

National policy on open research data & methods

National policy and executive plan by the
higher education and research community for 2021–2025

Open Science Coordination in Finland,
Federation of Finnish Learned Societies



**Open
Science**

Background

Extensive national and international work, e.g.

- UNESCO recommendation on open science (2021)
- CERN open science policy
- EU's Open Science Policy (2019)
- Minimum conditions supporting research reproducibility
- Open Science and its Role in Universities: A Roadmap for Cultural Change (2018); the Association of European Research Universities
- Turning FAIR into Reality: Final report and action plan from the European Commission expert group on FAIR data (2018),
- Six Recommendations for Implementation of FAIR Practice (2020)
- EU regulation on the openness of data, e.g. the Open Data Directive.

Finnish operators actively participate in European and international work, e.g.

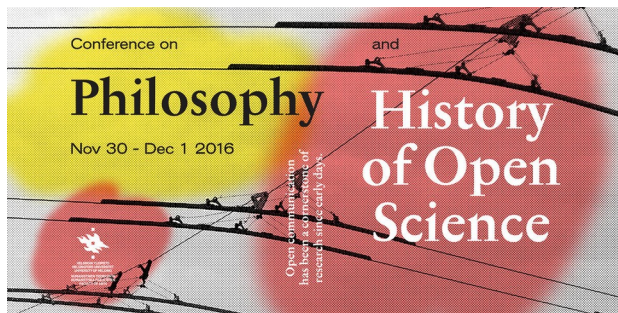
- European Open Science Cloud (EOSC)
- Research Data Alliance (RDA)
- International Science Council Committee on Data (CODATA)
- European research infrastructure work
- Finnish research community participates actively in dialogue where it can support the openness of research and contribute to the establishment of practical solutions in national and international cooperation.

“I have begun to think that no one ought to publish biometric results, without lodging a well arranged and well bound manuscript copy of all his data, in some place whereit should be accessible, under reasonable restrictions, to those who desire to verify his work.”

Francis Galton (1901), *Biometrika* 1:1, pp. 7-10.

What marks out modern science is not the conduct of experiments (alchemists conducted plenty of experiments), but the formation of a *critical community capable of assessing discoveries and replicating results.*

The Invention of Science: A New History of the Scientific Revolution, by David Wootton



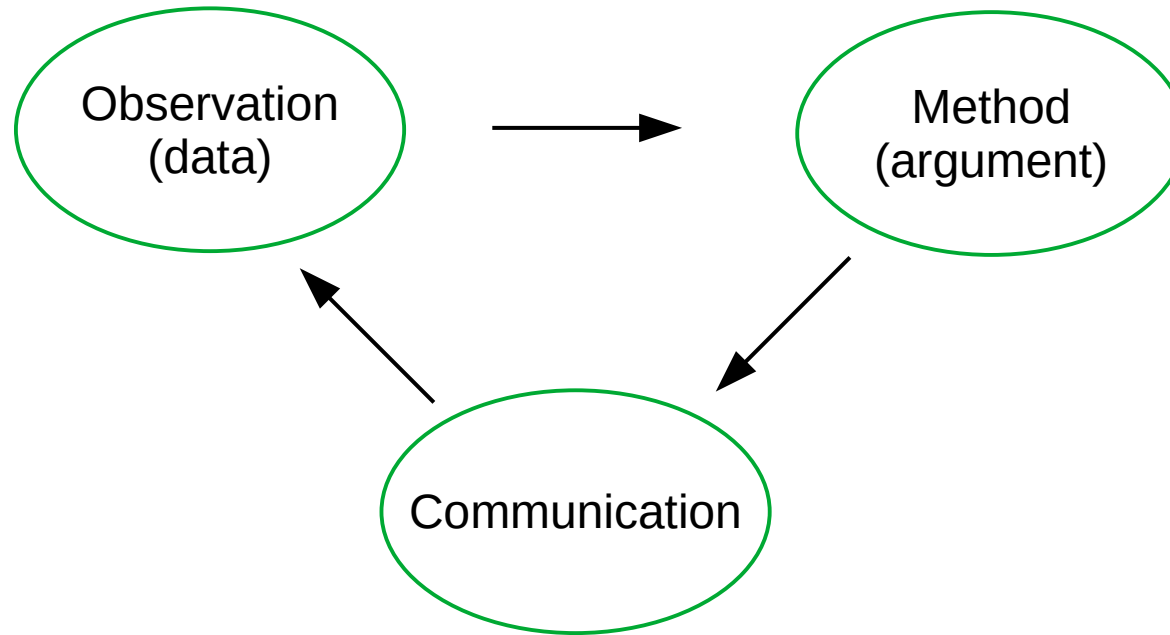
Alchemy & algorithms: perspectives on the philosophy and history of open science

▼ Leo Lahti, Filipe da Silva, Markus Petteri Laine, Viivi Lähteenoja, Mikko Tolonen



A family of alchemists at work, an engraving by Philip Galle, after a painting by Pieter Bruegel the Elder, published by Hieronymus Cock, c.1558.

Research process & life cycle



*“as open as possible,
as closed as necessary”*

National policy work for open science and research

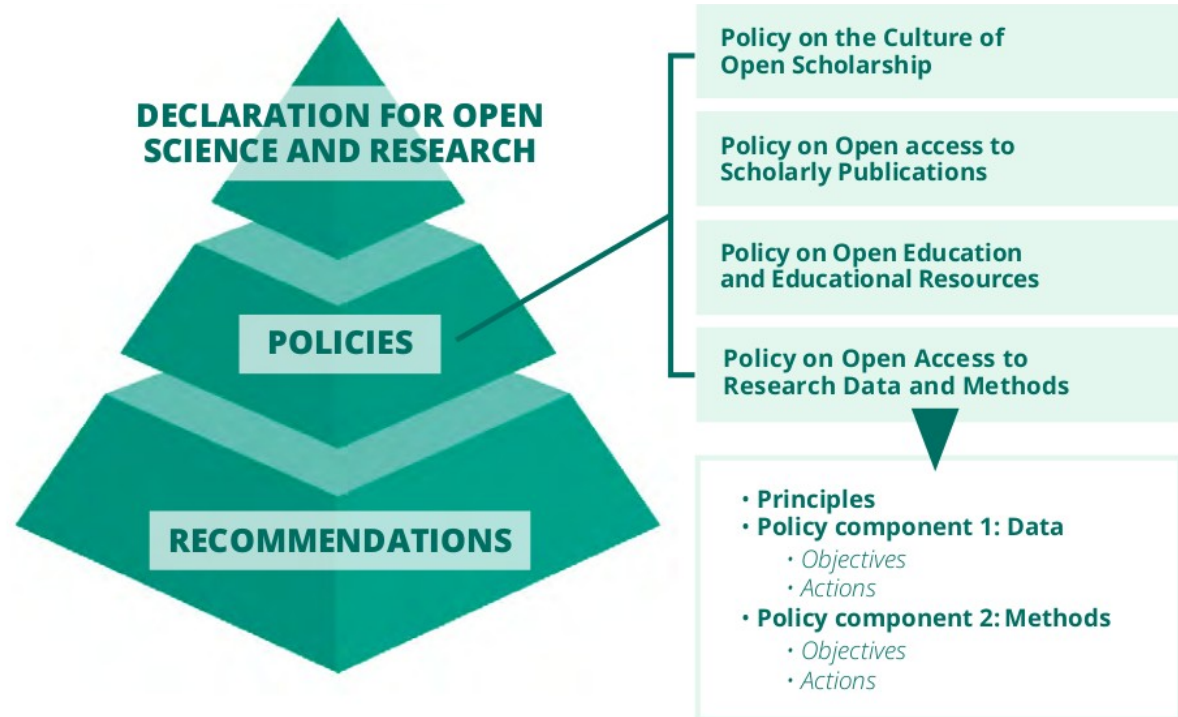
Strategic principles in national policy work

- Responsible openness
- Access to sustainable infra & services
- Researcher merit & careers

Implementation

- Entire Finnish research community
- Support: policies, guidelines, services, resources
- Coordination monitors implementation & development

Guiding principle:
*“as open as possible
as closed as necessary”*





RESPONSIBLE RESEARCH SERIES 4:2023

OPEN RESEARCH DATA AND METHODS. NATIONAL POLICY AND EXECUTIVE PLAN BY THE HIGHER EDUCATION AND RESEARCH COMMUNITY FOR 2021–2025.
Policy components 1 (Open access to research data) and 2 (Open access to research methods and infrastructures)

Responsible research series 4:2023

5th volume

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- Drawn up by the Finnish research community / work groups 2019-2023 (30+ members from various organizations)
- Builds on national and international work and dialogue; public commenting round
- Coordinated by National Coordination for Open Science and Research (Federation of Finnish Learned Societies)
- Covers all fields of higher education and research
- Broader societal implications

Why open?

Element of *research quality and impact* across the *full life cycle* of research, and opportunity to advance global inclusivity in research

Quality

- transparency
- verifiability
- trustworthiness
- integrity
- credibility
- reproducibility
- translatability into new uses

Impact

- accessibility & broad dissemination
- reuse
- speed
- efficiency
- emergence of new innovations
- establishing priority
- receive timely feedback
- community

→ *freedom* of research & *responsibility* of the researcher

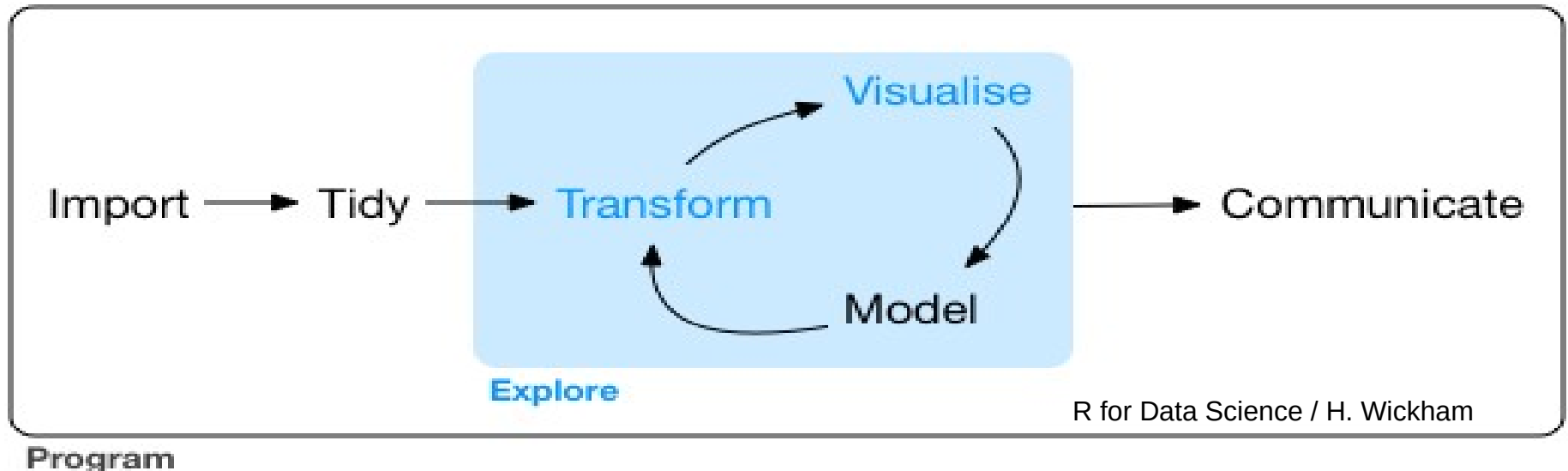
The influence of hidden researcher decisions in applied microeconomics

Nick Huntington-Klein ✉, Andreu Arenas, Emily Beam, Marco Bertoni, Jeffrey R. Bloem, Pralhad Burli, Naibin Chen, Paul Grieco, Godwin Ekpe, Todd Pugatch, Martin Saavedra, Yaniv Stopnitzky

First published: 22 March 2021

<https://doi.org/10.1111/ecin.12992>

Researchers make hundreds of decisions about data collection, preparation, and analysis in their research. We use a many-analysts approach to measure the extent and impact of these decisions. Two published causal empirical results are replicated by seven replicators each. We find large differences in data preparation and analysis decisions, many of which would not likely be reported in a publication. No two replicators reported the same sample size. Statistical significance varied across replications, and for one of the studies the effect's sign varied as well. The standard deviation of estimates across replications was 3–4 times the mean reported standard error.



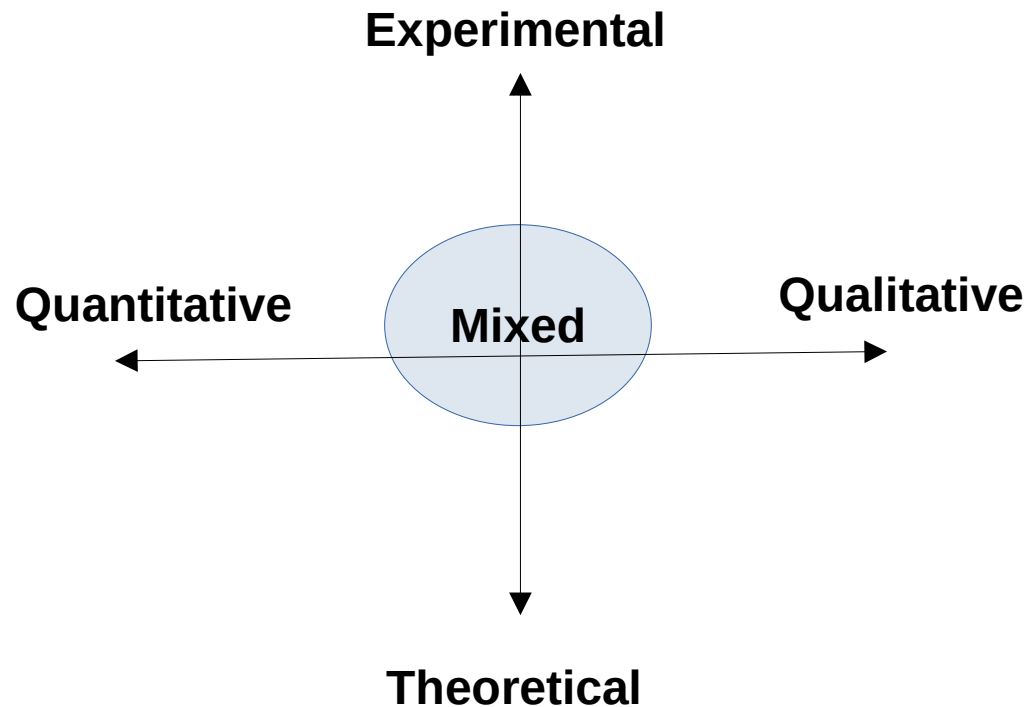
Why not open?

Bottlenecks:

- cultural
- technical
- financial
- continuous, iterative processual nature of methods development and application

What do we mean by *research method*?

“Organized and documented approach, for managing research resources and carrying out research in order to obtain research results.” (Finnish science vocabulary)



Description, protocol
Reasoning, argumentation
Qualitative model
Quantitative model
Quantitative test
Research diary or notebook
Questionnaire
Algorithm, script, workflow
Software

Infrastructures (virtual, physical) have an enabling role

Open data / method / infrastructure?

Research process, maturity & life cycle

- Full workflow vs. individual methods
- Early & broad openness
- Limitations explicitly justified

Degree & type of openness

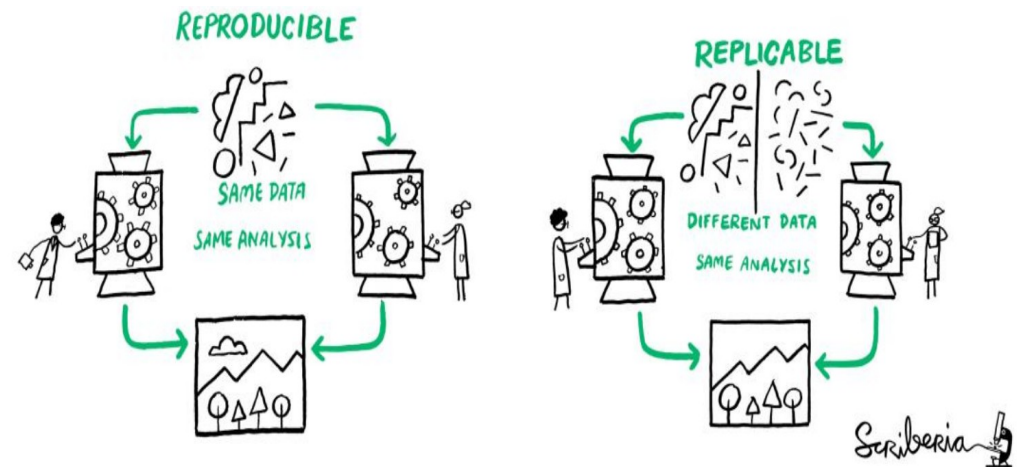
- Draft sketch → reproducible workflow → FAIR
- Transparent → Reproducible → Reusable → Interoperable
- FAIR principles

Culture and norms

- Research method as a *process*
- Standards in different fields
- IPR & research ethics

Open infrastructures

- Non-profit oriented
- Minimal costs for research
- Access can be regulated
- Open management & access policies



Objectives & actions



General principles:

- Responsible management of research resources
- Access to appropriate services
- Responsible research evaluation

Specific recommendations for key stakeholders: researchers, organizations, funders, publishers

Monitoring: Open Science Coordination at the Federation of Finnish Learned Societies, as part of the national open science monitoring programme.

OBJECTIVES	ACTIONS			
<p>1 Open research methods and infrastructures are recognised as key components of research quality and impact</p> <p>2 Research organisations and infrastructure providers support open research methods</p> <p>3 Rights and terms related to research methods and infrastructures are clearly agreed on between all participants in research work</p>	2023			
		Creation of indicators initiated		
		Assessment of need for discipline specific recommendations		
		2024		
		Dialogue on strategy for strengthening the documentation, citations and acknowledgement of research methods and infrastructures		
		Research funding organisations plan to better support objectives of this policy in evaluation		
		2023		
		Research methods and related policies, services, infrastructures and skills included in national OS architecture		
		Review of status of research infrastructures and services for open research methods		
		2024		
		DMP consortium supports this policy		
		2025		
	Research organisations provide support and recommendations for training and services for students, researchers, and other staff			
	Organisations describe expert roles in open methods and infrastructures			
	2023			
	Creation of recommendations and guidelines for documenting the rights, terms and licenses			
	2024			
	Discussions with the Finnish National Board on Research Integrity (TENK) on guidelines			
	2025			
	National guidelines to advance clear agreements on rights and responsibilities			
	2023	2024	2025	2026

Incentives?

- Research evaluation
- Career paths
- Support services (financial, technical, other)
- Improved citation practices

Organisations should encourage adoption and promotion of open practices in all fields of research; technical support and resources, recognition and incentives.

Argumentteja asiantuntijalaskelmien salaamiseksi:

- 1) Lähdekoodi on patentoitava ja siten salassa pidettävä teknologinen kehitystyö
- 2) Laskelmien luovuttaminen aiheuttaisi tutkimukselle, tutkimuksen arvioinnille ja tutkijalle haittaa
- 3) Lähdekoodi ei ole viranomaisen asiakirja, vaan muistiinpano tai luonnos
- 4) Luotettavaa tiedosta tulee vasta sitten, kun se on vertaisarvioitu

Julkisuuslain tulkinta ja uudistaminen

	Päätös	1 (31)
	21.12.2021	OKV/461/70/2020, OKV/458/70/2020
VALTIONEUVOSTON OIKEUSKANSLERI		OKV/461/70/2020-OKV-5

3.1.3 Avointa dataa ja tiedettä koskevia säännöksiä ja suosituksia

Perustuslain 12 §:ään perustuvien julkisuuslain 19 ja 20 §:ien tulkinnassa tärkeitä ovat avointa dataa koskevat Euroopan unionin säädökset. Lisäksi tulkinnassa merkittäviä ovat kansainväliset ja kotimaiset avointa tiedettä sekä avointa tietoa koskevat suositukset (soft law).

Avoimesta datasta ja julkisen sektorin hallussa olevien tietojen uudelleenkäytöstä säädetään Euroopan parlamentin ja neuvoston direktiivissä [\(EU\) 2019/1024](#) (jäljempänä avoimen datan direktiivi). Direktiivi on tullut saattaa jäsenvaltioissa voimaan 17.7.2021. Direktiivi on säädetty jo vuonna 2019 ja sen sisältö ja periaatteet on ollut perusteltua ottaa huomioon kansallisen julkisuus- ja muun lainsäädännön tulkinnassa samoin kuin hallinnollisissa käytännöissä soveltuvien osin jo ennen direktiivin voimaansaattamispäivää ja sen jälkeen täysimääräisesti.

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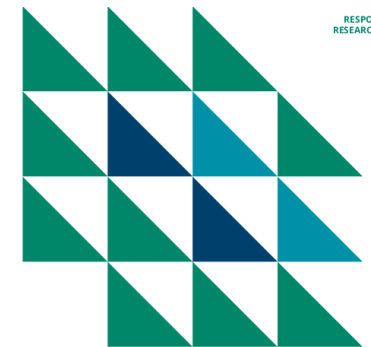
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