

The FAIR Concept: What ? How and Why?

Maastricht University Library

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The FAIR essential training



Maastricht University



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?

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](#)

- 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](#)



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

European Commission | Funding & tender opportunities
Single Electronic Data Interchange Area (SEDIA)

HORIZON 2020 ONLINE MANUAL

Search

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

Open access | Data management

Data management

Background - Extension of the Open Research Data Pilot in Horizon 2020

Please note the distinction between open access to scientific peer-reviewed *publications* and open access to research *data*:

- **publications** – open access is an *obligation* in Horizon 2020.
- **data** – the Commission is running a flexible pilot which has been *extended* and is described below.

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 screenshot shows the Zenodo record page for the 'NWO Data Management Plan Template'. The browser tabs include 'My Drive - Google Drive', 'FAIR CONCEPT', 'Assignments FAIR', 'Exercises Finda', 'Data from: The', 'FAIR data - Wiki', and 'NWO Data Man'. The URL is 'zenodo.org/record/3569201#.YAWvrjKg2w'. The Zenodo header shows the logo, a search bar, and the user 'm.vivasromero@maastrichtuniversity.nl'. The record is dated 'December 11, 2019' and has 'Data management plan' and 'Open Access' tags. The title is 'NWO Data Management Plan Template' by 'Schipper, Pieter; Cruz, Maria; de Jonge, Hans'. The description states that the template is intended for creating a data management plan for NWO-funded projects, based on the Science Europe Core Requirements for Data Management Plans. It mentions that the template will be available on NWO's website and via DMPonline from January 2020. The file list shows 'Files (215.1 KB)' with a table containing the file 'NWO-DMP-Template-version-January-2020.docx' (215.1 KB) and a download button. The 'OpenAIRE' logo is visible, indicating the record is indexed in the OpenAIRE database. The 'Publication date' is 'December 11, 2019' and the 'DOI' is '10.5281/zenodo.3569201'. The 'Keyword(s)' are 'Data Management Plan' and 'Research Data Management'. The Windows taskbar at the bottom shows various application icons and the system clock at 16:57 on 18-1-2021.

December 11, 2019

Data management plan Open Access

NWO Data Management Plan Template

Schipper, Pieter; Cruz, Maria; de Jonge, Hans

This template and its associated guidance is intended for creating a data management plan for NWO-funded projects. It applies for all grants awarded by NWO (the Dutch Research Council) from the 1st of January 2020. This template is based on the Science Europe Core Requirements for Data Management Plans, which aim to aid researchers in complying with research data management requirements even when working with different research funders and research organisations.

The template will be available on NWO's website and via DMPonline from January 2020. Grant holders are expected to consult with research data management support staff at their home institutions for the completion of the data management plan. NWO strongly advises the use of DMPonline for the completion of the data management plan.

Name	Size
NWO-DMP-Template-version-January-2020.docx	215.1 KB

Download

md5:b2b31f655327ef42df4b186a4276cf

Indexed in

OpenAIRE

Publication date:
December 11, 2019

DOI:
[10.5281/zenodo.3569201](https://doi.org/10.5281/zenodo.3569201)

Keyword(s):
Data Management Plan Research Data Management

The screenshot shows the content of the NWO Data Management Plan Template document. The browser tabs include 'My Drive - Google Drive', 'FAIR CONCEPT', 'Assignment', 'Exercises FAIR', 'Data from: The', 'FAIR data - Wiki', 'NWO Data Man', and 'Group 2'. The URL is 'dmp.datahubmaastricht.nl/plans/765/overview'. The document content includes a list of requirements for data management plans, numbered 4.1 through 5.7. The requirements cover topics such as data storage, data quality, data documentation, data processing, data sharing, and data archiving. The document is written in a formal, instructional style, using bullet points and numbered lists to present the requirements. The Windows taskbar at the bottom shows various application icons and the system clock at 16:58 on 18-1-2021.

4.1 During the project, I will have access to sufficient storage capacity and sites and a backup of my data will be available (please elaborate briefly).

4.2 I will ensure that the data and their documentation will be of sufficient quality to allow other researchers to interpret and reuse them (in a replication package).

4.3 All data processing and analysis will be programmed in syntax or script files.

4.4 Descriptive comments will be added to the syntax, script files or documentation.

4.5 Syntax or script files will be placed under version control.

4.6 Data corrections in this phase are programmed in syntax or script files.

4.7 Data will be shared and transferred in a secure way.

5. Data Archiving and Open Access

5.1 I will select a data format, which will allow other researchers and their computers (machine actionable) to read my data collection.

5.2 I will use a metadata scheme for the description of my data collection (for describing the dataset as a whole).

5.3 I will make the following end products available for further research and verification. Consider whether these will make your research verifiable, reproducible and/or viable for further research.

Multiple answers possible.

5.4 I have a number of selection criteria, which will allow me to determine which part of the data should be preserved once the project has ended (please elaborate briefly).

5.5 The data collection of my project will be findable for subsequent research.

Examples: on a catalogue, a web portal, or through the search engine of the repository.

5.6 I will be using a persistent identifier as a permanent link to my data collection.

5.7 Once the associated article is published and/or the project has ended, (part of) my data will be accessible for further research and verification.

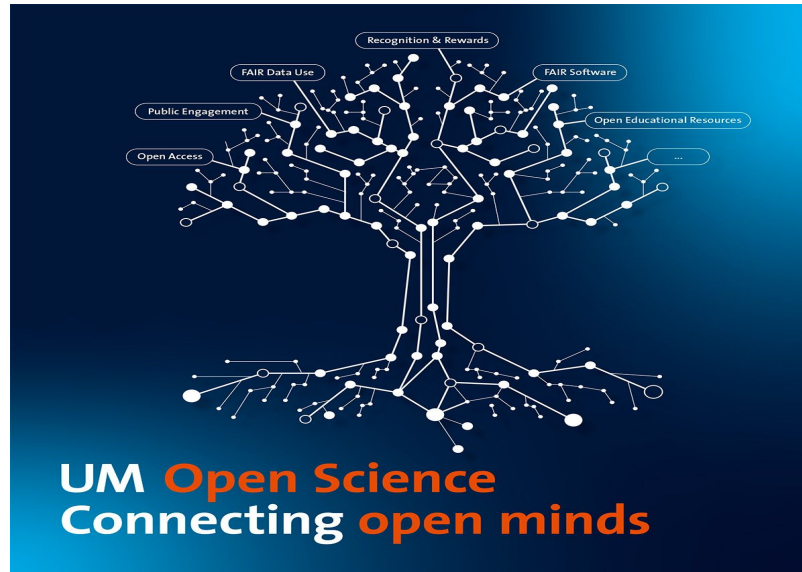


The University Goals

Maastricht University aims to be FAIR by 2025

FAIR@UM & UMC 2025 Manifesto

<https://zenodo.org/records/10000000>





UM CDDI Case Studies:

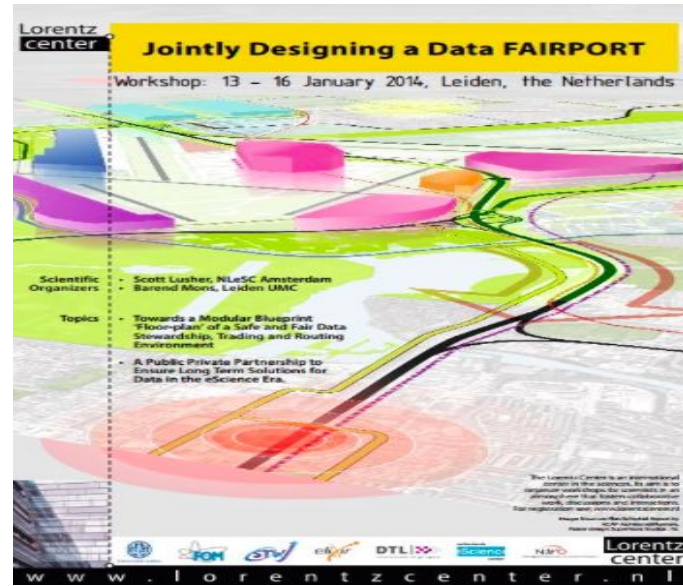
Showcase	Research area	Learning goal
Sharing large datasets from magnetic resonance imaging (MRI) experiments	Neurosciences	Understanding the resource and cost requirements of storing and processing large image data
Detect how 'good students' use a dashboard, which communicates their test results.	Education 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

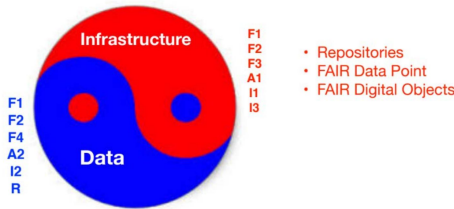
[https://dmp.datahubmaastricht.nl/plans/
840](https://dmp.datahubmaastricht.nl/plans/840)

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.



PROF. DR. MICHEL DUMONTIER,
DISTINGUISHED UNIVERSITY PROFESSOR DATA SCIENCE

'Open Access creates the rocket fuel to accelerate scientific discovery and improve health & wellbeing'

Open up to open access



Status: Work in Progress (WIP)



PROF. DR. RIANNE LETSCHERT,
RECTOR

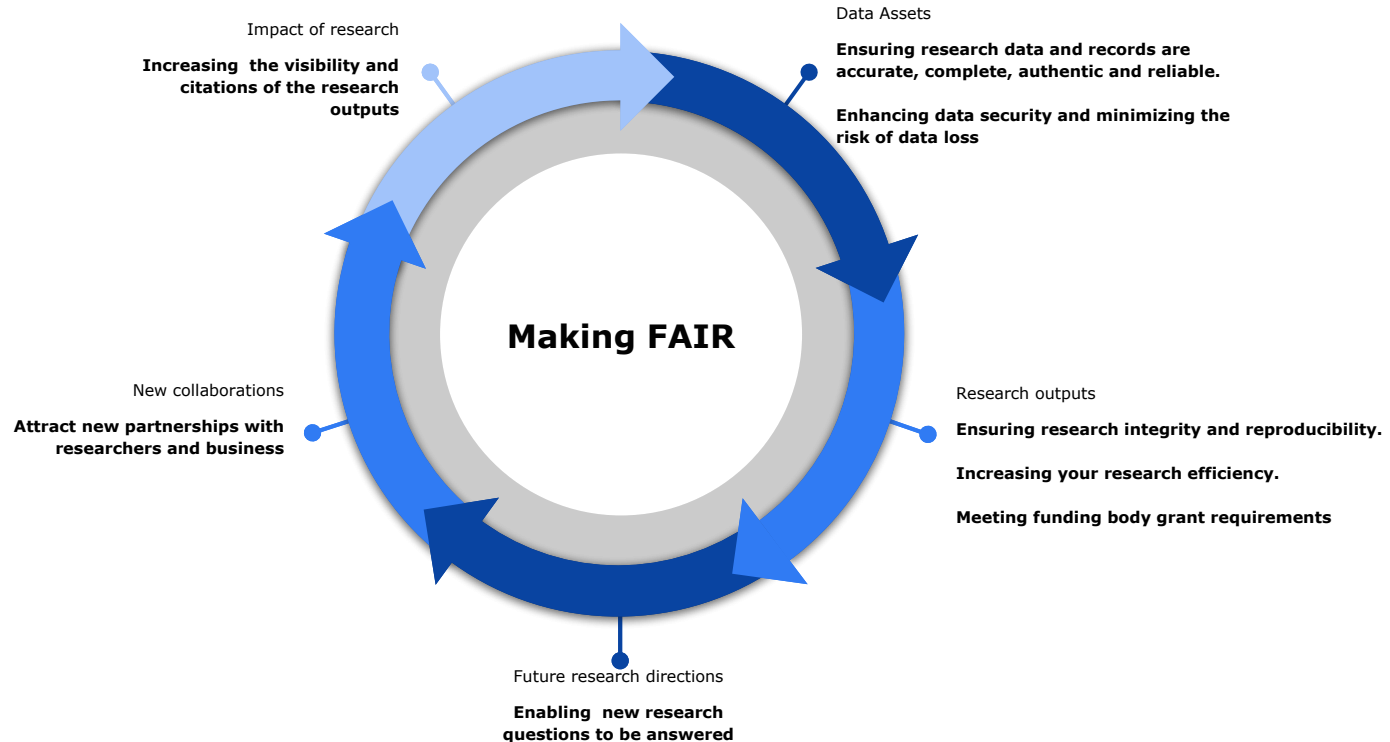
'Open Access empowers fair sharing of scientific evidence and contributes to the advancement of science & society'

Open up to open access



@c.utrillaguerrero@maastrichtuniversity.nl

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
Article Accesses

1122
Web of Science

1416
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.

Online attention



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*

[View more on Altmetric](#)

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?

Go to slido.com

Enter code: **FAIR-UM**

slido

Can we go FAIR in all disciplines?

 Start presenting to display the poll results on this slide.