Open Science

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Open Science

What is it about?

Open science is a movement to make scientific research and its findings (including research data and code) accessible to all levels of society, i.e., both amateurs and professionals interested in scientific research, ideally by using novel digital technologies and collaboration tools.

Traditional Science	Open Science
Trust	Accountability & Transparency
Competition	Collaboration
Publication-driven	Data-Driven
Impact Factor/h-index	(Altmetrics?)
Data Protection/Withering	Data Sharing / FAIR Data
Scientific Impact	Societal Impact

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Open Science – The EC perspective

Open Science = systemic transition of the science system which affects the way that:

● research is performed	-> research integrity and open access/data
● knowledge is shared/diffused/preserved	-> revised and new practices of scholarly communication
● research projects/results are evaluated	-> new metrics and research indicators
● research is funded	-> OS principles such as FAIR data and 100% OA
● researchers are rewarded	-> new rewards and incentives
● future researchers are trained	-> skills and education
● interact	-> citizen science, scientific social networks

…and thus affects the whole research cycle and all its stakeholders

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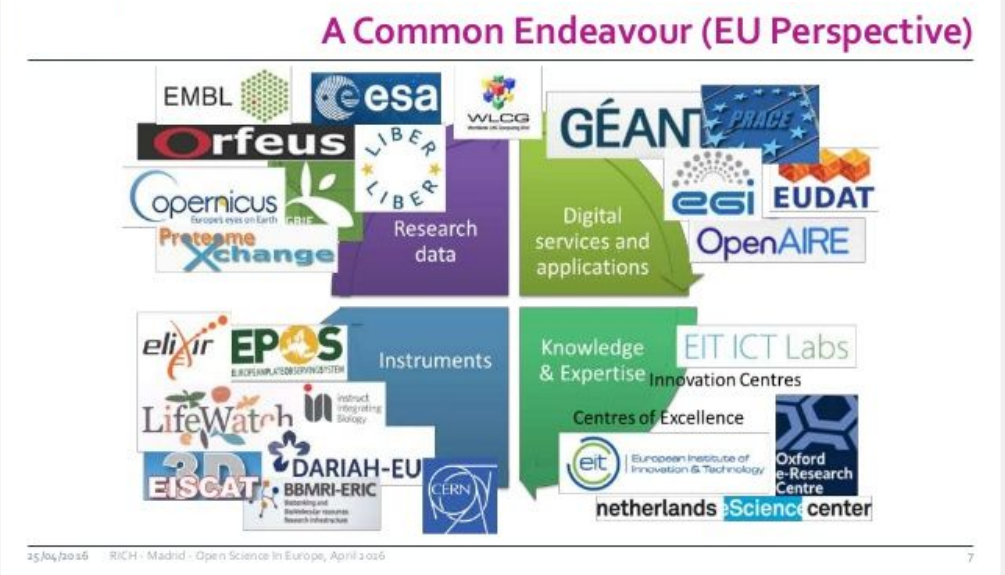
How will the EU/EC make this a reality?

European Open Science Cloud

- Governance
- Services
- Infrastructure



Pilot Projects

National Plan Open Science

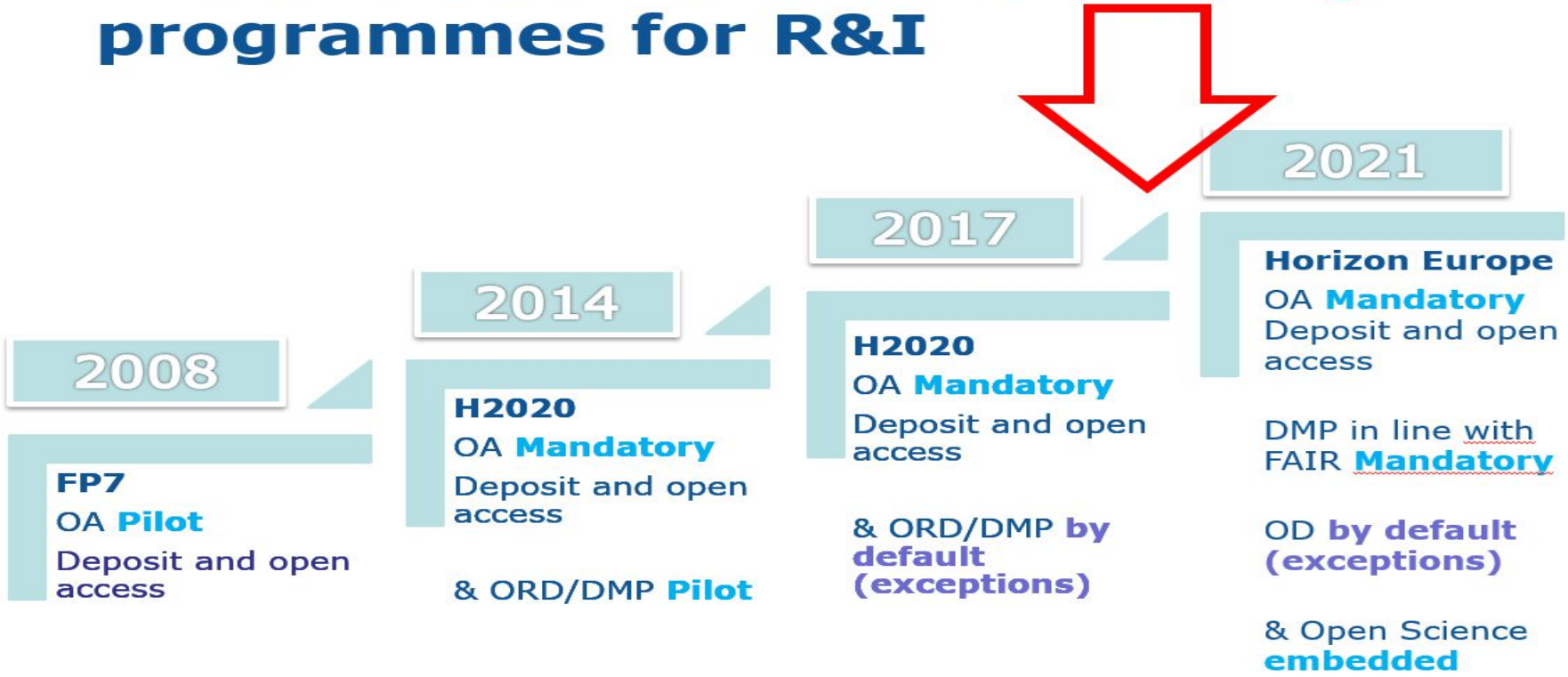
Open Science in the Netherlands

- Optimal access to and reuse of research data
- Journal publications are 100% open access from 2020
- Open science principles become part of researcher evaluation (reward systems)
- Promote and support Open Science
- Citizen science

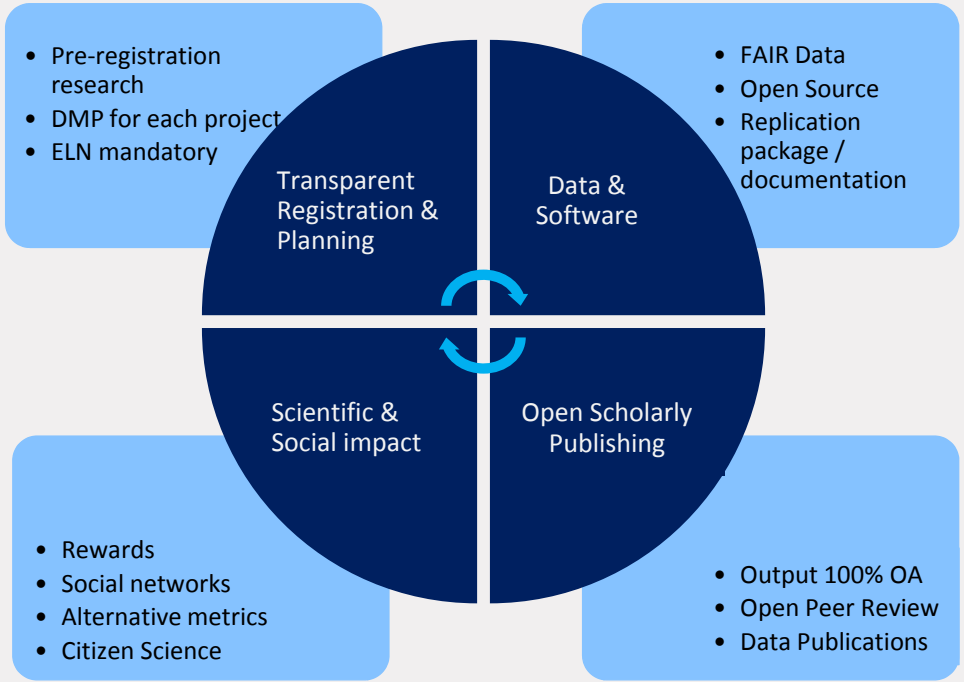
Signatories include all universities, Royal Dutch Society of Sciences, and the main research funders (NWO and ZonMW)

nationaal plan open science

Timeline


The evolution of the EU funding programmes for R&I
2008
FP7
OA Pilot
Deposit and open access
2014
H2020
OA Mandatory
Deposit and open access
& ORD/DMP Pilot
2017
H2020
OA Mandatory
Deposit and open access
& ORD/DMP by default (exceptions)
2021
Horizon Europe
OA Mandatory
Deposit and open access
DMP in line with FAIR Mandatory
OD by default (exceptions)
& Open Science embedded

The (Near-)Future Research Landscape for PhDs



Open Access Publishing

How is the view beyond the paywall?

Publishing – Traditional versus Open Access

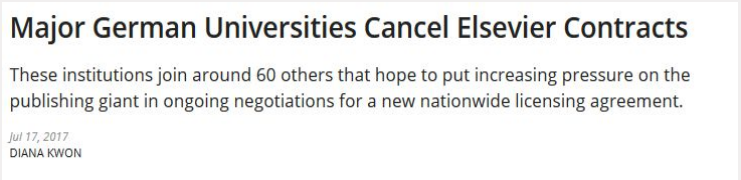
Key issues with the traditional subscription model

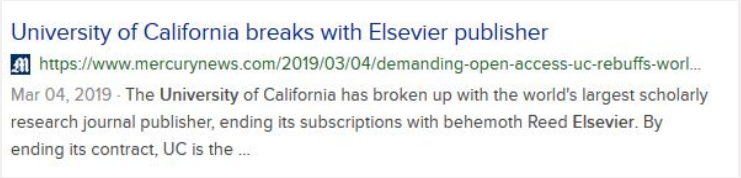
Reader – Paywalled Access
Reader gets access by paying subscription fees, this is not “open access”

- No subscription means no access (the so-called **Paywall**) -> currently RSC in NL, Elsevier in Germany, Sweden, etc.

Author - Copyright Transfer Agreement
Publisher becomes Rightsholder
Exclusive license to publish
Restricted reuse (**self-archiving rights = “green open access”)**

- Copy, distribution, remixing, adaptation of the entire/parts of the article usually not allowed or very limited
- Sharing of the publisher’s PDF is typically not allowed or very limited
- Reuse of the images that you made for an article is typically not allowed without permission or very limited
- No translation or derivative works allowed, unless permission
- No text/data mining





“Real” Open Access – (ideally) Three Components

- Immediate, permanent, free and online access for all readers/users on the platform of the publisher
- Non-exclusive license to publish
- Extensive reuse (= copy, download, redistribute, print, etc.) of content for all users as long as proper attribution is given –> plagiarism protection

Attribution required, copy and distribution allowed, commercial use allowed without asking permission

Attribution required, copy and distribution allowed, commercial use only allowed by permission

Attribution required, copy and distribution of verbatim copies allowed, commercial use only allowed by permission

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Most Common Open Access Types

	Green Open Access (= self-archiving)	**Hybrid (Gold) Open Access (double dipping)**	**Full (Gold) Open Access**
Business Model	Traditional subscription journal	Mixed model: traditional subscription journal in which **a number of articles are open access**	Full journal content is open access
Who pays?	Reader (= university = library + companies)	Reader + Author	Author
Costs Author	Free of charge	APCs = 500–6000 Euro	APCs = 0–5000 Euro
When open access?	**Embargo-dependent Version-dependent Platform-dependent** (depends on CTA)	Immediately	Immediately
License	Copyright Transfer Agreement (CTA)	Creative Commons (usually) + hopefully a non-exclusive License to Publish	Creative Commons (usually) + typically non-exclusive License to Publish

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Wiley's Self-Archiving Policy

Authors of articles published in Wiley journals are permitted to self-archive the submitted (preprint) version of the article at any time, and may self-archive the accepted (peer-reviewed) version after an embargo period.

Version =

Submitted (preprint) Version

The submitted version of an article is the author's version that has not been peer-reviewed, nor had any value added to it by Wiley (such as formatting or copy editing).

The submitted version may be placed on:

- the author's personal website
- the author's company/institutional repository or archive
- not for profit subject-based preprint servers or repositories

Allowed platforms for this version

Self-archiving of the submitted version is not subject to an embargo period. We recommend including an acknowledgement of acceptance for publication and, following the final publication, authors may wish to include the following notice on the first page:

"This is the pre-peer reviewed version of the following article: [FULL CITE], which has been published in final form at [Link to final article using the DOI]. This article may be used for non-commercial purposes in accordance with Wiley Terms and Conditions for Self-Archiving."

The version posted may not be updated or replaced with the accepted version (except as provided below) or the final published version (the Version of Record).

There is no obligation upon authors to remove preprints posted to not for profit preprint servers prior to submission.

Embargo for this version

Version =

Accepted (peer-reviewed) Version

The accepted version of an article is the version that incorporates all amendments made during the peer review process, but prior to the final published version (the Version of Record, which includes; copy and stylistic edits, online and print formatting, citation and other linking, deposit in abstracting and indexing services, and the addition of bibliographic and other material.

Self-archiving of the accepted version is subject to an embargo period of 12-24 months. The embargo period is 12 months for scientific, technical, and medical (STM) journals and 24 months for social science and humanities (SSH) journals following publication of the final article.

- the author's personal website
- the author's company/institutional repository or archive
- not for profit subject-based repositories such as PubMed Central

Allowed platforms for this version

Articles may be deposited into repositories on acceptance, but access to the article is subject to the embargo period.

The version posted must include the following notice on the first page:

"This is the peer reviewed version of the following article: [FULL CITE], which has been published in final form at [Link to final article using the DOI]. This article may be used for non-commercial purposes in accordance with Wiley Terms and Conditions

Elsevier's green open access (self-archiving) policy

Version = Published Journal Article

Policies for sharing published journal articles differ for subscription and gold open access articles:

Subscription articles

- If you are an author, please share a link to your article rather than the full-text. Millions of researchers have access to the formal publications on ScienceDirect, and so links will help your users to find, access, cite, and use the best available version
- Theses and dissertations which contain embedded PJAs as part of the formal submission can be posted publicly by the awarding institution with DOI links back to the formal publications on ScienceDirect
- If you are affiliated with a library that subscribes to ScienceDirect you have additional private sharing rights for others' research accessed under that agreement. This includes use for classroom teaching and internal training at the institution (including use in course packs and courseware programs), and inclusion of the article for grant funding purposes
- Otherwise sharing is by agreement only

Gold open access articles

- May be shared according to the author-selected end-user license and should contain a CrossMark logo, the end user license, and a DOI link to the formal publication on ScienceDirect.

This basically says that you are allowed to do nothing with this version unless you get permission from Elsevier or use it for your dissertation

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In which open access category are my favourite journals?

What type of journal is it?

“Full” Open Access Journal

Full open access ±15%

Subscription-based Journal

Green OA only ±5%

Hybrid Gold OA or Green OA ±80%

No OA <1%

Open Access Mandates

	Open access mandatory?	Which type?	Which publications?	When OA?	Embargo (months)	Which version is allowed?
TU/e	Yes	Green OA + Funder Compliance	All publications	Compliant with publisher's conditions	Check here	1. Accepted version (2. Version of Record) (3. Submitted version)
	Strongly recommended	Preferably gold, Green allowed	All publications	(Preferably) immediately	N.A.	1. Submitted version 2. Accepted version 3. Version of Record
NWO	Yes (Dec 2015)	Preferably gold, Green allowed	All publications	Immediately	0	1. Submitted version 2. Accepted version 3. Version of Record
	Yes	Preferably gold, Green allowed	Peer-reviewed articles	Immediately (default), but up to 6 months after publication	6	1. Accepted version 2. Version of Record
Plan S = EC + Research Funders	Yes	Full (gold) OA (and maybe hybrid gold OA)	All publications	Immediately (from 2020)	0	1. Version of Record 2. Accepted version??

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Exercise

1. Let's assume that your publication has to comply with the Horizon2020 policy requirements for open access! Establish what those requirements are exactly!

2. Check then for the following journals

- how the article can be published open access (green, hybrid and/or gold)
- whether costs need to be paid and how much
- whether an embargo time applies and if yes, how long is the embargo time
- Which open access route is compliant with the Horizon2020 policy

Group 1: Macromolecules and ACS Central Science

Group 2: ChemBioChem and Science Advances

Group 3: Nature Chemistry and Nature Communications

Group 4: Journal of Biological Chemistry and PNAS

Group 5: Chemical Science and Chemical Communications

Group 6: Angewandte Chemie and Advanced Science

Answers to Excercise

Horizon 2020 guidelines:

http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-pilot-guide_en.pdf

The open acces mandate comprises two steps:

1. Depositing publications in repositories

A machine-readable copy of the version of record or final peer-reviewed manuscript accpeted for publication must be deposited in a repository

2. Providing access to the publications

A) self-archiving (green OA) : within 6 months after publication

B) open access (gold OA)

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Answers to exercise – Group 1

Macromolecules (ACS)

Green open access is possible for the accepted author manuscript, but the ACS embargo is 12 months. H2020 only allows a maximum of 6 months. Green open access is therefore not compliant.

Hybrid Open Access is possible and compliant with H2020; costs are 4000 USD

ACS Central SCience

Only Gold Open Access is possible and compliant with H2020; costs are currently 0 Euro

https://pubs.acs.org/page/4authors/authorchoice/index.html

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Answers to exercise – Group 2

Science Advances (AAAS)

Only Gold Open Access is possible and compliant with H2020; costs are currently 4500 USD

ChemBioChem (Wiley)

Green open access is possible for accepted author manuscript , but the Wiley is 12 months. H2020 only allows a maximum of 6 months. Green open access is not compliant.

Hybrid Open Access is possible and compliant with H2020; costs are 2900 Euro

http://advances.sciencemag.org/content/licensing-and-charges

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Answers to exercise – Group 3

Nature Chemistry

Green open access is possible for the accepted author manuscript, the embargo is 6 months. H2020 allows a maximum of 6 months. Green open access is therefore compliant.

Hybrid Open Access is not offered for this journal

Nature Communications

Full Gold Open Access -> direct open access

Costs are 4290 Euro per article

https://www.nature.com/openresearch/publishing-with-npg/nature-journals/

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Answers to exercise – Group 4

Journal of Biological Chemistry (ASBMB Society)

Green open access is possible for the accepted author manuscript, the embargo is 0 months. H2020 allows a maximum of 6 months. Green open access is therefore compliant.

Hybrid Open Access is offered for this journal and its costs 2000 USD with a CC-BY license

PNAS (National Academy of Sciences)

Green open access is possible for the accepted author manuscript, the embargo is 0 months. H2020 allows a maximum of 6 months. Green open access is therefore compliant.

Hybrid Open Access is offered for this journal and its costs 2000 USD with a CC-BY license

http://www.jbc.org/site/misc/ifora.xhtml#charges
https://www.pnas.org/page/subscriptions/open-access

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Answers to exercise – Group 5

Chemical Communications (RSC)

Green open access is possible for the accepted author manuscript, the embargo is 12 months. H2020 allows a maximum of 6 months. Green open access is therefore not compliant.

Hybrid Open Access is offered for this journal and its costs 1600 GBP for the article type “paper”

Chemical Science (RSC)

Full Gold Open Access -> direct open access

Costs are currently 0 Euro per article

https://www.rsc.org/journals-books-databases/open-access/gold-open-access/

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Answers to exercise – Group 6

Angewandte Chemie (Wiley)

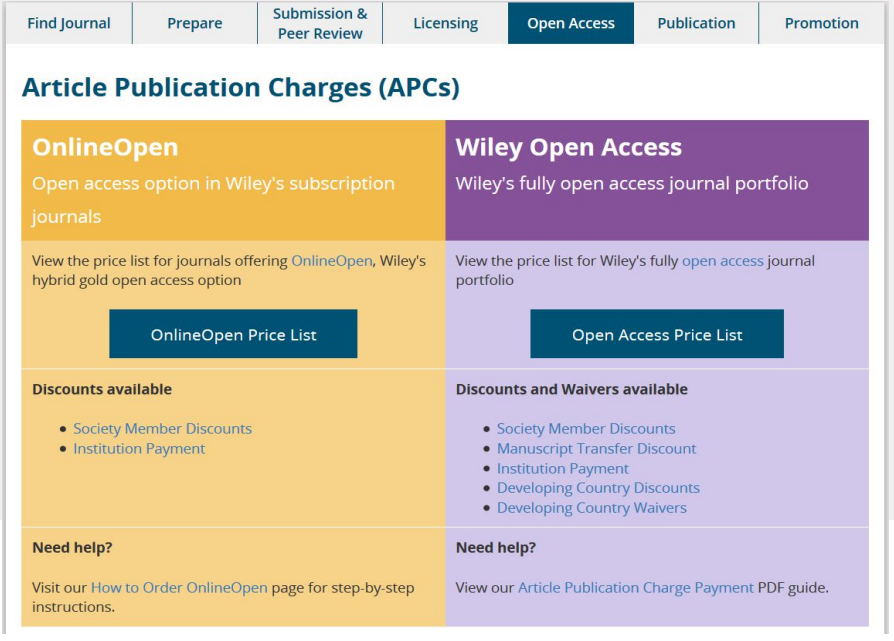
Green open access is possible for the accepted author manuscript, the embargo is 12 months. H2020 allows a maximum of 6 months. Green open access is therefore not compliant.

Hybrid Open Access is offered for this journal and its costs 5000 USD / 4000 Euro

Advanced Science (Wiley)

Full Gold Open Access -> direct open access

Costs are 5000 USD per article



https://authorservices.wiley.com/author-resources/Journal-Authors/open-access/article-publication-charges.html

Open Acces Publishing

Theory put to practice

1. In which journal is the article accepted?
2. Which funding do you have? This is sometimes mentioned in the Acknowledgements. This determines whether you have any formal open access obligations. Check university's website for funder policies.
3. Which publisher? What does the publisher allow you to do with regards to open access? Check publisher's website and/or your library website
4. Which open access options can I select for this article? Publishers often use this jargon: Open access = Pure gold OA, Open choice = Hybrid OA, Self-archiving = Green OA
5. How much does open access publishing cost? Look for terms such as article processing charges (APCs) or article processing fees. Check the publisher's website.
6. Does every open access option comply with funder policy? Check publisher's website against funder policy.
7. Is there maybe an open access deal or open access fund to get money back? Check the website of your library.
8. Which (Creative Commons) license is available? Check publisher's website.

cOAlition S - Plan S

cOAlition S aims to accelerate the transition to a scholarly publishing system that is characterized by full and immediate free online access to and largely unrestricted use and re-use of scholarly publications.

Current situation:

- Details are still unclear, which leads to interpretation.
- The final version of Plan S is expected in spring.
- Many journals do currently not (fully) meet the criteria for compliance.
- Much will depend on how publishers and funders in “important science countries” will respond to the Plan S requirements.

cOAlition S

National funders from:

Austria	Netherlands	Zambia
Finland	Norway	Jordan
France	Poland	
Ireland	Slovenia	
Italy*	Sweden*	
Luxembourg	UK	

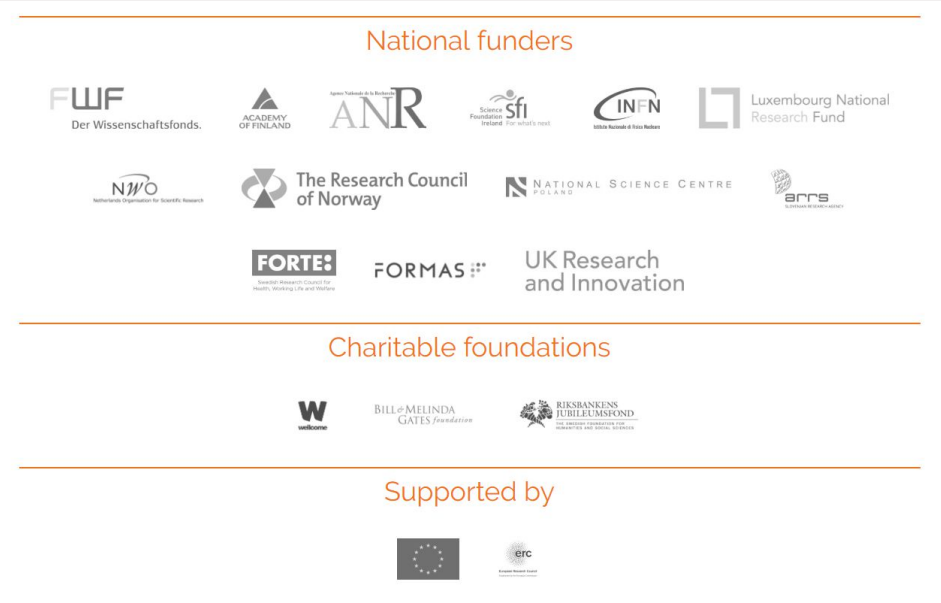
* Not the major funders

Charitable foundations:

Wellcome Trust, UK
Bill & Melinda Gates Foundation, US

Supported by:

European Commission and ERC
(pending approval by the European Parliament)



The coalition might expand further: US, Indian and Chinese funders have shown interest.

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Plan S versus current funder requirements

(for peer-reviewed scientific articles)

For publications	NWO	EU (H2020)	Plan S
When open	direct	After 6 months	direct
Article version	Any version allowed	Author accepted manuscript or publishers version	Author accepted manuscript or publishers version
Copyright			No copyright transfer
License			CC-BY
Other requirements			“quality criteria”, e.g. journal must be transparent about costs and pricing
For journals	**NWO**	**EU**	**Plan S**
Peer-review process			Solid and clearly described
Other			Transparent about costs and pricing and meet specifics on a.o. metadata and technical features.

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Plan S

All publications, independent of publication venue:

Direct open access
No copyright transfer
CC-BY 4.0 license

	Open Access journals or Open Access platforms	Deposition of scholarly articles in Open Access repositories	Transformative agreements
	Authors publish in a Plan S compliant Open Access journal or on a Plan S compliant Open Access platform with a CC BY license.	Immediately upon publication, authors deposit the final published version of a scholarly publication (Version of Record (VoR)) or an Author's Accepted Manuscript (AAM), in a Plan S compliant repository. The document is made available immediately open access (with no embargo) under a CC BY license.	Authors publish Open Access with a CC BY license in a subscription journal that is covered by a transformative agreement that has a clear and time-specified commitment to a full Open Access transition.
Criteria for journals	- DOAJ registered - All scholarly content must be openly accessible - Solid and clearly described peer-review system - No mirror subscription journal	- Self-archiving policy must be registered in Sherpa-Romeo - Solid and clearly described peer-review system	- Details of transformative agreement listed on website - Contracts, including costs, publicly available - Contract negotiations concluded before end 2021, max. duration 3 yrs. - Transformation scenario included in agreement.
		Repository must be registered in OpenDOAR and meet a number of quality criteria.	

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In which open access category are my favourite journals?

What type of journal is it?

“Full” Open Access Journal

Full open access ±15%

Subscription-based Journal

Green OA only ±5%

Hybrid Gold OA or Green OA ±80%

No OA <1%

DOAJ* journals @ TU/e: 8% of total output

*DOAJ = Directory of Open Access Journals

Journal	Journal	Journal
Optics Express	New J. of Physics	Optical Materials Express
PLoS ONE	Sustainability	World Electric Vehicle Journal
Scientific Reports	European Cells & Materials	AIP Advances
Nature Communications	**Polymers**	Computational & Math. Meth. in Medicine
RSC Advances	Contrast Media & Molecular Imaging	EPJ Web of Conferences
Chemical Science	Frontiers in Psychology	**Materials**
Energies	Atmospheric Chemistry & Physics	**Molecules**
Sensors	J. Petroleum Exploration & Production Techn.	PLoS Computational Biology
IEEE Photonics Journal	Applied Sciences	… … …
J. Computational Geometry	Int. J. Env. Research & Pulic Health	… … …
Biomedical Optics Express	MATEC Web of Conferences	… … …

APCs of full open access journals can be paid from your grant.

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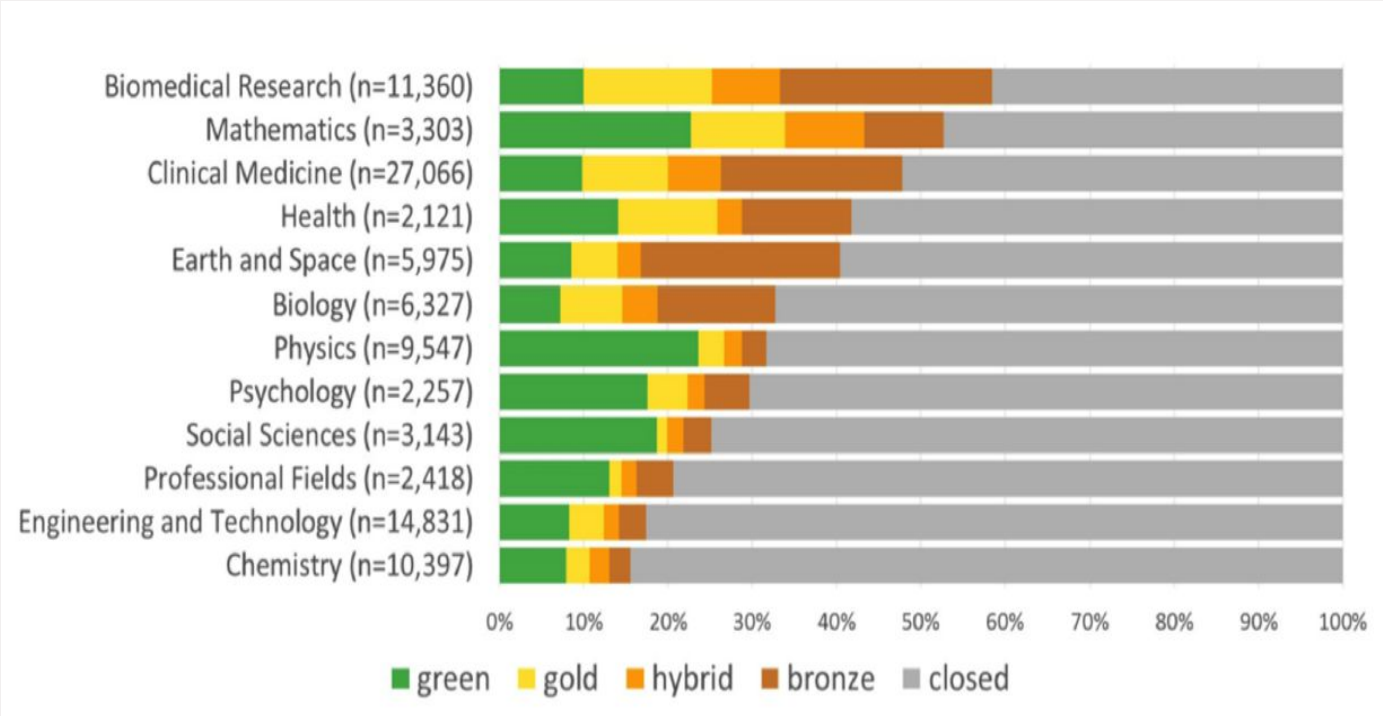
Concerns expressed by researchers include

- Size of the cOAlition and the internationally operating scientific system
- Mismatch with the way research and researchers are currently assessed
- Time to implementation
- Freedom of choice
- Journal quality (control)
- Costs
- Negative aspects of the Open Access publishing system
- Differences in publishing cultures are not acknowledged

OA per discipline



Open Access Publishing

All that glitters is not gold

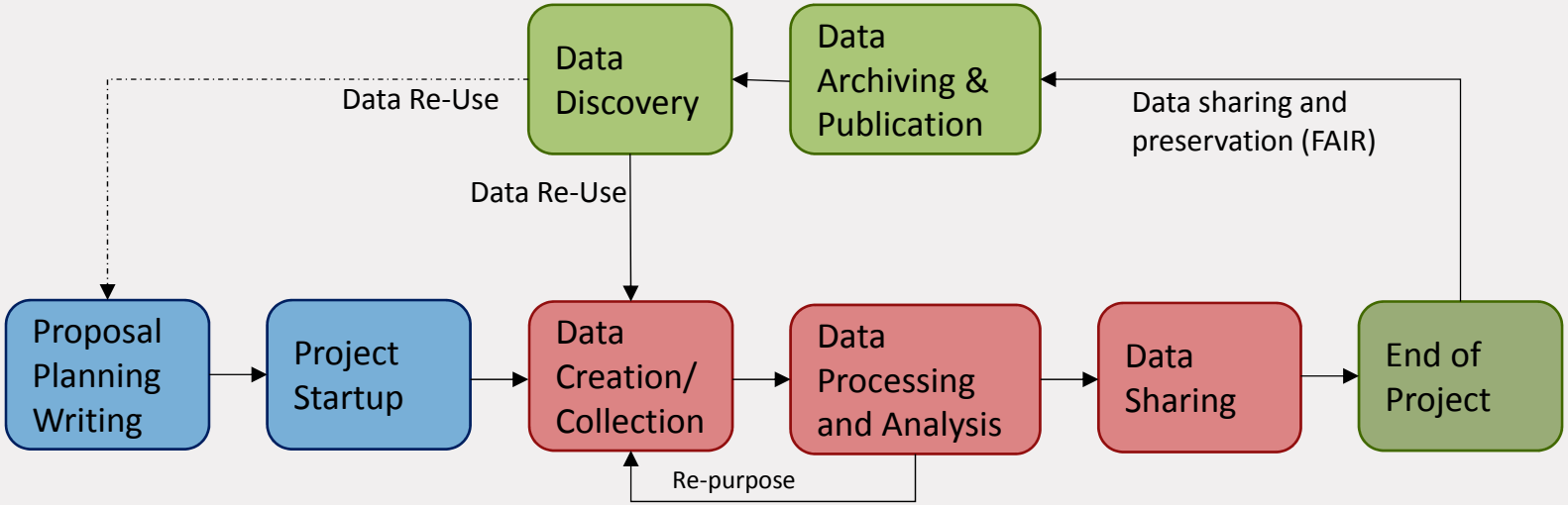
- Publishing open access has not (yet?) resulted in stopping the upward cost spiral of libraries
- Transparancy/openness does not automatically translate into quality improvement and better peer review practices -> Mega + Predatory Journals / Open Peer Review versus Traditional Peer review
- Open access is not necessarily a free choice: the peer-review process determines in which journal your article will be accepted, and article acceptance determines your open access options
- On the plus side: OA has resulted in innovation, creative ideas and more “dynamics” in publishing

The world's most valuable resource

Data and the new rules of competition

The Economist, 2017

Research Life Cycle and Research Data Management (RDM)



Research Data Management concerns the organisation of data, from its entry to the research cycle through to the dissemination and archiving of valuable results.

What is data?

Which data should be made available according to funders?

Data is:

a) "natural" materials (biomaterials, chemicals*, paper lab journals, codebooks*, prototypes, 3D printed models, designs, etc.)

b) all (relevant) digital data

Funder	Which Data?
Horizon 2020	Researchers do not have to store/archive all data. Data refers primarily to the **data required to validate the results presented in scientific publications**.
NWO, TTW, ZonMW	Only storage of data that are relevant for reuse. Researcher decides which data are relevant.

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The datamanagement protocol

Stage	Type of Document
Proposal	Data Management Paragraph/Section
Acceptance	Data Management Plan

Data management paragraph/section should (briefly) discuss whether data will be collected, shared, archived and/or published

Data Management Plan is now a deliverable!

NWO: first DMP version within 4 months after being awarded the project

H2020: first DMP version within 6 months

DMP rejected = funding of the project will not start

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What are researchers required to do with respect to RDM once funding has been awarded?

The funder requirements essentially ask you to:

1. Make a data management plan (and assess potential GDPR issues)

2a. Deposit research data **-> *Scientific integrity***

2b. Make the data “as open as possible, as closed as necessary” **-> *Reuse = publish/disseminate data***

3. Make your data FAIR (applies to all relevant data)

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Datamanagement Plans

What kind of information should be included there?

Section	How to address?
Data description What data is collected, processed or generated?	Data description, type and format
Data Storage How data will be preserved (in particular after the end of the project)?	a) During research: data storage = typically university servers (and project partner servers) b) After research: data deposition = data archive/repository
Metadata & Provenance Which methodology and standards will be applied?	Documentation, protocols, metadata standards, etc.
Data Availability and Reuse How will data be shared/made open access?	a) Deposition in a data archive/repository (FAIR principles) b) Open access or not? c) Usage license d) Formal agreements on data reuse

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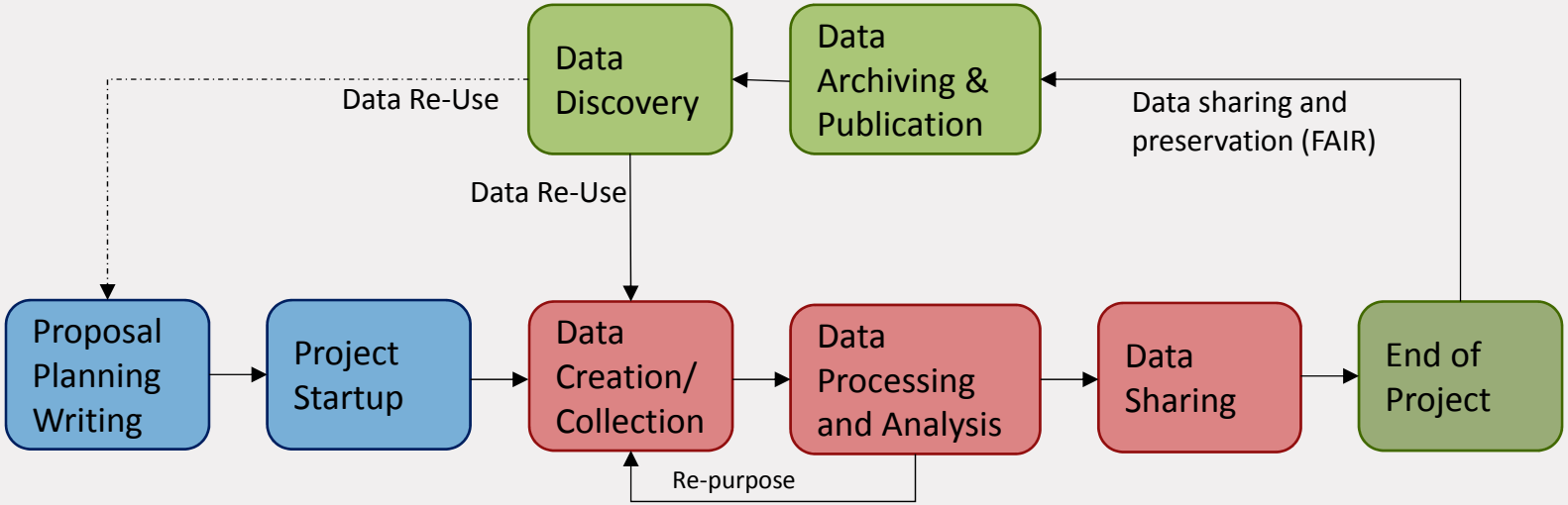
Research Life Cycle and Research Data Management



In each phase, we should take into account these external requirements.

Research Life Cycle and Research Data Management (RDM)

Proposal
Planning
Writing

- **Write RDM paragraph**
- Review existing data sources
- Determine if project will produce new data or combine existing data
- Identify potential users of your data, potential archives
- Investigate archiving, costs, consent and confidentiality

Project
Startup

- **Create a Data Management Plan (DMP)**
- **Identify whether you have personal/sensitive data – assess GDPR compliance**
- **Take into account additional institutional and funder requirements or restrictions**
- Make decisions about documentation form and content
- Conduct pretest of collection material and methods

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Research Life Cycle and Research Data Management (RDM)

Data Creation/ Collection

- How to organize files
- **Arrange safe and secure storage & backups**
- Q.A. for data collection
- **Think about access control and security**

Data Processing and Analysis

- **Document analysis process and file manipulations**
- Metadata generation
- Maintain Electronic Lab Notebook (ELN project) when applicable
- Manage file versions

Data Sharing

- Determine file formats
- Determine sharing platform/tools
- Verify institutional and funder requirements or restrictions

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Research Life Cycle and Research Data Management (RDM)

Data Discovery

Data Archiving & Publication

- Further document and clean data
- Revisit metadata use and standards
- **Deposit data in a trusted repository**
- Perform reproducibility check on publications
- **Use permanent identifiers in publication of articles, dissertations**

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Deposit Data in a Trusted Repository

Where can I find a data repository?

Data Repository	Type	Which type of research?
4TU.Centre for Research Data	Institutional	Technical scientific data
DANS Easy	National	Humanities, Social Sciences, etc.
Cambridge Crystallographic Data Centre (CCDC)	Discipline	Structural Information (X-ray, etc.)
Figshare	Generic	All disciplines, but not just data
Zenodo	Generic EU Platform	All disciplines, but not just data

Funder-approved list of "trusted" data repositories: https://www.re3data.org/

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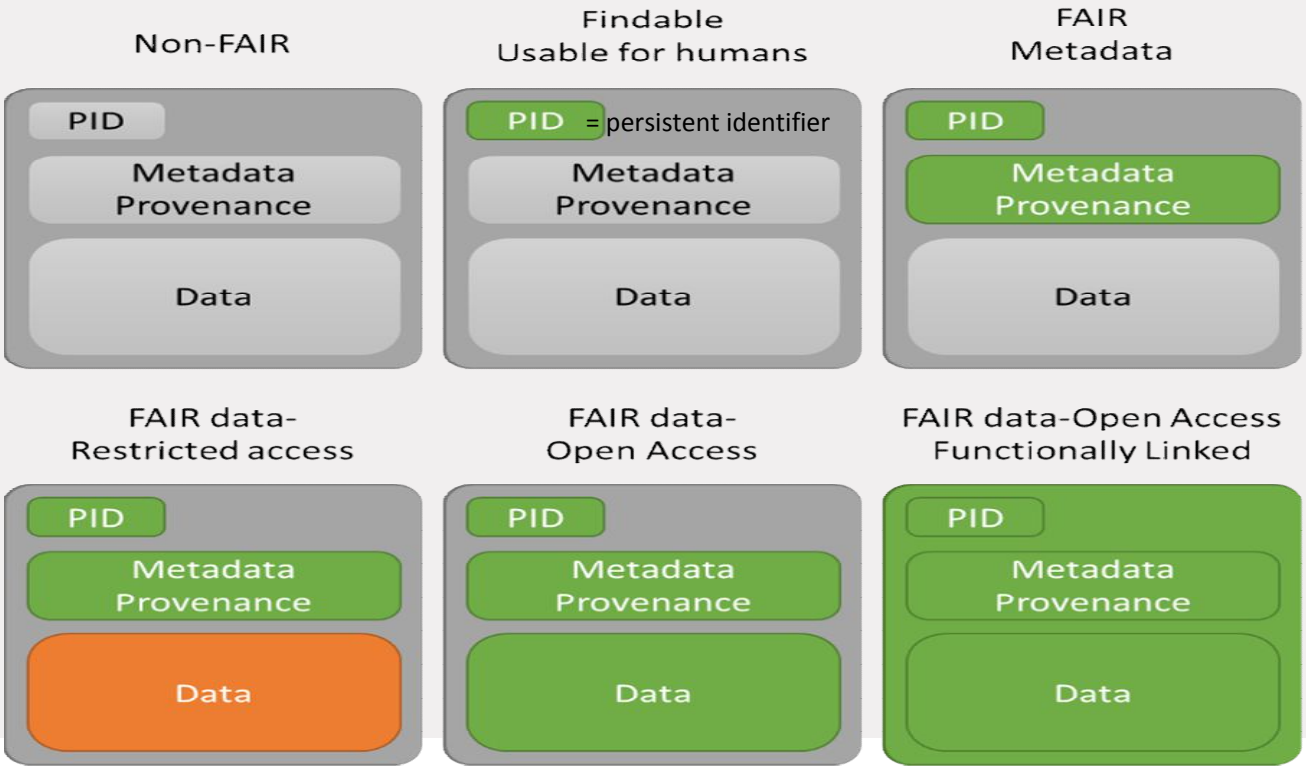
Making your research data FAIR

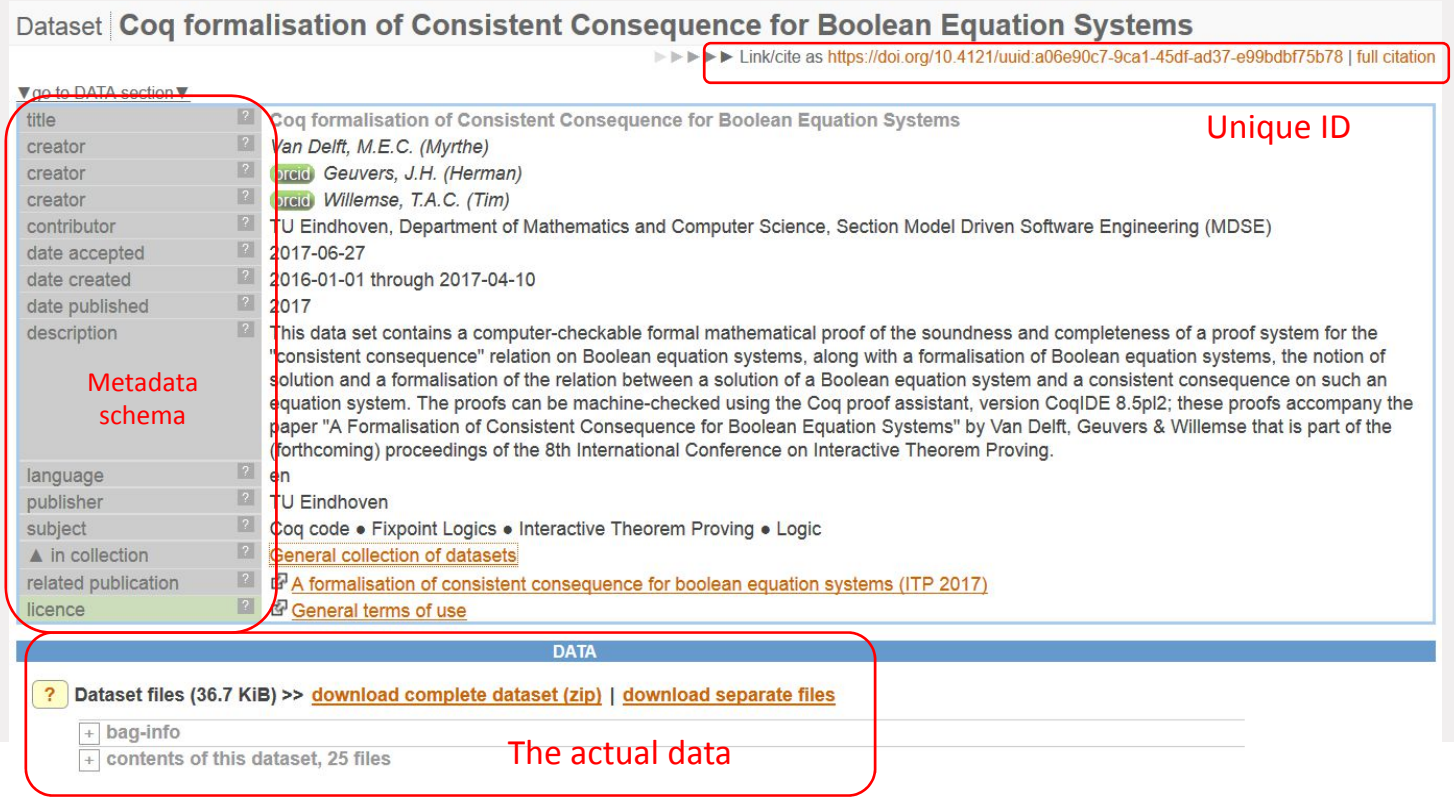
Data are easy to find, access, combine and reuse for both humans and machines



FAIR data principles: https://www.dtls.nl/fair-data/fair-principles-explained/

Publishing and archiving research data in a data repository

4TU.Centre for Research Data as an example



Making your research data FAIR

4TU.Centre for Research Data as an example

How is the FAIRness of my data increased?	FAIR principle
Data are assigned a DOI	Findable
Data can be linked to journal/other publications (DOI reservation is possible)	Findable
Data are assigned descriptive/discipline-related metadata	Findable
Metadata can be harvested by Google etc.	Findable
Data are open access (restricted access options are being developed)	Accessible
Data can be accessed/downloaded by machines/humans using a standardized communications protocol	Accessible
Metadata in Datacite metadata schema	Interoperable Findable
Data are assigned a user license (menu of licenses)	Reusable
Data are preserved for the long term (15 years)	Reusable Accessible

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Good RDM: should not only be externally motivated!

- It reduces risk of data loss
- It can improve your research workflow
- It can help you get recognized for your work
- It can lead to novel insights
- It promotes scientific integrity and quality of data (combat scientific fraud)
- It reduces the need for duplication of research and data
- It puts public-funded research results in the public sphere
- It promotes collaboration as your results are findable for other researchers
- Businesses and other organisations can also profit from research (data)
- Making research results more accessible may contribute to better and more efficient science overall!

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Open Science

Open Access Publishing

- In my PhD research I have generated research findings that are a significant breakthrough in my field – it is no problem that I cannot publish in the journals Nature or Science if the new university policy will be that journal publications must be published immediately in open access. Note: Both the journals Nature or Science currently do not offer immediate (gold) open access.

- Publishers contribute little or nothing to the advancement of science; it would be much better if all universities published the research output of their own researchers

- Publishing all journal articles immediately in open access must become mandatory for all researchers in Europe because it is the only way to give everyone quick, direct and free access to scientific findings

- Researchers should not have to pay the costs for open access publishing from their research budgets if researchers already do all the work (create data, write papers, do peer review, etc.)

- Peer review should be simplified or be eliminated from scientific publishing because it prevents scientific information/knowledge becoming available as soon as possible

Open Science

Research Data

- I would be glad if my university drafts clear guidelines on research data management (for example, on how to handle my research data during my PhD and how to archive my research data when I graduate), so that I know what is expected of me

- Researchers should not get research funding if they don’t share their research data, software, scripts, etc. – publishing results only via journal publications (papers) is not enough

- PhD students should not receive their PhD degree unless they deposit and publish their research data (including relevant raw data) with full documentation in a data archive/repository

Open Science

Open Science General

- The societal impact of scientific research should be as important or more important than scientific impact and should therefore be more highly rewarded

- Companies, governments and citizens should determine the university's research agenda to a large extent, even if this means that there will be little funding for fundamental research and research where the societal or economic impact is not immediately obvious

- All scientific output (papers, research data and raw data, software, scripts, conference posters, etc.) must be available open access, regardless of the importance of the findings – if the article is not available in open access, it will not count as research output

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