THE UNIVERSITY of EDINBURGH

Research Data Support: Quick Guide 6

MAKING YOUR RESEARCH DATA 'FAIR'

In 2016, the 'FAIR Guiding Principles for scientific data management and stewardship' were published in *Scientific Data*, and since then they have gone on to become a touchstone for the long-term management of research data of all kinds. **The FAIR authors intended to provide guidelines to improve the Findability, Accessibility, Interoperability, and Reusability of digital assets.** These principles emphasise machine-actionability (i.e. the ability of automated computational systems to find, access, interoperate, and reuse data with minimal or no human intervention) as humans increasingly rely on computational means to discover and work with data as a result of the increase in volume, complexity, and creation speed of data.

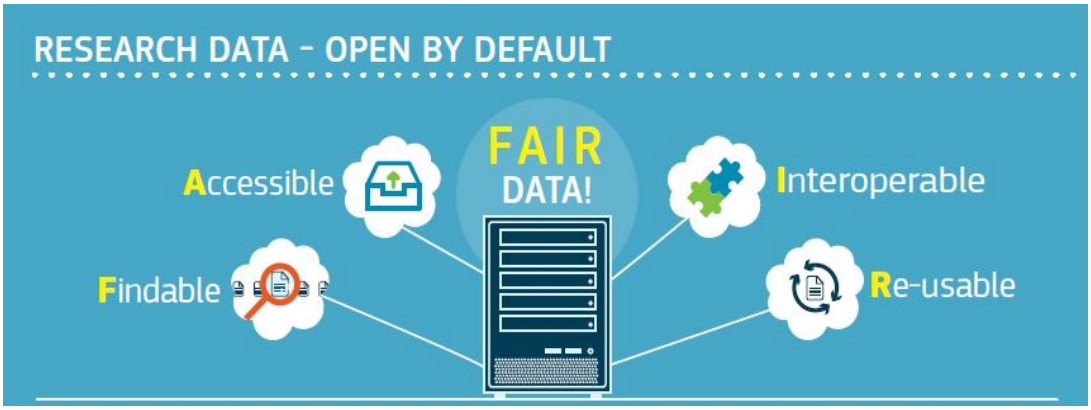


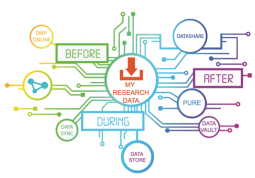
Figure 1 - FAIR infographic by OpenAIRE for Horizon 2020 (CC-BY)

F IS FOR FINDABLE

Metadata and data should be easy to find for both humans and computers. Machine-readable metadata are essential for automatic discovery of datasets and services. Depositing your data in a trusted digital repository, such as Edinburgh DataShare, enables it to be discovered more easily by automated services such as metadata harvesters, as well as search engines.

A IS FOR ACCESSIBLE

Once the user finds the required data record, they need to know how the data itself can be accessed. Ideally the data will be open to all, but in some cases (where the data is sensitive, or under embargo) accessing it may involve authentication and authorisation. Including a clear data access statement in your publications will also help with this, and may raise interest in your work.



I IS FOR INTEROPERABLE

Datasets often need to be integrated with other datasets, so selecting a standard format is essential. The Research Data Support team provides guidance on choosing an interoperable file format for your data (see Contacts and Resources section, below). The data may also need to interoperate with applications or workflows for analysis, storage, and processing. Using persistent identifiers such as ORCIDs and DOIs helps to link people, projects, publications and data within the scholarly record.

R IS FOR REUSABLE

The ultimate goal of FAIR is to optimise the reuse of data, whether this is for the purposes of attempting to reproduce findings or to use the data for a new purpose altogether. To achieve this, metadata and data should be well-described so that they can be replicated and/or combined in different settings. Including a "read me" file with your data deposit – and perhaps also a copy of your data management plan (DMP) – will also help human readers to understand the processes undertaken, and determine whether your data is useful for them.

CONTACTS AND RESOURCES

- Wilkinson et al. (2016) The FAIR Guiding Principles for scientific data management and stewardship: https://www.nature.com/articles/sdata201618
- The GO FAIR initiative: https://www.go-fair.org/fair-principles/
- The EU FAIRsFAIR project: https://www.fairsfair.eu/
- Options for long-term data deposit at Edinburgh: https://www.ed.ac.uk/information-services/research-support/research-data-service/after
- Research Data Service guidance on choosing the best file formats: https://www.edweb.ed.ac.uk/information-services/research-support/research-data-service/after/data-repository/choosing-file-formats
- Research Data MANTRA training: https://mantra.edina.ac.uk/
- Contact Research Data Support: email data-support@ed.ac.uk or contact the IS Helpline

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