OpenAIRE and Open Science

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Go to **www.menti.com** and use the code **1755 2241**

MICCAI x OpenAIRE session

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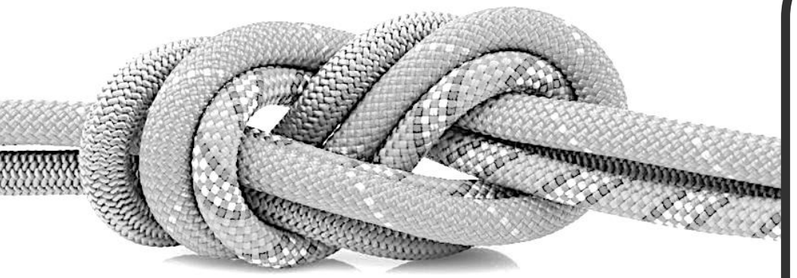
Or use QR code

Open Science

What is Open Science



Spiros Athanasiou et al, 2020. National Plan for Open Science.

Open Science is the **new standard of practices, means and collaboration** for producing and distributing scientific output and research results, with a direct scientific, economic and societal impact

Core principles

1. **Collaboration**
2. **Open Access**
   Read and access scientific information
3. **FAIR* principles**
   Discovery, Interoperability, Reuse
4. **Documentation**
   Transparency, Accuracy

Areas of action

Scientific **outputs**

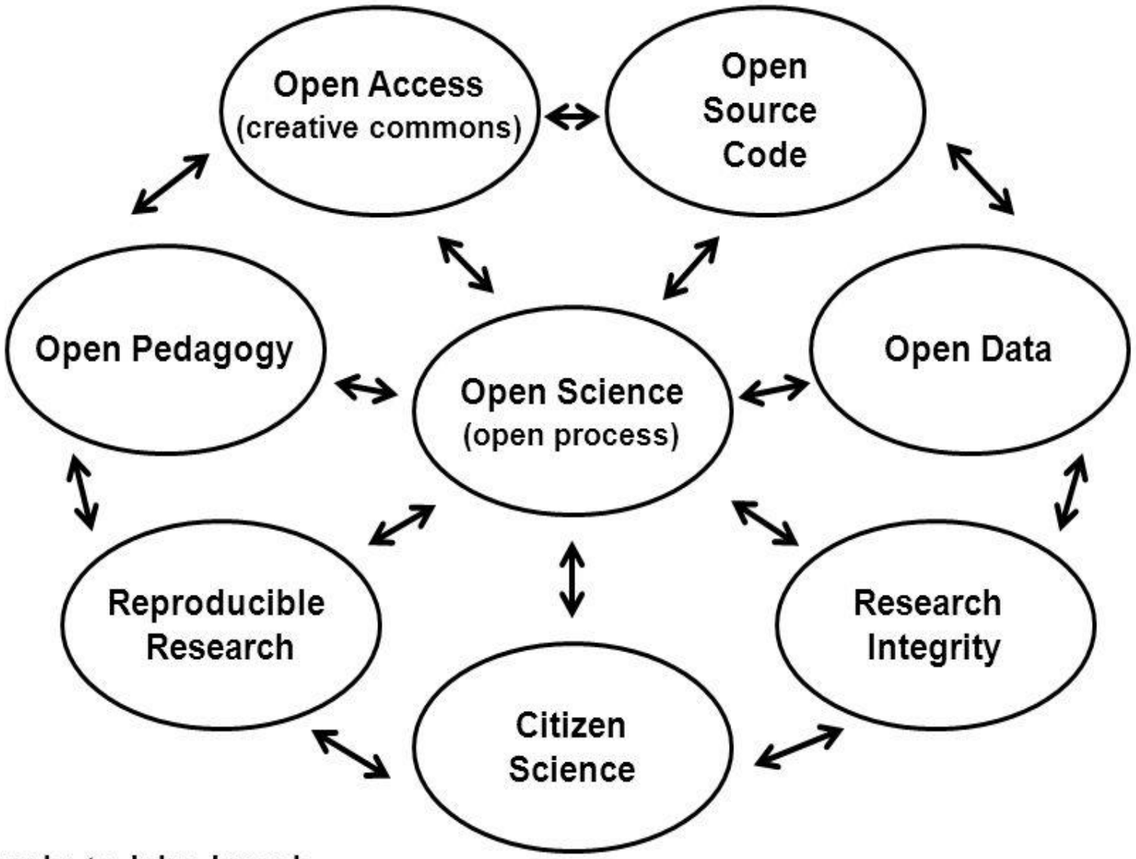
Infrastructures and services for research

Training and new skills

OpenAIRE

ΑΘΗΝΑ
Έρευνα & Καινοτομία
Τεχνολογίες Πληροφορίας

Open Science Ecosystem



With thanks to John Jungck

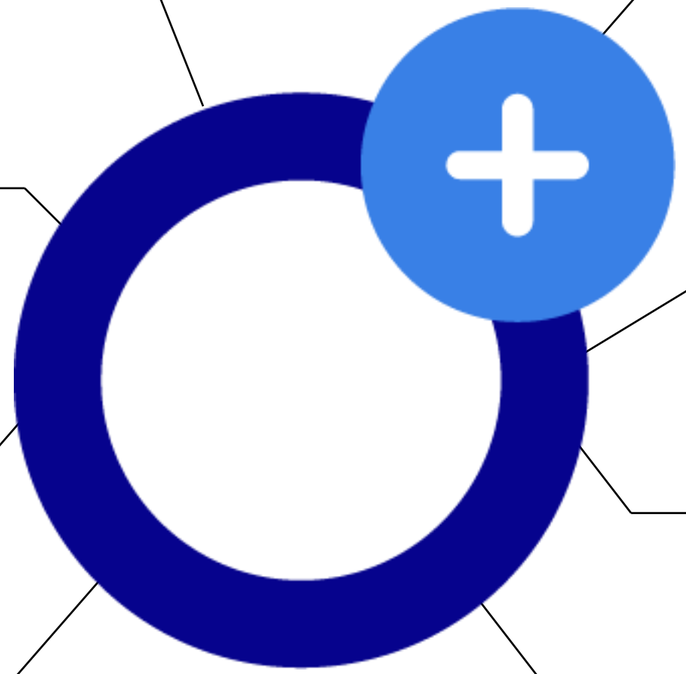
Why choosing Open Science?

Research

- Reach wider audience
- Re-use research outputs
- Validate research
- Prevent information and data loss

Economy

- Stimulate innovation
- Strengthen regional and national markets
- New job openings



Researchers

- Promote integrity
- Increase use of citations and get more credits
- Rewards in the EOSC

Society

- Builds trust <– transparency
- Inclusivity in Science-> Citizen Science
- Collaborations on national and EU level

OpenAIRE

European Commission

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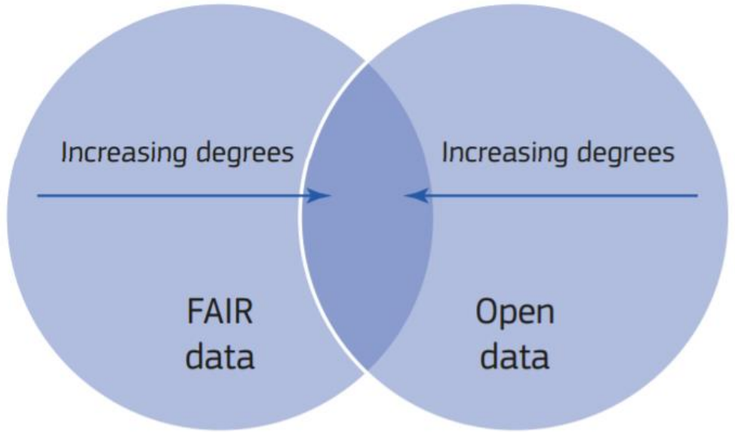
Research Data Management

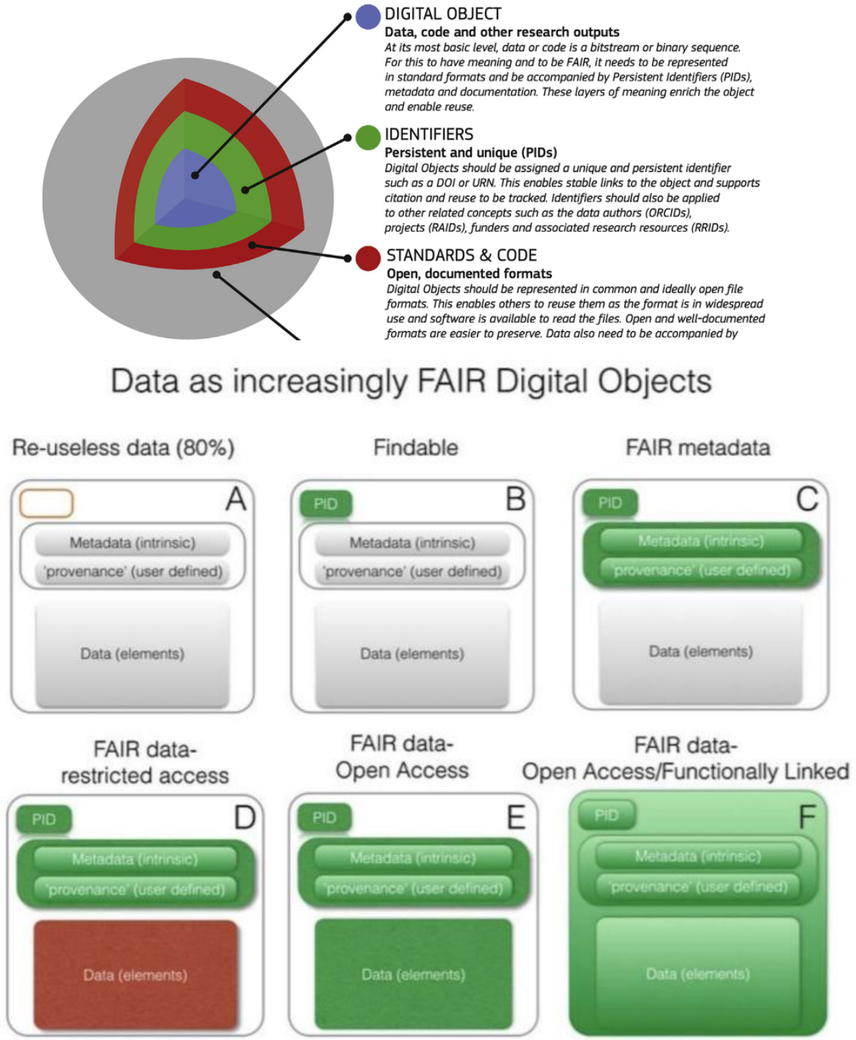
EOSC - The Web of FAIR data

- FAIR-enabling ecosystems



"highly distributed ecosystem requiring technical mechanisms linking resources, and social mechanisms to define specifications, standards and protocols"

FAIR principles for digital objects



https://www.ands.org.au/working-with-data/fairdata/training

RDM lifecycles

https://datamanagement.hms.harvard.edu/about/what-research-data-management/biomedical-data-lifecycle

Table 1
Life cycle stages and identified questions

Stages	Questions
Identifying	▪ What data are available? ▪ What is the current audience for these data? ▪ What potential future audiences exist for these data? ▪ Is this an isolated data set or could it be combined with other sets?
Digitizing	▪ Are the data in digital format? ▪ If no, what would it take to digitize the data? ▪ Are the data in a stable digital format that can be preserved?
Cleaning	▪ How many people have touched or will touch the data? ▪ What rules have been created to ensure consistent data standardization? ▪ What tools am I using to standardize the data?
Describing	▪ Is there a README.txt file outlining the project? ▪ Is there a standard ontology applicable to this data set? ▪ What information would others need to use the data?
Storing and preserving	▪ What access is needed to work with the data now? ▪ Who needs access now? ▪ What are the best storage options for the future? ▪ What is the intended duration of preservation?
Sharing	▪ Are there any privacy concerns about these data? ▪ Who is the owner of this data set? ▪ What institutional policies apply to these data? ▪ How can sharing rights be maximized?
Analyzing	▪ What analysis tools are available? ▪ What are the limitations of the data set?

Goben A, Raszewski R (2015) The data life cycle applied to our own data. J Med Libr Assoc. 103(1): 40–44. doi: 10.3163/1536-5050.103.1.008

Data Management Plans

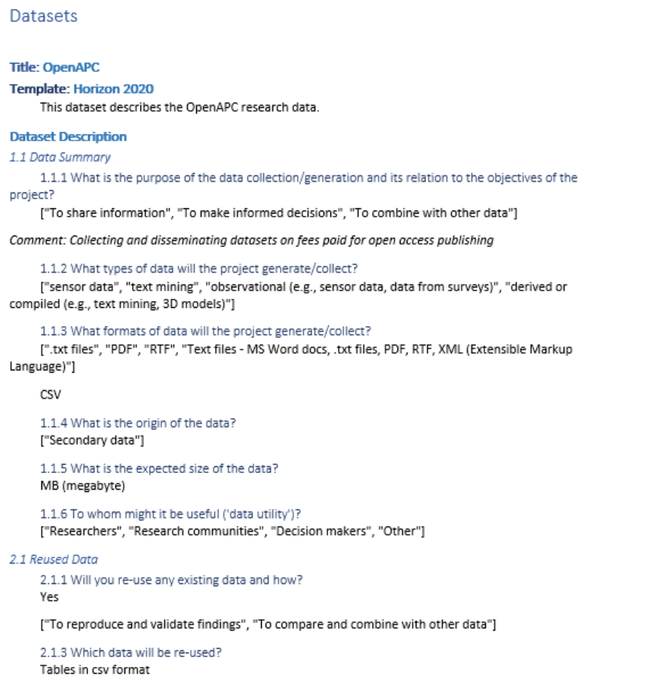
Deliverable and “living” document

- documents processes undertaken throughout data management lifecycle, including costs

≠

What is not a DMP?

Research assessment method



Datasets

Title: OpenAPC

Template: Horizon 2020

This dataset describes the OpenAPC research data.

Dataset Description

1.1 Data Summary

1.1.1 What is the purpose of the data collection/generation and its relation to the objectives of the project?

["To share information", "To make informed decisions", "To combine with other data"]

Comment: Collecting and disseminating datasets on fees paid for open access publishing

1.1.2 What types of data will the project generate/collect?

["sensor data", "text mining", "observational (e.g., sensor data, data from surveys)", "derived or compiled (e.g., text mining, 3D models)"]

1.1.3 What formats of data will the project generate/collect?

[".txt files", "PDF", "RTF", "Text files - MS Word docs, .txt files, PDF, RTF, XML (Extensible Markup Language)"]

CSV

1.1.4 What is the origin of the data?

["Secondary data"]

1.1.5 What is the expected size of the data?

MB (megabyte)

1.1.6 To whom might it be useful ('data utility')?

["Researchers", "Research communities", "Decision makers", "Other"]

2.1 Reused Data

2.1.1 Will you re-use any existing data and how?

Yes

["To reproduce and validate findings", "To compare and combine with other data"]

2.1.3 Which data will be re-used?

Tables in csv format

Open Science in Europe

Article 29

Article 29.2 Grant Agreement
- Open Access
eck embargo periods)

Publications

"As open as possible,
as closed as necessary"

Article 29.3 Grant A
- Open & FAIR data
- DMP "living document"

Research Data

Opting out options

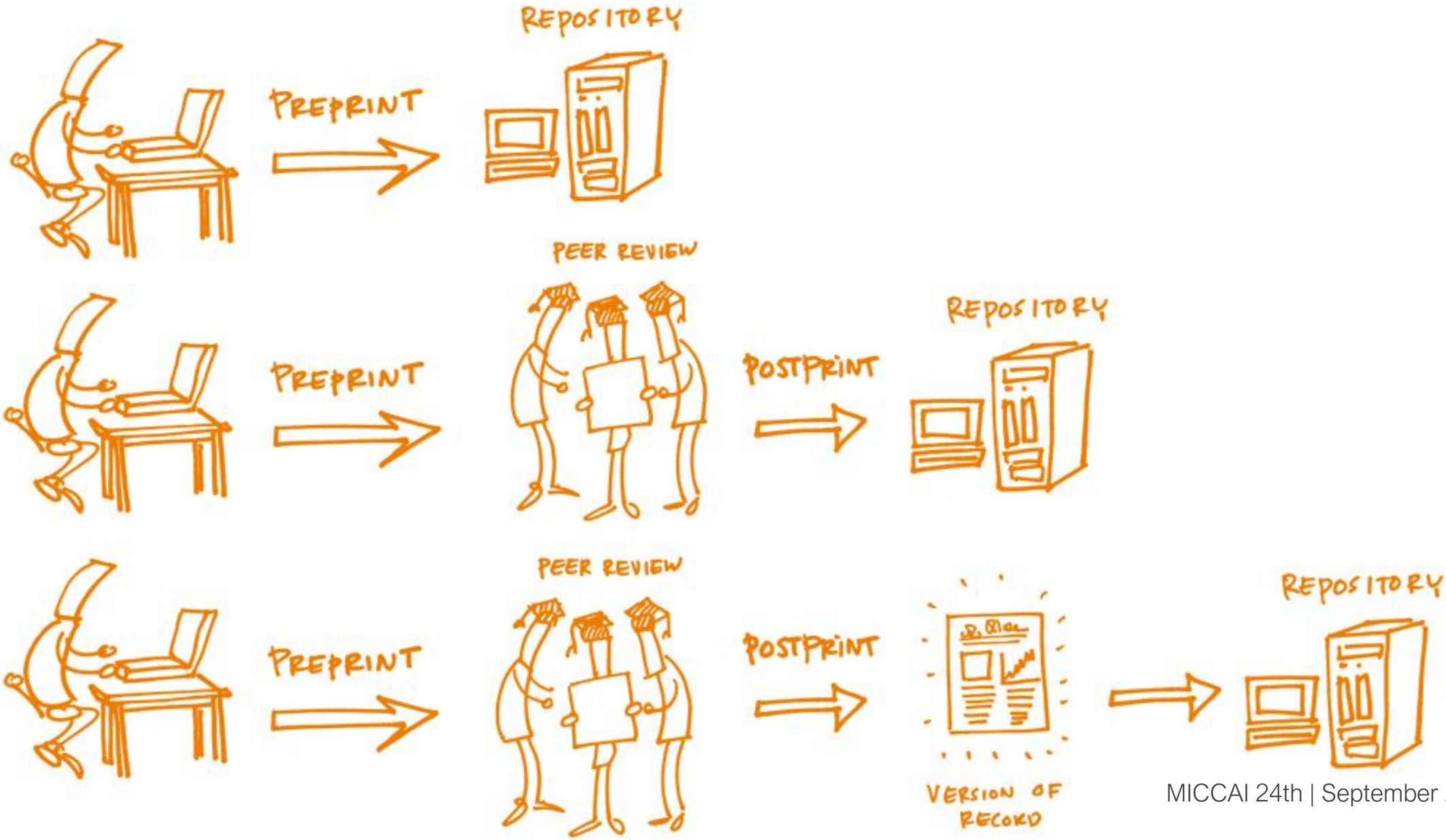
Access and preservation

- **Deposit a version of the publication in a literature repository and ensure open access**
  - Embargoes may apply: 6 months for STEM or 12 months for SSH

- **Publish research in an Open Access journal**
  - Article Processing Charges (APCs)

+ open access to metadata!

MODES OF SELF-ARCHIVING

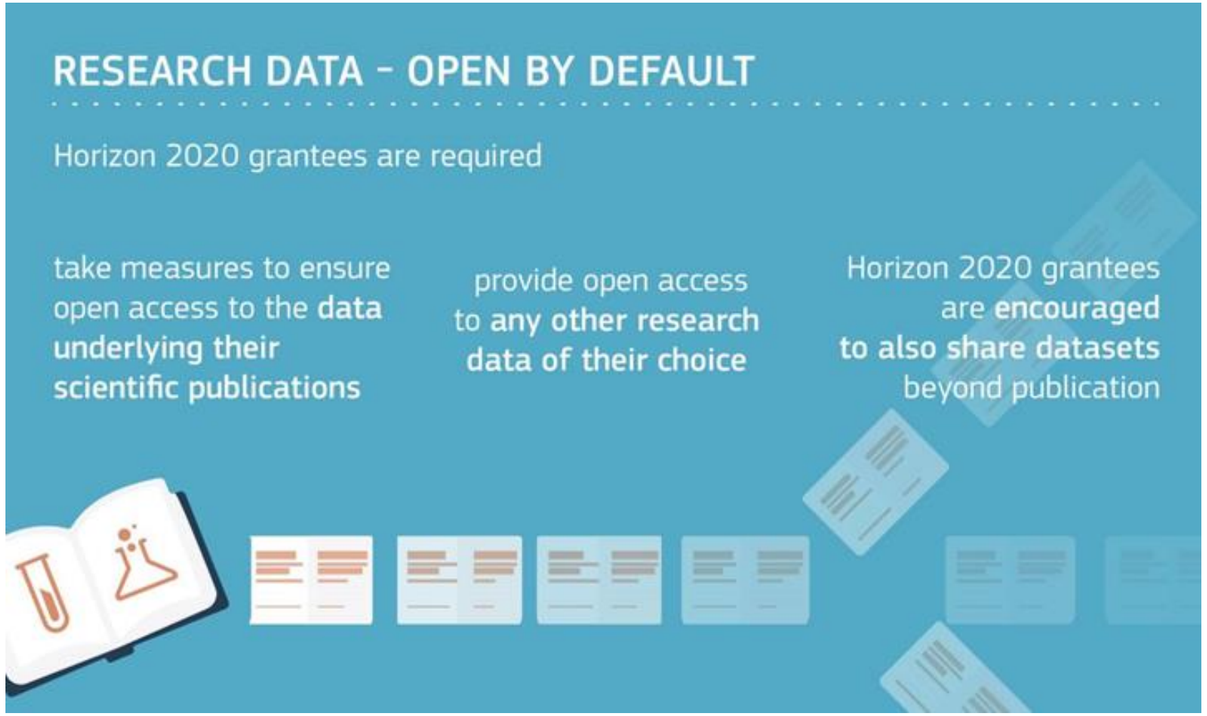


Acknowledge funding

When you deposit, you must also ensure open access to the descriptive metadata that identify the deposited publication. This metadata must be in a standard format and must include all of the following:

- the words ["European Union (EU)" and "Horizon 2020"] ["Euratom" and Euratom research and training programme 2014-2018"];
- the name of the project, acronym and grant number;
- the publication date, and length of embargo period if applicable, and
- a persistent identifier.

Research data



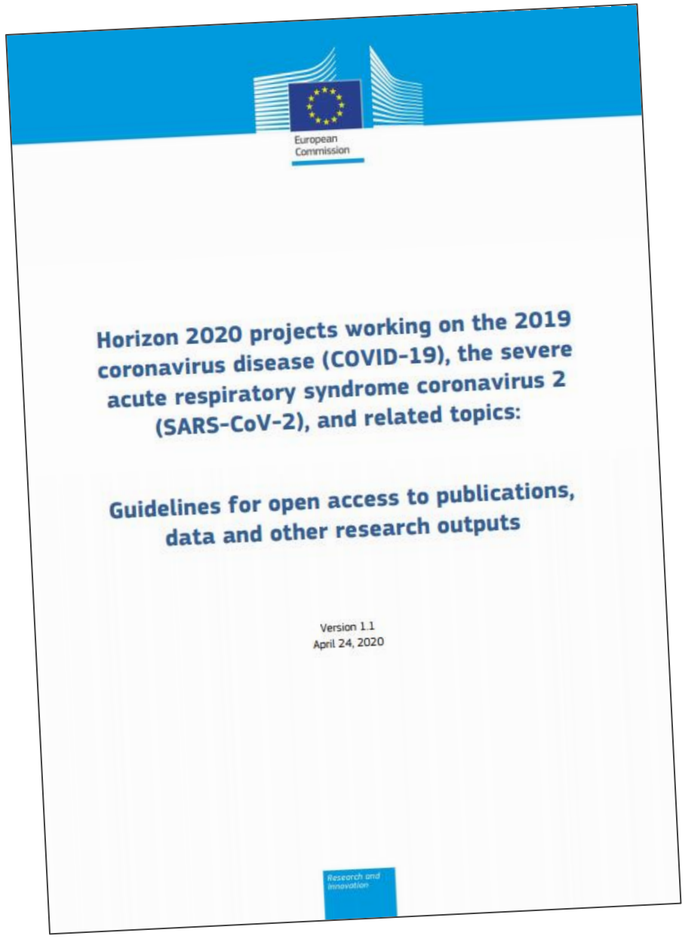
1. Develop a Data Management Plan (DMP)
2. Deposit research data in data repositories
3. Provide open access to research data, if possible.
4. Make data FAIR

COVID-19 research

Open access data benefits millions of scientists around the world and is essential for a rapid response to the COVID-19 pandemic

Artist's impression of open access COVID-19 data sharing. Credit: Spencer Phillips, EMBL-EBI.

Open Access for COVID-19 research


European Commission

Horizon 2020 projects working on the 2019 coronavirus disease (COVID-19), the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), and related topics:

Guidelines for open access to publications, data and other research outputs

Version 1.1
April 24, 2020

Research and Innovation

- **All peer-reviewed research publications** relevant to the outbreak are made immediately open access, or freely available at least for the duration of the outbreak;
- Research findings relevant to the outbreak are shared **immediately with the WHO upon journal submission**, by the journal and with author knowledge;
- Research findings are made available via preprint servers before journal publication, or via platforms that make papers openly accessible before peer review, with clear **statements regarding the availability of underlying data**;
- Share interim and final research data, **together with protocols and standards** used to collect the data, as rapidly and widely as possible - **including with public health and research communities and the WHO**;
- Authors are clear that data or preprints shared ahead of submission will not pre-empt its publication in these journals.

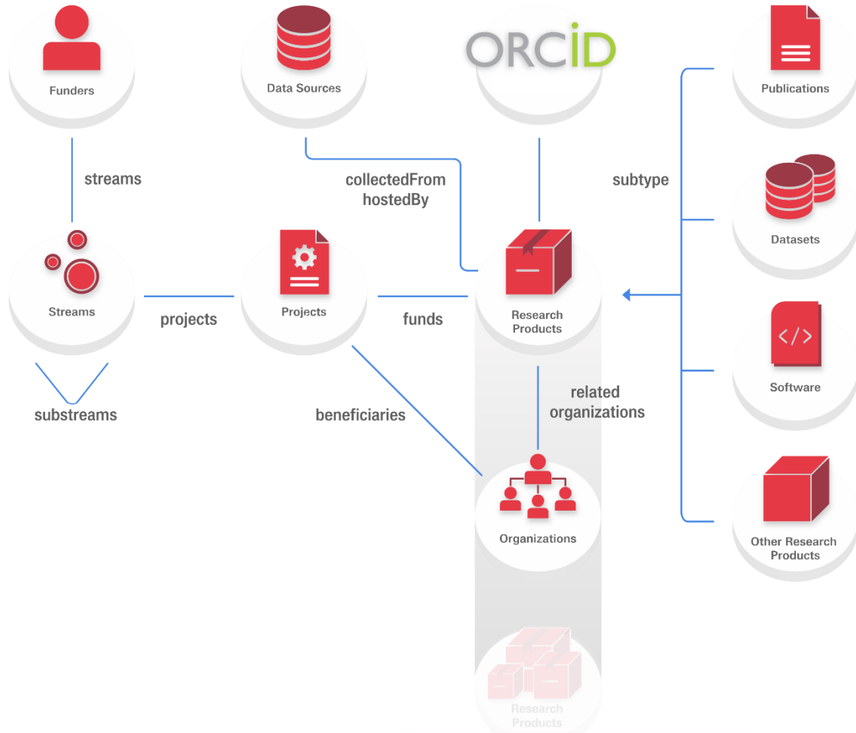
https://ec.europa.eu/research/participants/data/ref/h2020/other/hi/oa-pilot/h2020-guidelines-oa-covid-19_en.pdf

OpenAIRE

About OpenAIRE

Paneuropean electronic infrastructure: added value horizontal services

- **Distributed** and **participatory** electronic infrastructure
  - Based on existing national infrastructures
  - Interconnection of various actors across Europe
- **Linked** Open Science
  - Support for all types of research entities and outputs
- **Human** network
  - National nodes in more than 34 countries



EXPLORE OpenAIRE RESEARCH GRAPH

OpenAIRE services in EOSC

1

Guidelines

Setting compliance of EOSC data sources

Data Source

OpenAIRE Guidelines for DATA Repositories

OpenAIRE Guidelines for OTHER research products

OpenAIRE Guidelines for CRIS

PROVIDE

Register
Validate

3

Global sources

EOSC scientific product catalogue

OpenAIRE RESEARCH GRAPH

DEVELOP

EXPLORE

MONITOR

5

Funder - Institution – Community OS Monitoring

EUROPEAN OPEN SCIENCE CLOUD

Findable Accessible Interoperable Reusable

2

argos

zenodo

CONNECT

4

Research Community Gateways

amnesia

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Policies
Aligning
Training
Empowering
Services
Connecting
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Making the connections.

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Make your content count

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zenodo

a catch-all-repository

www.zenodo.org

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amnesia

Anonymize your datasets

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OA BROKER

Routing information across content providers

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ScholeXplorer

Interlinking data and publications

scholexplorer.openaire.eu

METADATA VALIDATOR

Helping you apply the OpenAIRE Guidelines

provide.openaire.eu

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Discover and share research

explore.openaire.eu

OpenAIRE | DEVELOP

APIs to access the OpenAIRE Research Graph

develop.openaire.eu

argos

Plan and follow your data

openaire.eu/argos

Services for all

Resources

How to comply with H2020 mandates - publications

How can identifiers improve the dissemination o your research outputs?

Legal issues

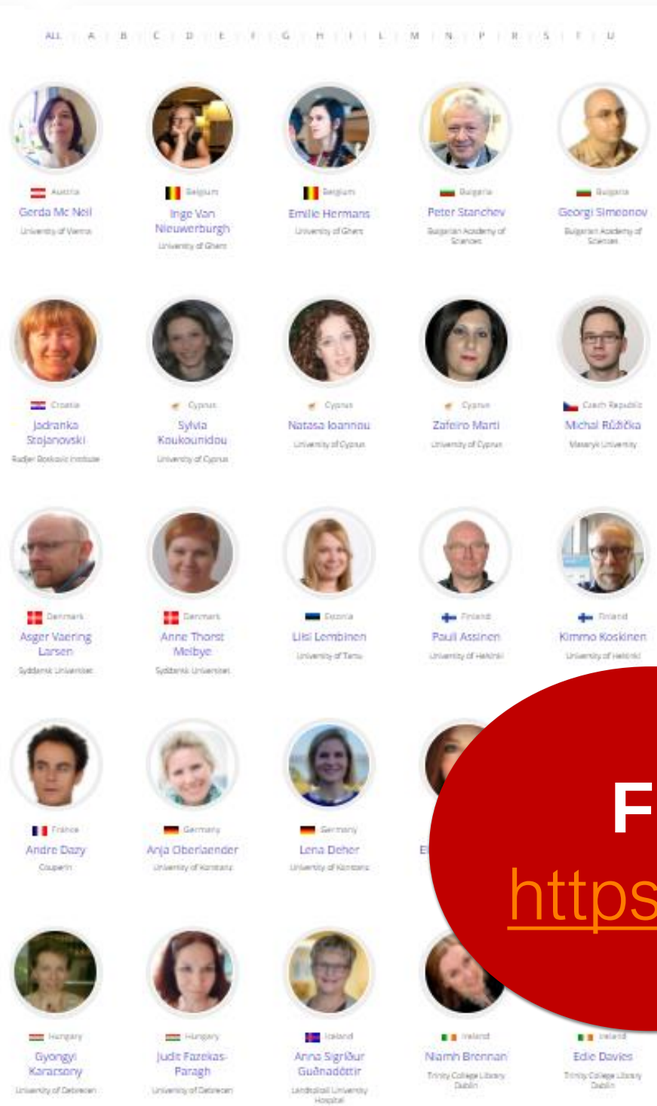
How do I know if my research data is protectec

How do I license my research data

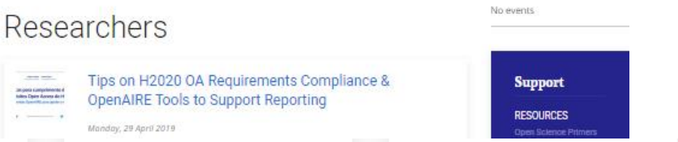
Can I reuse someone else's research data

Data reuse stories & use cases

Series of stories and use cases reporting the process of data reuse, describing experiences of reuse of a variety of research data.



Researchers



ıonymize your data

For researchers

amnesia

Report your publication and data to the EC

For project coordinators

EXPLORE

Claim a publication or data to your funding

For researchers

EXPLORE

Register & Validate your repository

Content Enrichment

For Repository Managers

Track the usage activity of your repository

Find a NOAD in your country!

https://www.openaire.eu/contact-noac

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Useful Links

- **OpenAIRE Helpdesk: https://www.openaire.eu/support/helpdesk**
- **OpenAIRE NOADs: https://www.openaire.eu/contact-noads**

- **OpenAIRE Factsheets: https://www.openaire.eu/openaire-h2020-factsheets**
- **OpenAIRE Research Community Dashboard: https://connect.openaire.eu/**
- **OpenAIRE webinars:**
- **https://www.openaire.eu/frontp**

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Sign up to OpenAIRE and subscribe to the Newsletter to get informed about news and updates

Thank you!

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Benefits and concerns of biomedical data sharing

Reasons to share individual-level data	Concerns about sharing individual-level data
To improve science	**May hamper science**
• Enable verification, replication, and expansion of research results • Address biases, deficiencies, and dishonesty in research • Enable novel analyses and increase study power • Improve meta-analyses • Maximize data use, particularly for datasets that cannot be replicated • Inform research design and research funding • Improve teaching resources • Increase primary data producers' academic profiles and collaboration opportunities	• Reputational harms of critical secondary analyses • Consequences of flawed/poor quality secondary analyses • Reduction of incentives for primary research • Increased incentives to conduct short-term research rather than long-term research • Opportunity costs of curating and sharing data
To improve health	**May hamper health**
• Inform health care planning and allocation • Inform regulatory review • Improve evidence base for clinical decision making • Improve use of health care resources • Improve patient care	• Effects of flawed secondary analyses on scientific evidence base • Burden of evaluating validity of secondary analyses • Effects of second-guessing regulatory procedures, policies, and processes
Explicit moral claims	**Explicit ethical issues**
• Importance of maximizing the value and utility of data • Promotion of scientific values • Promotion of best practices in research conduct, analysis, and reporting • Demonstration of respect for research participants • Promotion of the public good	• Protection of participants' privacy and confidentiality • Validity of consent, including broad consent • Potential harms of secondary research for research participants including discrimination and stigma • Researchers' ability to fulfill commitments made to research participants during data collection • Effects of moral distance and limited awareness of the context in which data were collected • Potential impacts on public trust and confidence of conflicting analyses • Balancing the interests of differing stakeholders in data sharing • Making best use of limited research resources
	Barriers to sharing
	• Costs of developing and maintaining appropriate expertise and infrastructure • Curation costs • Ownership, intellectual property rights, and commercial confidentiality • Lack of policies and processes

Bull S, et al. (2015) Views of Ethical Best Practices in Sharing Individual-Level Data from Medical and Public Health Research. Journal of Empirical Research on Human Research Ethics. http://dx.doi.org/10.1177/1556264615594767