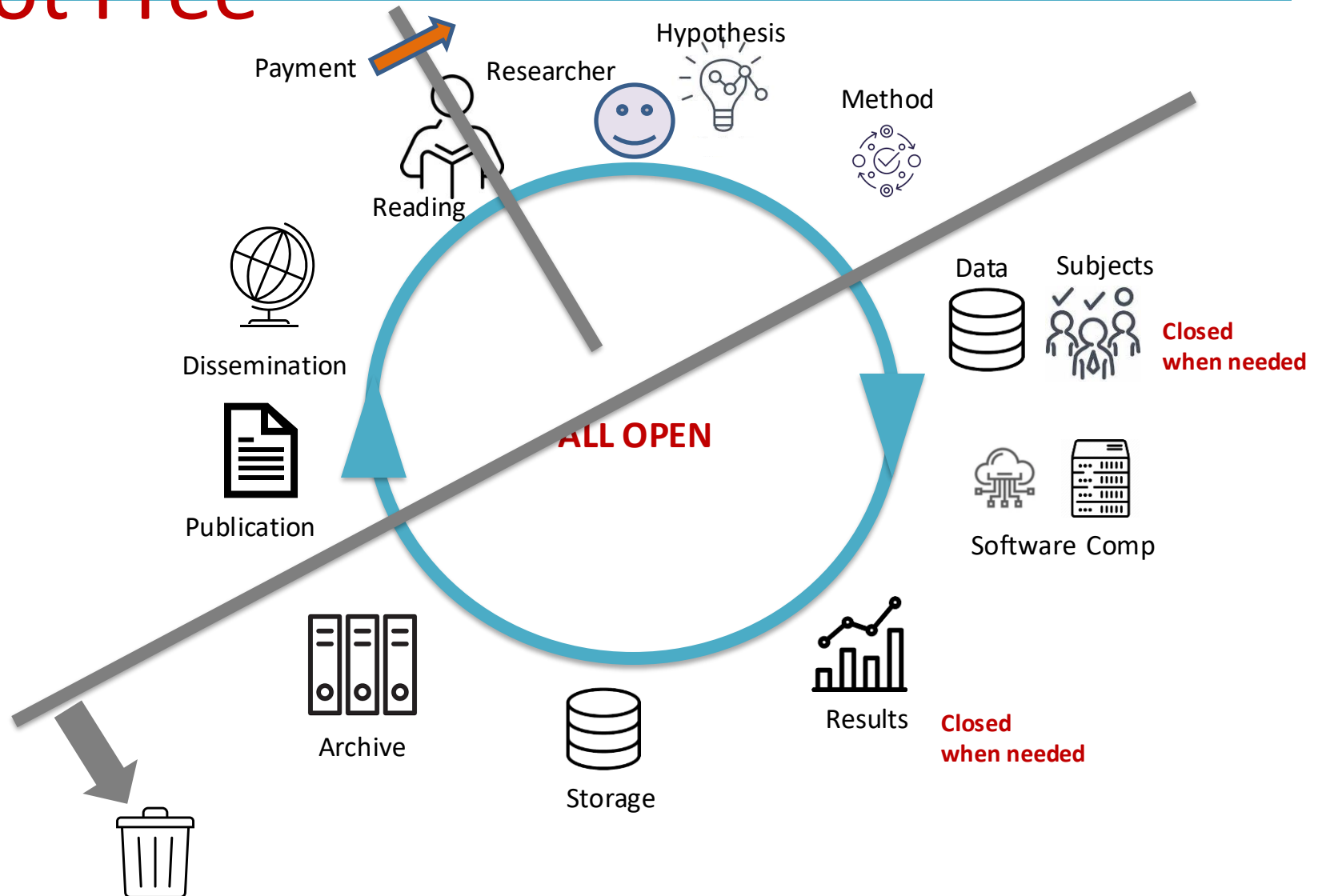
OPEN SCIENCE

Research Lifecycle

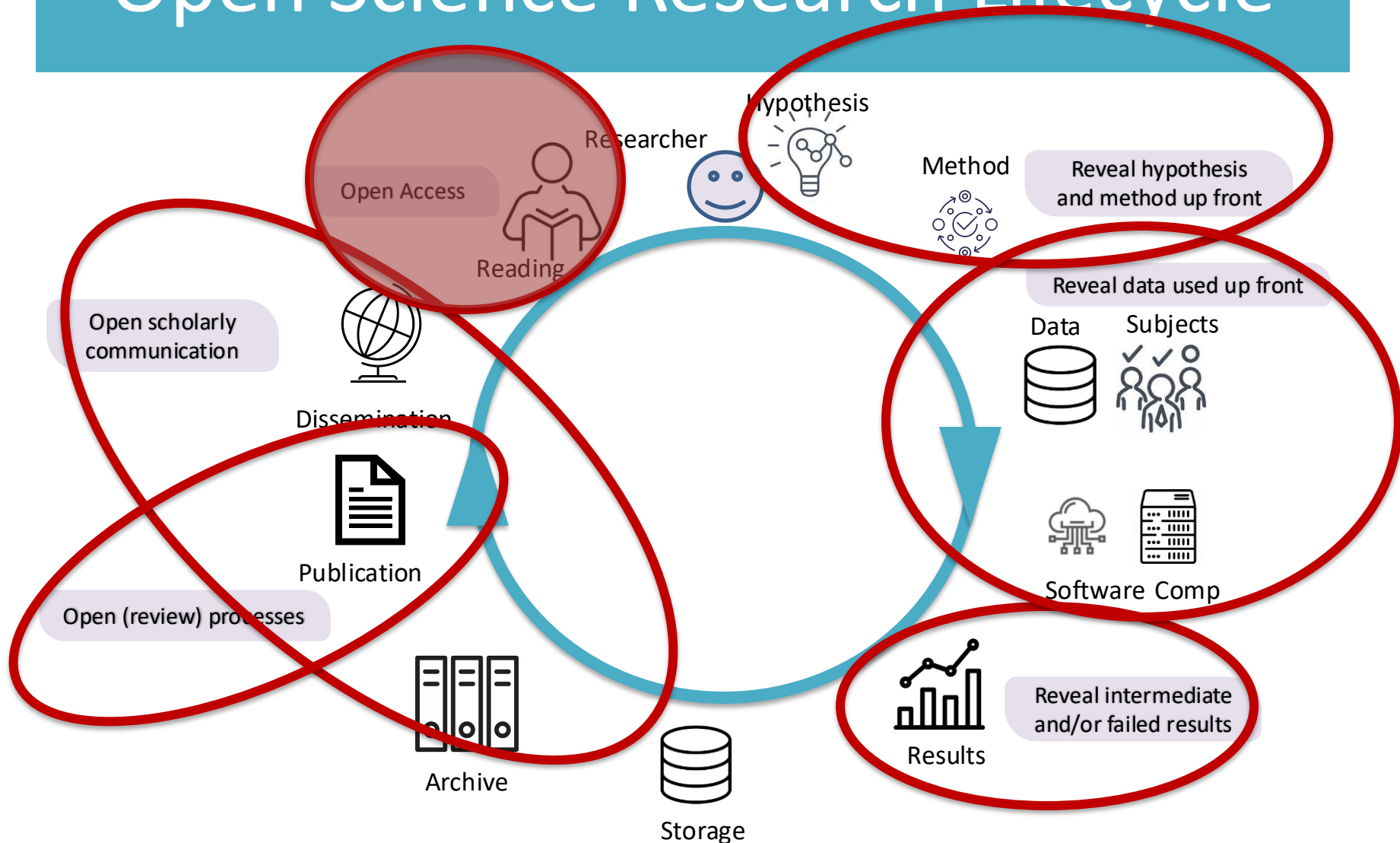


Open Science Research Lifecycle

Not Free

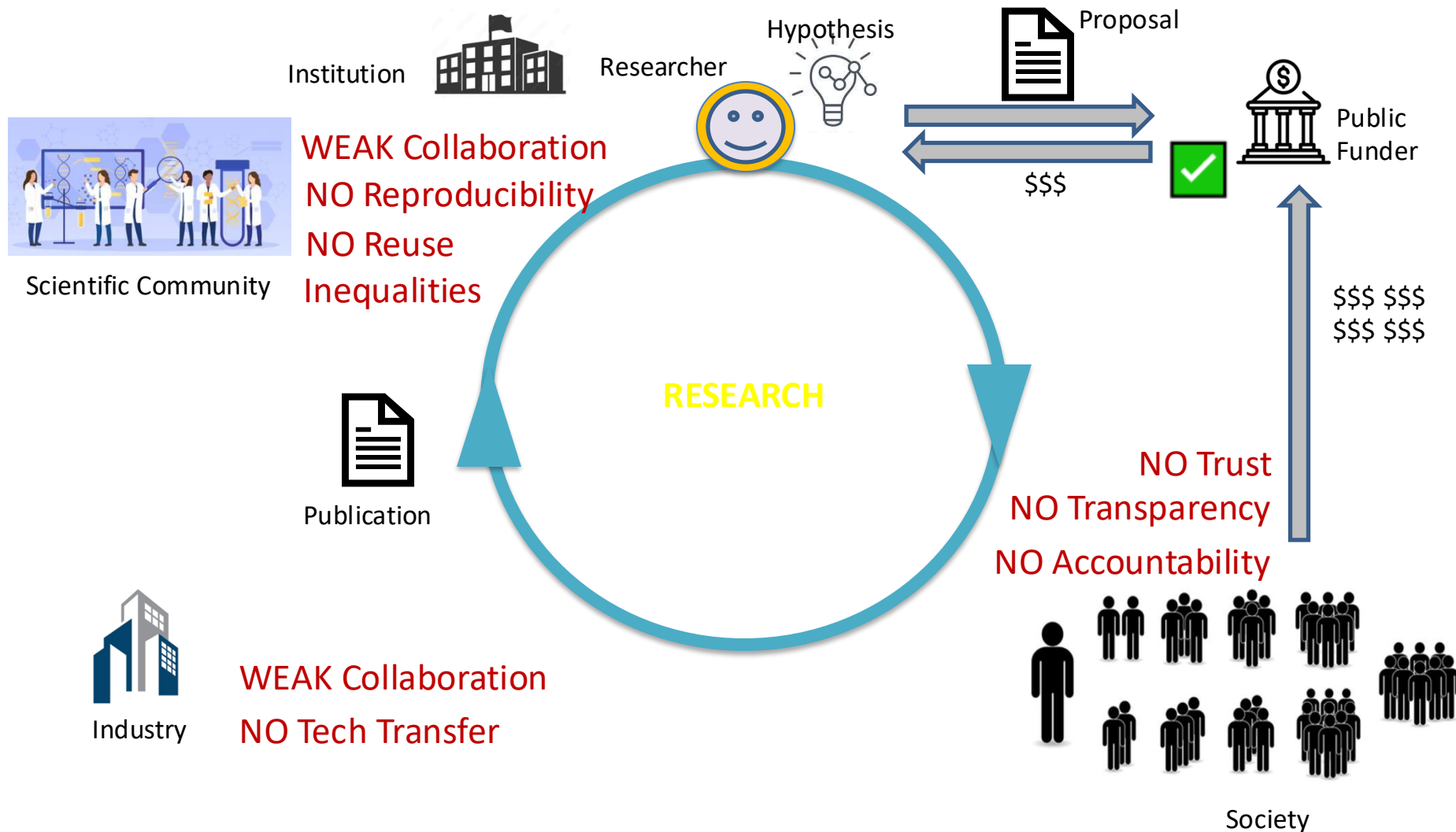


Open Science Research Lifecycle



WHY OPEN SCIENCE

External Research Environment



No Reproducibility

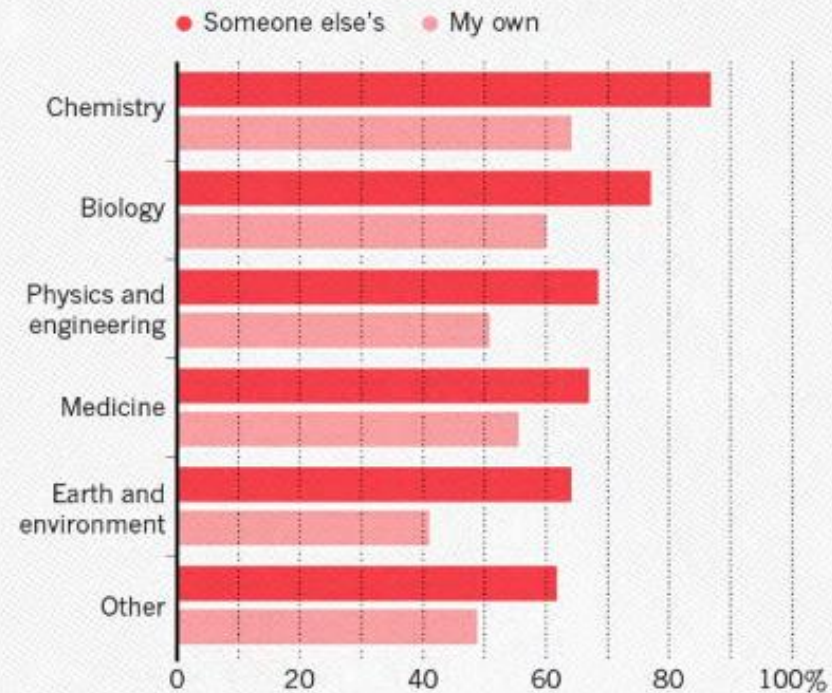
IS THERE A REPRODUCIBILITY CRISIS?



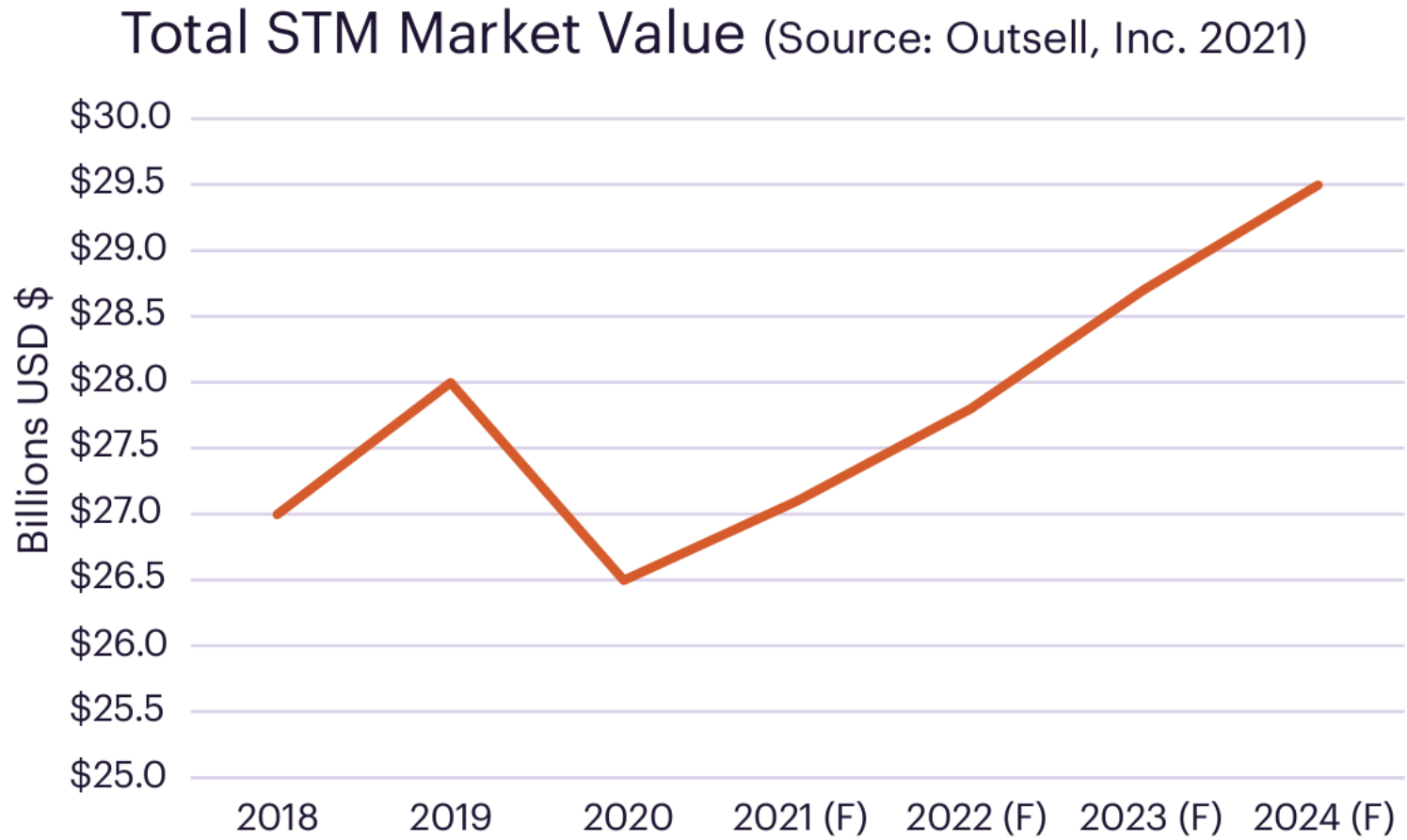
©nature

HAVE YOU FAILED TO REPRODUCE AN EXPERIMENT?

Most scientists have experienced failure to reproduce results.



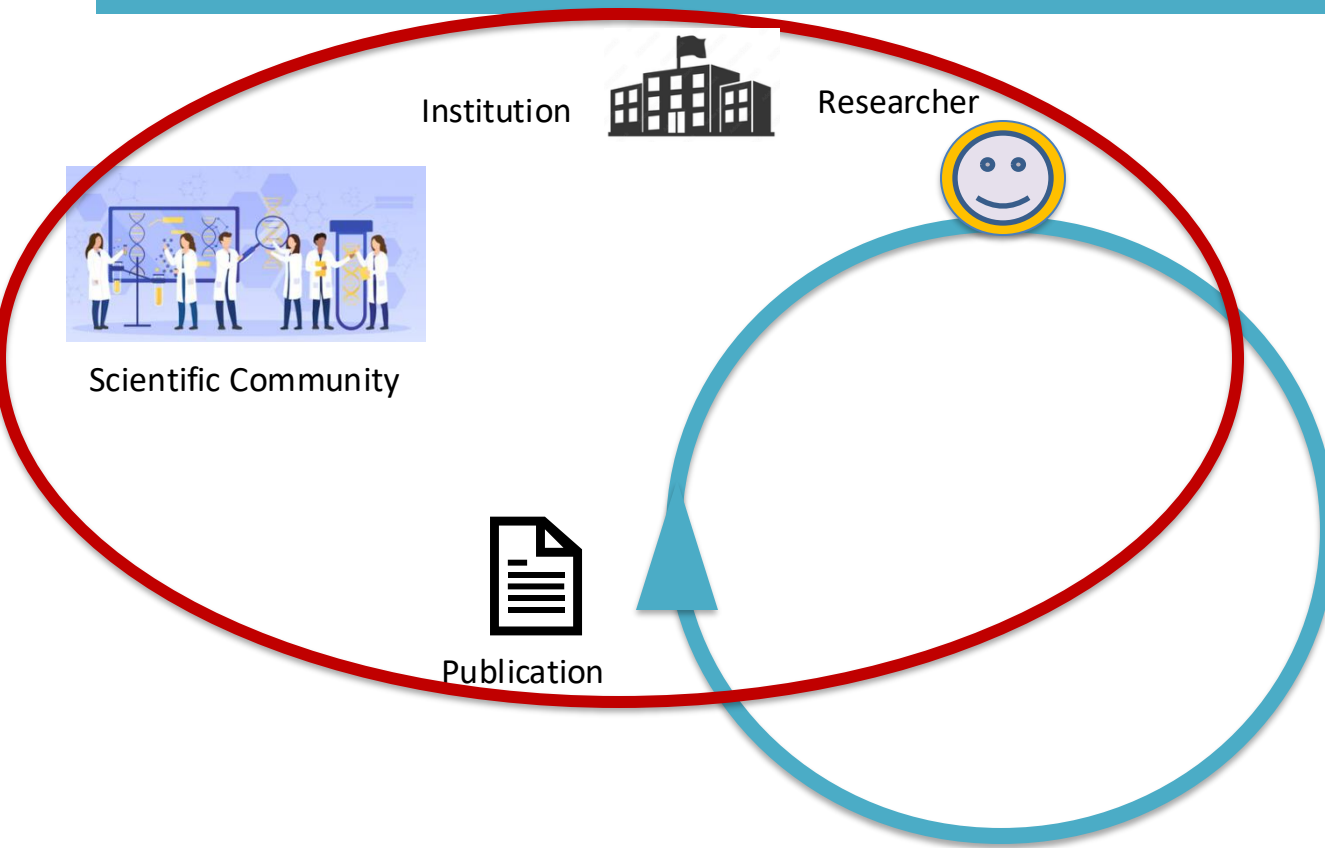
Big Business → Inequalities



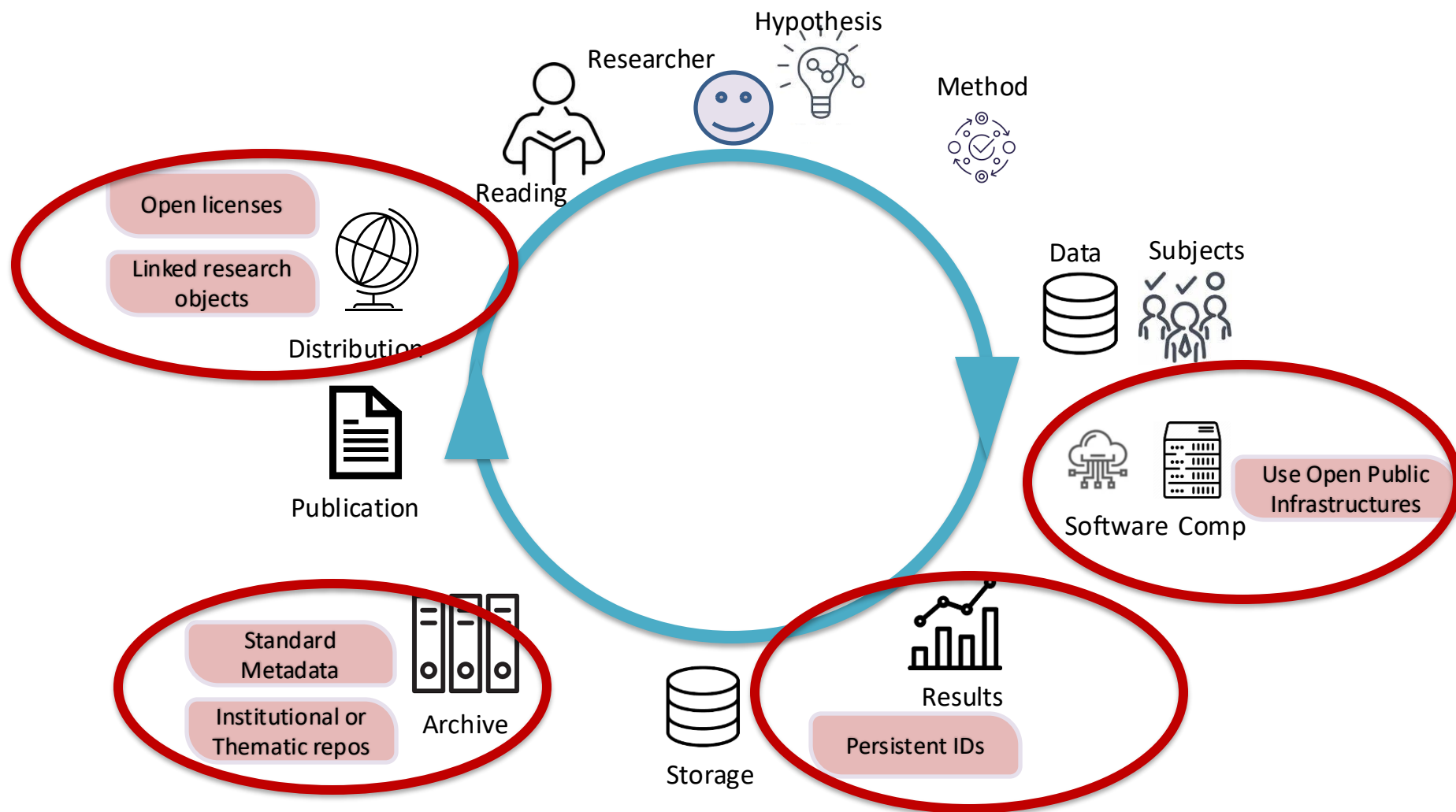
HOW OPEN SCIENCE

OPEN RESEARCH EVALUATION

Research(er) Evaluation



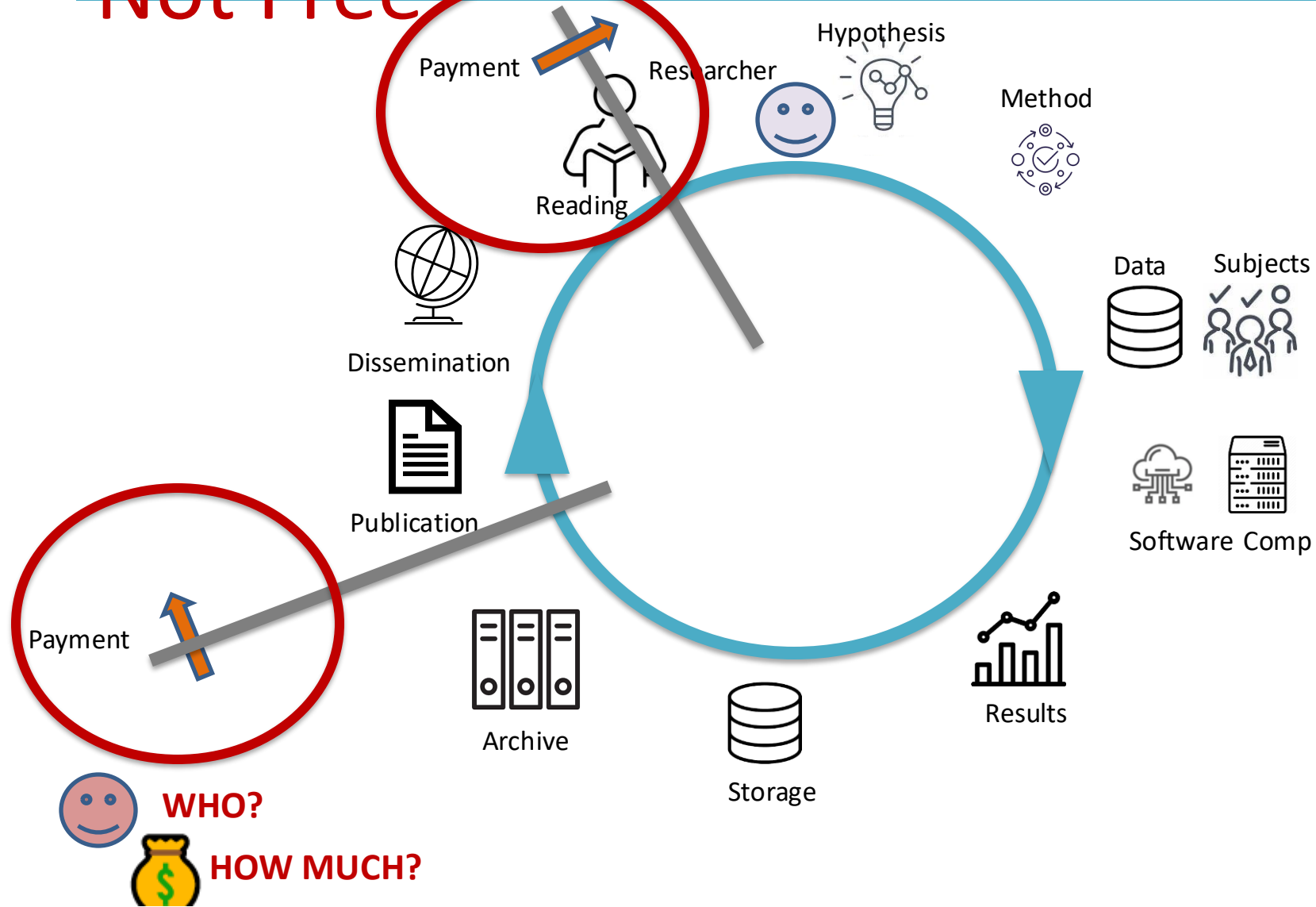
Research(er) Evaluation



OPEN ACCESS

Open Access

Not Free



ACM OPEN

Open Access

ACM Council Decisions

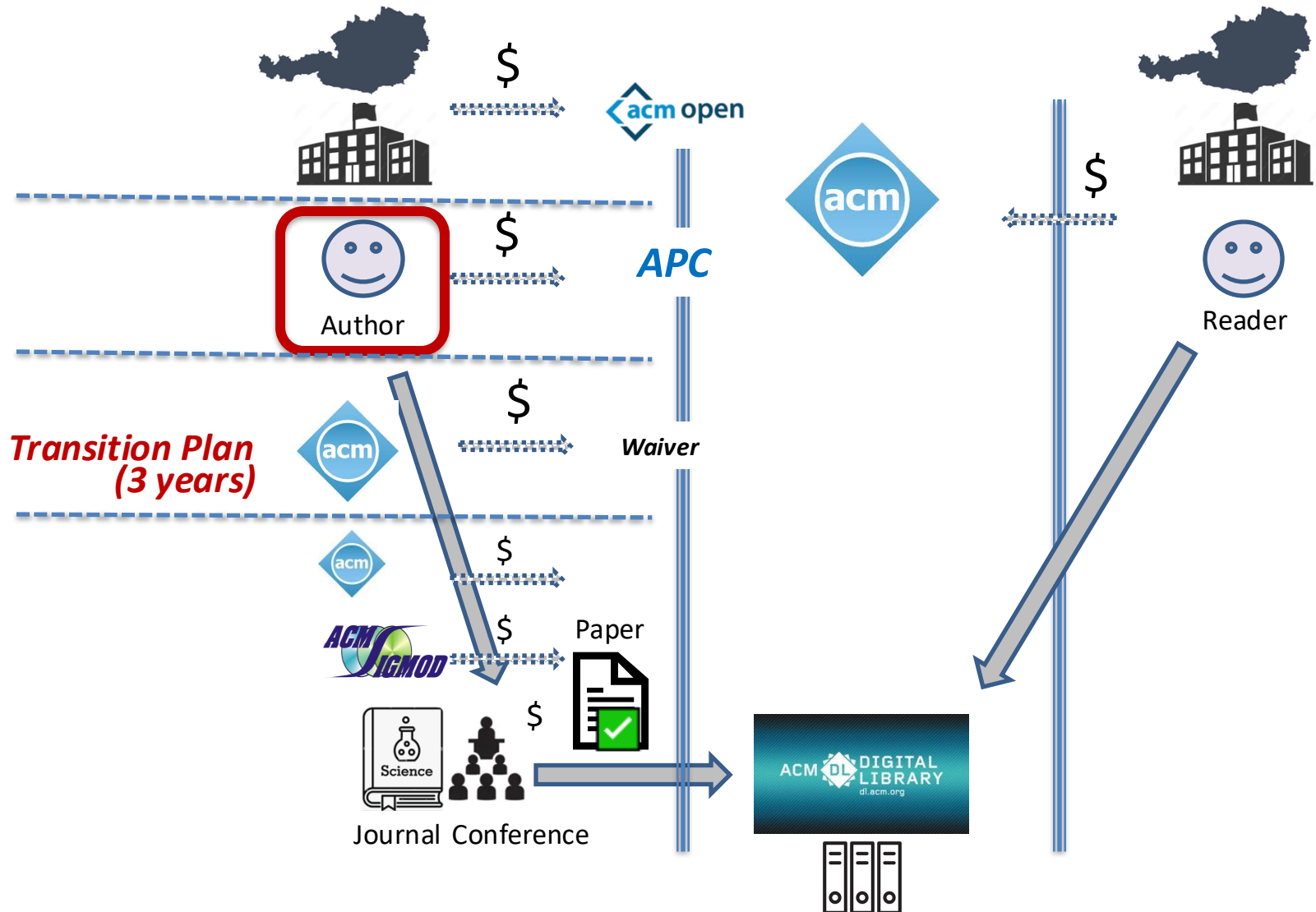
19 June 2020

5 Nov 2024, 28 March 2025, 13 June 2025

9 October 2025

All ACM publications
and related research artifacts
in the ACM DL
will be fully **openly** available
after **1 January 2026**

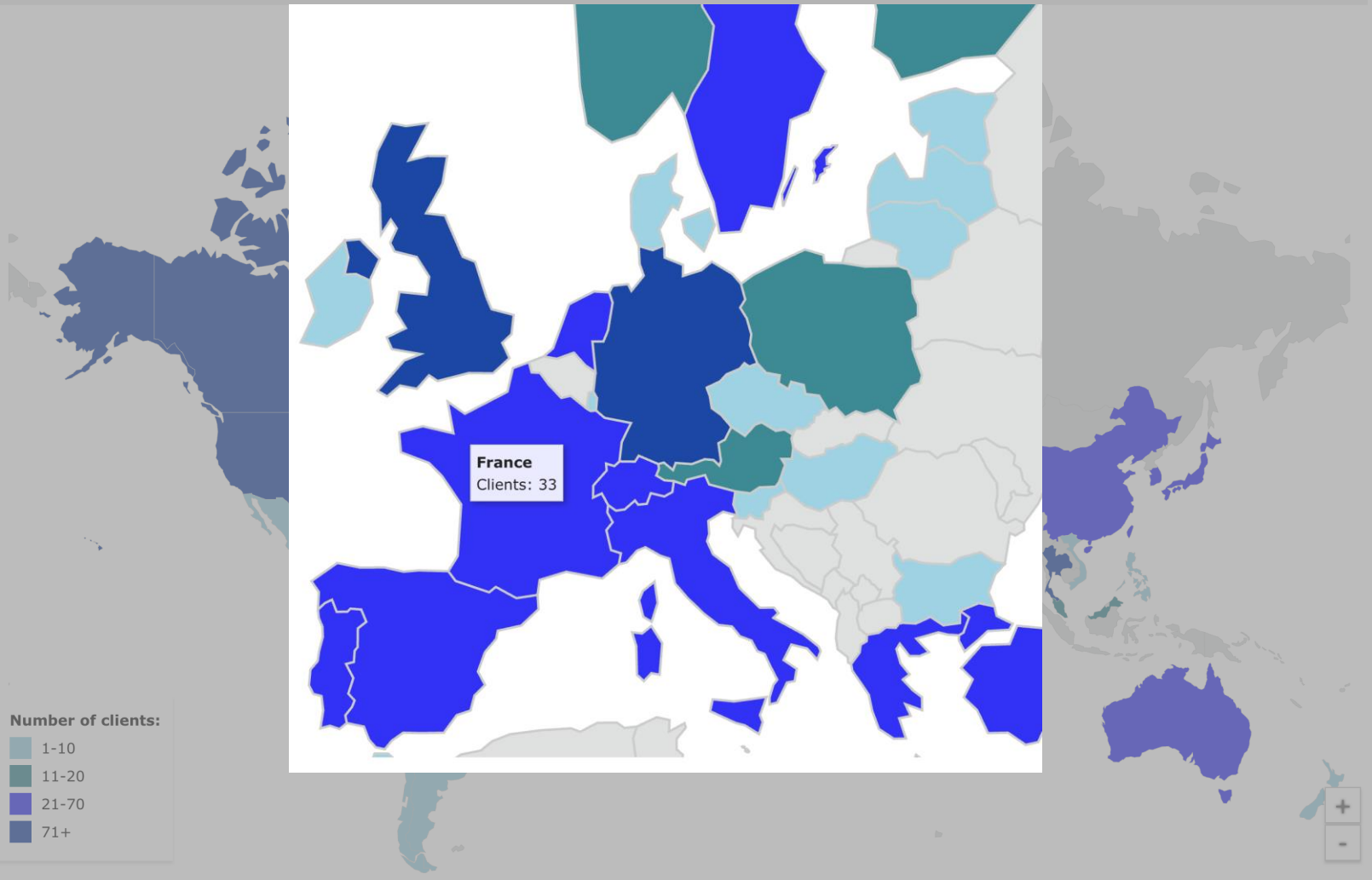
ACM Open



ACM Open: Flip Status Today

ACM Open Global Participation

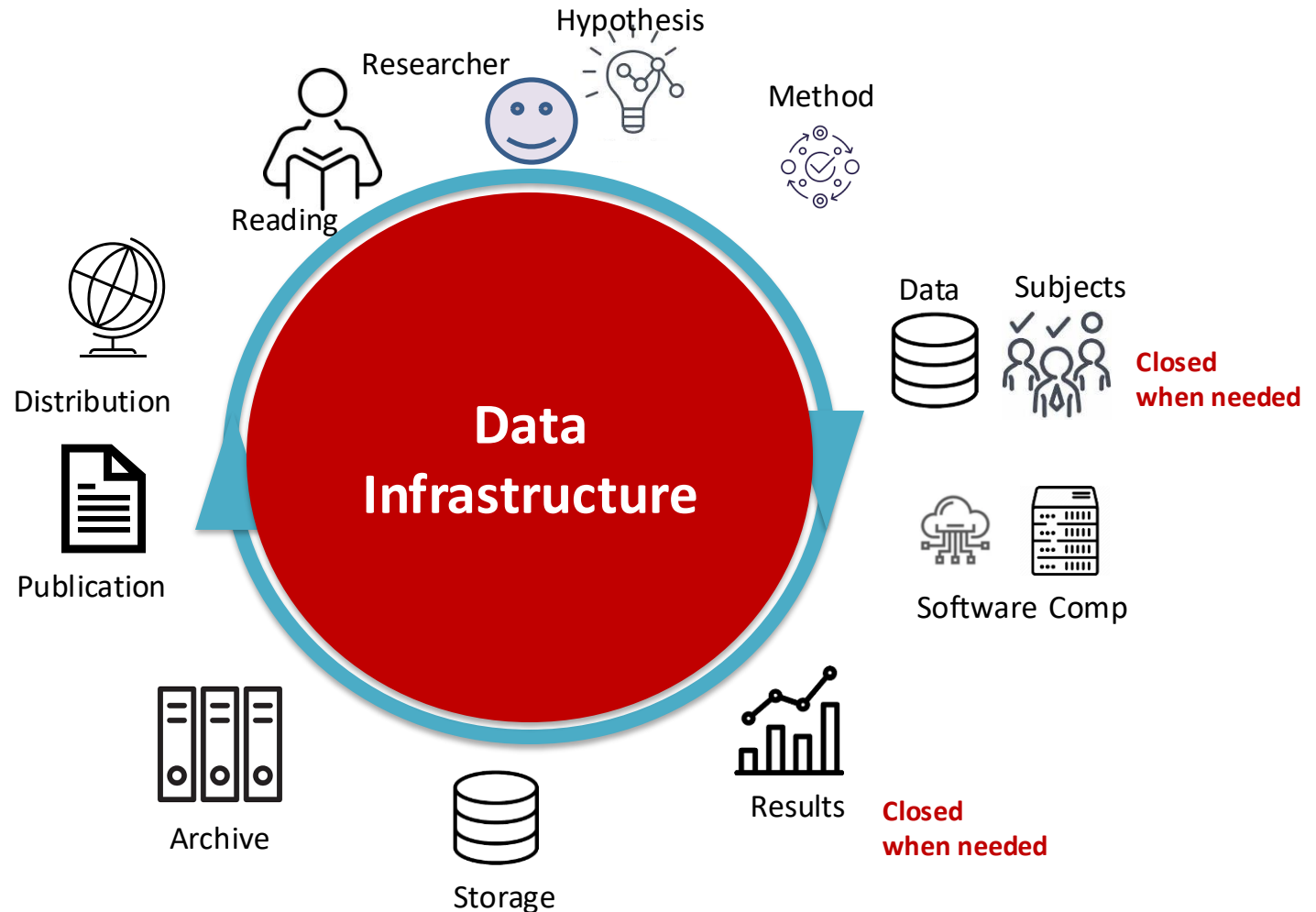
Total Number of Participants: 2,784



WHAT OPEN SCIENCE

OPEN SCIENCE INFRASTRUCTURES

Open Science Data Infrastructure



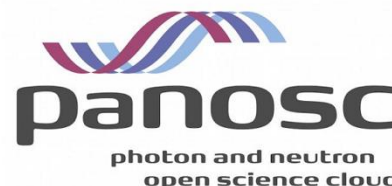
European Open Science Cloud (EOSC)

<https://eosc.eu/>

<https://open-science-cloud.ec.europa.eu/>

Open and FAIR Data (FAIR = Findable, Accessible, Interoperable, Reusable)

(Clusters of) Thematic Research Infrastructures



Generic eInfrastructures



OpenAIRE Graph Dataflow

<https://www.openaire.eu/>



Software Citation

Software is a critical part of modern research...



... yet there is little support for its acknowledgement and citation

OpenAIRE Graph Data Sources



... and more tools and software sources



... and more publishers



... and more European and international funders



... and more research graphs



... and more registries



Red de repositorios de acceso abierto a la ciencia



... and more aggregators



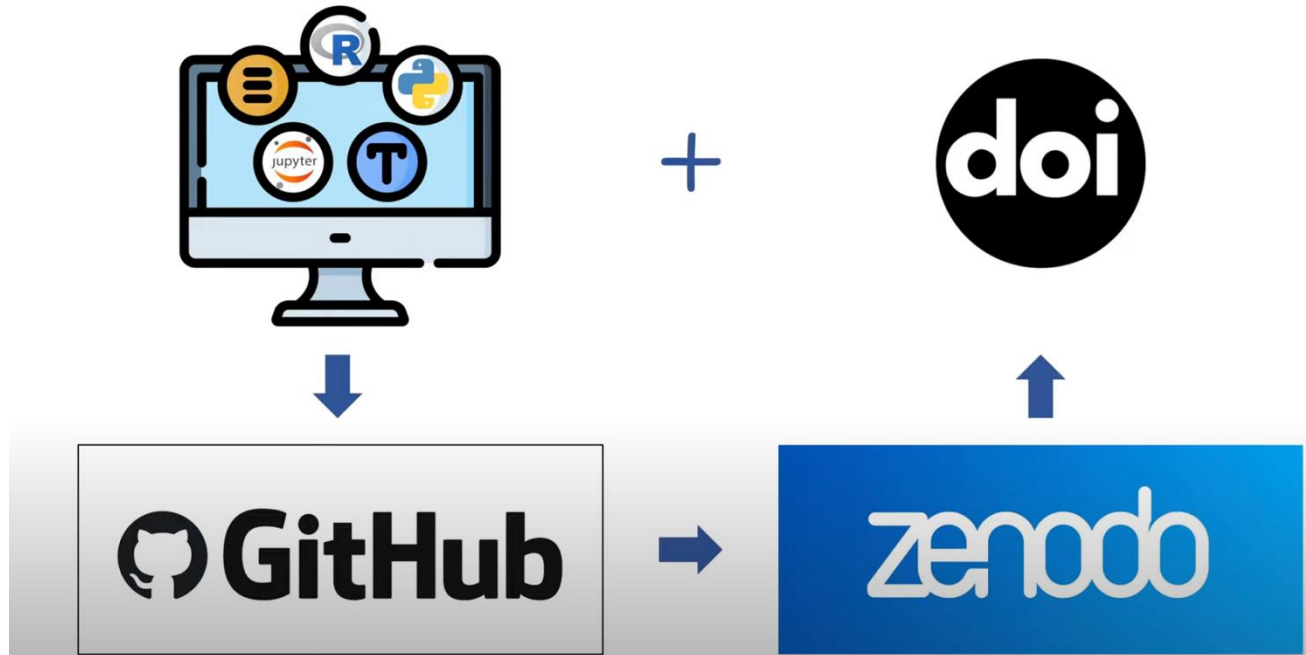
... and more thematic and institutional repositories



... and more infra and RI sources

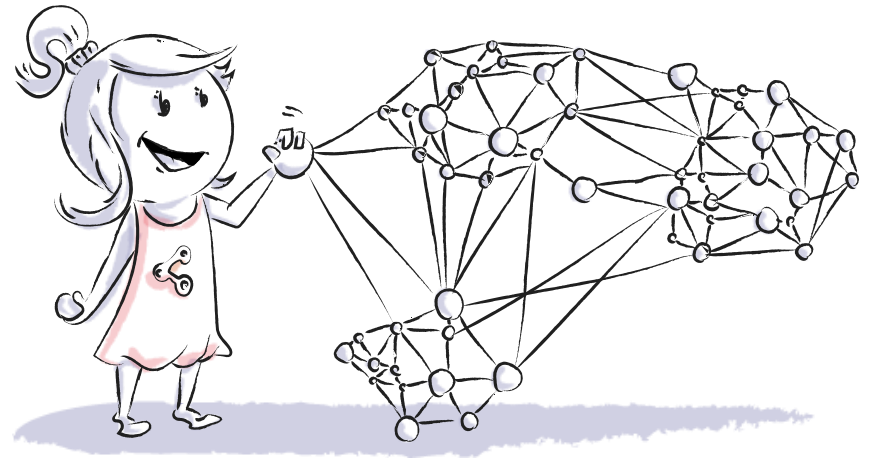
Software Citation

<https://github.com/force11/force11-sciwg>
<https://support.datacite.org/docs/software-citation>
<https://www.softwareheritage.org/>

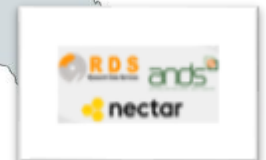


OpenAIRE in Numbers

203 funders
141K data sources
3.5M grants
196M publications
+80M pdfs
734K software
78M research datasets
28M other research products
6.5B semantic links



OpenAIRE International Outreach



CONCLUSIONS

OPEN SCIENCE





The End

Yannis Ioannidis
yannisi@acm.org

