The FAIR Concept: What ? How and Why?

Maastricht University Library

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The FAIR essential training

Aim

The aim of this presentation is to briefly introduce the FAIR high level principles, its origins challenges and a few examples of it

Outline

We will introduce the following:

- The national and international roots and origins of the “FAIR” model
- The Impact of FAIR and Open Science for Research and Society
- FAIR principles and Case Studies
- What’s in FAIR for you?

What is FAIR?

FAIR is an international, bottom up approach for the discovery, and re-use of digital content such as data for both machines and individuals

Wilkinsons et al. 2016

https://www.nature.com/articles/sdata201618

Where did this all start?

- Wilkinson, M. D. et al. (2016) The FAIR Guiding Principles for scientific data management and stewardship. Sci. Data 3:160018, https://doi.org/10.1038/sdata.2016.18

FAIR principles to support knowledge discovery and innovation : What makes your data FAIR?

Box 2 | The FAIR Guiding Principles

To be Findable:
F1. (meta)data are assigned a globally unique and persistent identifier
F2. data are described with rich metadata (defined by R1 below)
F3. metadata clearly and explicitly include the identifier of the data it describes
F4. (meta)data are registered or indexed in a searchable resource

To be Accessible:
A1. (meta)data are retrievable by their identifier using a standardized communications protocol
A1.1 the protocol is open, free, and universally implementable
A1.2 the protocol allows for an authentication and authorization procedure, where necessary
A2. metadata are accessible, even when the data are no longer available

To be Interoperable:
I1. (meta)data use a formal, accessible, shared, and broadly applicable language for knowledge representation.
I2. (meta)data use vocabularies that follow FAIR principles
I3. (meta)data include qualified references to other (meta)data

To be Reusable:
R1. meta(data) are richly described with a plurality of accurate and relevant attributes
R1.1. (meta)data are released with a clear and accessible data usage license
R1.2. (meta)data are associated with detailed provenance
R1.3. (meta)data meet domain-relevant community standards

The international and national roots of FAIR

> H2020 Online Manual > Cross-cutting issues > Open access & Data management >

Open access | Data management

Open access

These guidelines explain the rules on open access to scientific peer reviewed publications and research data that beneficiaries have to follow in projects funded or co-funded under Horizon 2020. Note that these guidelines do not apply to their full extent to actions funded by the European Research Council (ERC). For information and guidance on implementation of Open Access and the Open Research Data Pilot at the ERC, please see the Guidelines on the Implementation of Open Access to Scientific Publications and Research Data in Projects supported by the European Research Council under Horizon 2020 or contact erc-open-access@ec.europa.eu.

Open Access guidelines for H2020 projects working on COVID-19, SARS-CoV-2 and related topics

The COVID-19 crisis is putting high pressure on the research community to speed up science discovery, inform the public health response and help save lives. A necessary complementary action to accelerate and amplify the impact of research is to ensure that research findings and data relevant to this outbreak, are shared as rapidly, openly and effectively as possible. Therefore, the European Commission is urging all H2020 projects working on COVID-19, SARS-CoV-2 and related topics to provide immediate open access to their related publications, data and any other output.

To support the projects, a guidance document has been developed that includes specific guidelines regarding:

- The FAIR principles;
- Open access to publications;
- Open access to data;
- Data Management Plans;
- Other research outputs;

The document includes as well ongoing data-related efforts under the umbrella of the European Open Science Cloud and other useful tools and resources.

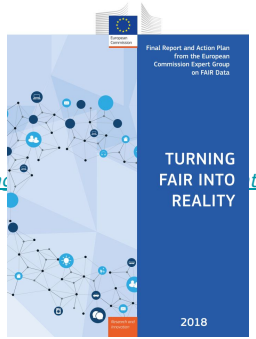
:ipants/docs/h2020-funding-guide/cross-cutting-issues/open-access-data-manag *tm*

European Commission

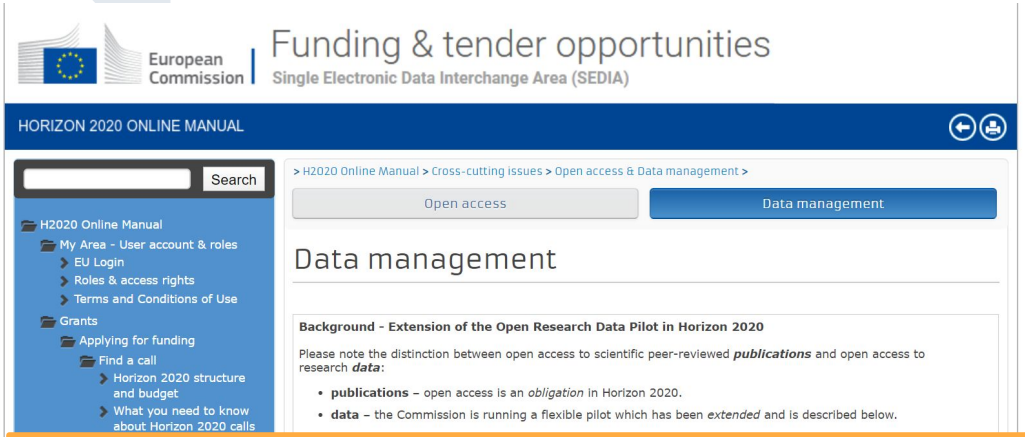
Horizon 2020 projects working on the 2019 coronavirus disease (COVID-19), the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), and related topics:

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

Version 1.0, April 8, 2020



Recognition within the European



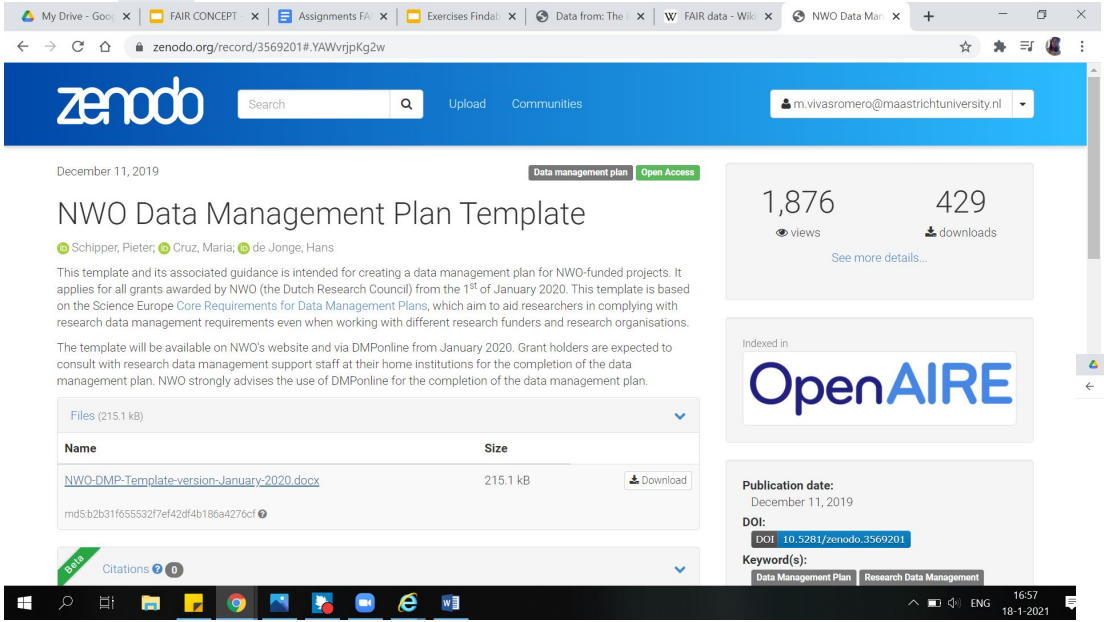
FAIR data management

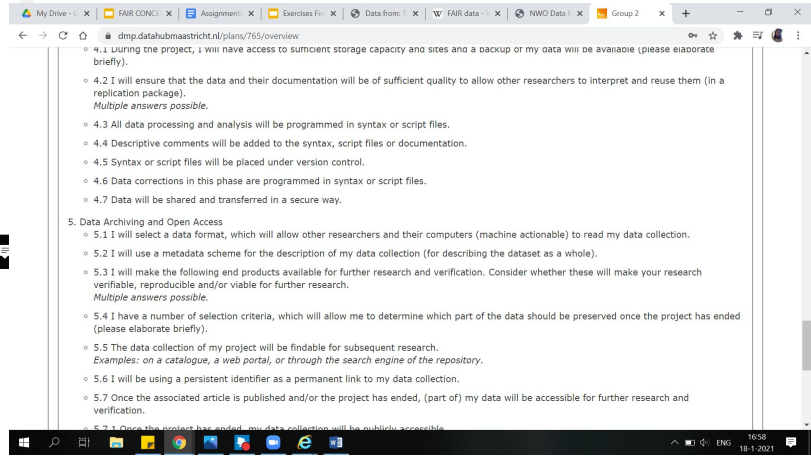
In general terms, your research data should be 'FAIR', that is findable, accessible, interoperable and re-usable. These principles precede implementation choices and do not necessarily suggest any specific technology, standard, or implementation-solution.

This template is not intended as a strict technical implementation of the FAIR principles, it is rather inspired by FAIR as a general concept.

Source: https://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-data-management/open-access_en.htm

National and Institutional Recognition



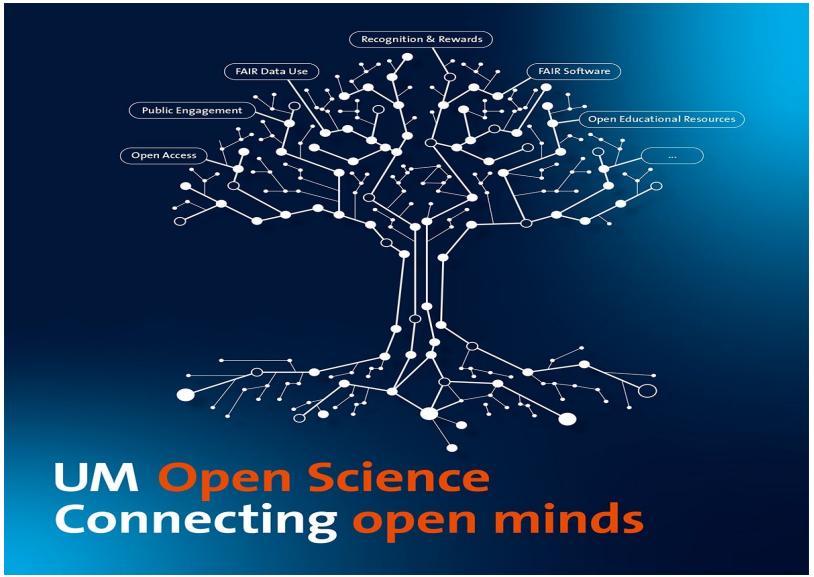


The University Goals

Maastricht University aims to be FAIR by 2025

FAIR@UM & UMC 2025 Manifesto

https://zenodo.figshare.com/articles/Towards_a_FAIR_University/6753353/1



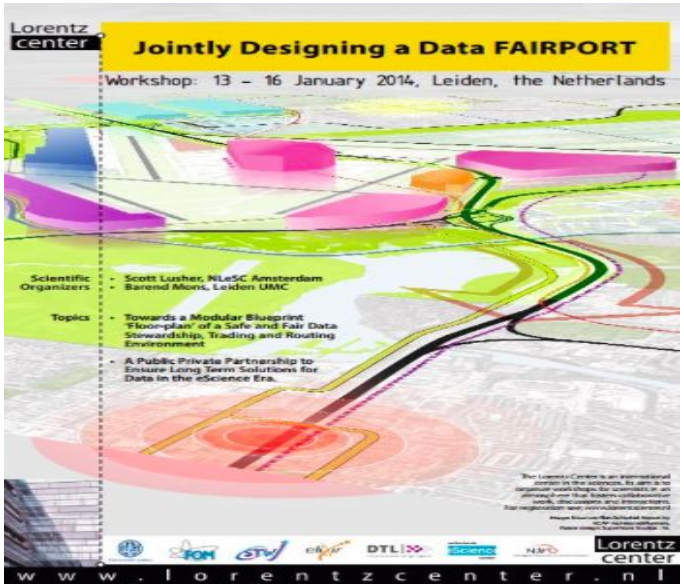
UM CDDI Case Studies:

Showcase	Research area	Learning goal
Sharing large datasets from magnetic resonance imaging (MRI) experiments	Neurosciences	Understanding the resource and cost requirements of storing and processing large image data
Detect how 'good students' use a dashboard, which communicates their test results.	Education sciences	Investigate the ethical concerns when FAIRify with sensitive personal data
Network analysis of case law	Jurisprudence (i.e. law)	The representation of (legal) textual data with established community standards
Secure analysis of health data on institutional infrastructure	Epidemiology	Develop and deployment of a database by university service provider
Tracking governmental/institutional funding flows in international markets	Political science	Create machine-readable metadata that doesn't reveal protected information
Predicting economic policies based on presidential speeches	Economics	Create metadata for speech-data/expressive (social media) data.
Linking medical data to create a dashboard for Inflammatory Bowel Disease patients	Medical informatics	Create links between data generated by different software in different organisations

DMP Maastricht

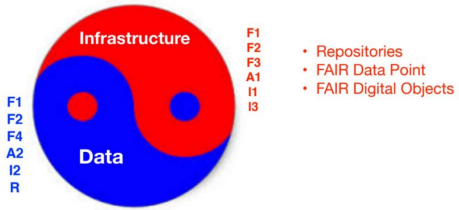
https://dmp.datahubmaastricht.nl/plans/840

Minimal-set of community agreed principles - where FAIR began



How do we go FAIR? What are the limits of FAIR?

- No technological barriers, repositories, FAIR data points and Digital objects are available
- The change is about a choice, an agreement with a Scientific Community to make knowledge available



FAIR maximize the impact from your research

Making research data more **F**inable, **A**ccessible, **I**nteroperable and **R**eusable (**FAIR**) provides a range of benefits to researchers, research communities, research infrastructure facilities.

Plenty of benefits from FAIR

Making your data and research visible to

SCIENTIFIC DATA

Comment | Open Access | Published: 15 March 2016

The FAIR Guiding Principles for scientific data management and stewardship

Mark D. Wilkinson, Michel Dumontier, [...] Barend Mons

Scientific Data **3**, Article number: 160018 (2016) | Cite this article

108k Accesses | **1416** Citations | **1509** Altmetric | Metrics

Access & Citations

108k	1122	1416
Article Accesses	Web of Science	CrossRef

Citation counts are provided from Web of Science and CrossRef. The counts may vary by service, and are reliant on the availability of their data. Counts will update daily once available.

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1295 tweeters | 91 blogs | 19 Facebook pages
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2377 Mendeley | 18 Citeulike

This article is in the 99th percentile (ranked 61st) of the 263,901 tracked articles of a similar age in all journals and the 1st percentile (ranked 1st) of the 1 tracked articles of a similar age in *Scientific Data*

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Altmetric calculates a score based on the online attention an article receives. Each coloured thread in the circle represents a different type of online attention. The number in the centre is the Altmetric score. Social media and mainstream news media are the main sources that calculate the score. Reference managers such as Mendeley are also tracked but do not contribute to the score. Older articles often score higher because they have had more time to get noticed. To account for this, Altmetric has included the context data for other articles of a similar age.

https://www.nature.com/articles/sdata201618

Can we go FAIR in all disciplines?

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Can we go FAIR in all disciplines?

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