

FAIR Assessment, Metrics & Certification

Ilona von Stein (WP4) 10:30–10:45



All components are needed to support FAIR



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European Commission Expert Group on FAIR Data, 2018. https://doi.org/10.2777/1524



Many components make the FAIR Symphony



Data objects need to be considered into their context

Image: European Union Youth Orchestra, euyo.eu



Assessment of FAIR data objects and metrics



FAIR Data Object Assessment Metrics



About FAIR Support FAIR Landscape

Tools & Software Events I

re Events Project Outputs Outreach

¹While FAIR principles may apply to any digital objects, we are concerned with the subset of digital objects: research data that are collected, measured, or created for purposes of scientific analysis.

- ✓ FsF-F1-01D Data is assigned a globally unique identifier
- ✓ FsF-F1-02D Data is assigned a persistent identifier
- FsF-F2-01M Metadata includes descriptive core elements (creator, title, data identifier, publisher, publication date, summary and keywords) to support data findability
- $\,\,\,\,\,\,\,$ FsF-F3-01M Metadata includes the identifier of the data it describes
- $\,\,
 m imes\,$ FsF-F4-01M Metadata is offered in such a way that it can be retrieved by machines
- $\,\,\,\,\,\,$ FsF-A1-01M Metadata contains access level and access conditions of the data
- $\,\,\,\,\,\,$ FsF-A2-01M Metadata remains available, even if the data is no longer available
- ✓ FsF-I1-01M Metadata is represented using a formal knowledge representation language
- ✓ FsF-I1-02M Metadata uses semantic resources
- ✓ FsF-I3-01M Metadata includes links between the data and its related entities
- ✓ FsF-R1-01MD Metadata specifies the content of the data
- ✓ FsF-R1.1-01M Metadata includes license information under which data can be reused
- ✓ FsF-R1.2-01M Metadata includes provenance information about data creation or generation
- ✓ FsF-R1.3-02D Data is available in a file format recommended by the target research community

Please login & comment below citing in the subject line the Metric Identifier No. you are referring to - e.g. "FSF-R1.3-01M"



Building on prior global indicators & initiatives

Refine and revise metrics through iterations (v0.4)

https://fairsfair.eu/fairsfair-dataobject-assessment-metricsrequest-comments

FAIRsFAIR Data Object Assessment Metrics: https://doi.org/10.5281/zenodo.4081213

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Practical tests implemented against metrics

Programmatic assessment for published datasets



https://www.fairsfair.eu/f-uji-automated-fair-data-assessment-tool

Repositories

Open source Available for testing Existing web standards and external registries and resources

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Machine actionable assessment tool

Allevisioner Jan Allevisioner Jan Allevis br Evelanting Research Data Objects Based on FARM/ARE Metrics. The sock as supported by the <u>FARM/ARE propert </u> Occoor AVERAGOO Croit & Cool Grant Agreement 831568. Concasts the davieges MIT Loorees Prod our mone should F-U.S	
Serves Ruglapivt v	
FAIR object PAIPvess assessment of a data object	~
POST /evaluate	-
FAIR metric FAIRstAIR assessment metrics	~
CET /setrics Return all metrics and their definitions	-
Response body	
<pre>"metric_identifier": "FsF-F1-02D", "metric_name": "Persistent identifier", "output": {</pre>	
"pid": "https://doi.org/10.1594/PANGAEA.902845", "pid_scheme": "doi",	
"resolvable_status": true,	
"resolved_url": "https://doi.pangaea.de/10.1594/PANGAEA.902845"	

https://www.fairsfair.eu/f-uji-automated-fairdata-assessment-tool and https://github.com/pangaea-datapublisher/fuji

Graphical user interface / www.f-uji.net



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Practical recommendations for FAIR data improvement

FsF-I1-02M - Metadata uses semantic resources			
Status:	fail		
Score:	0 of 1		
Output:	[]		
Metric tests:	Test:	Test name:	Result:
	FsF-I1-02M	-1 Namespaces of known semantic resources can be identified in metadata	•
Debug:	Level:	Message:	
	INFO	Number of vocabulary namespaces extracted from all RDF-based metadata -: 1	
	INFO	Default vocabulary namespace(s) excluded -: ['http://schema.org/']	
	WARNING	NO namespaces of semantic vocabularies found in the metadata	







% DataverseNO



PHAIDRA DIGITAL COLLECTION



Alignment of FAIR data assessment initiatives

Avoid duplicate efforts



Disciplinary practices



and-certification-eosc-region-report-available



Find synergies



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FAIR Assessment, Metrics & Certification





Data needs to remain FAIR over time

FAIRness is a 'snapshot'

Context is key

FAIR + time = preservation



 \rightarrow FAIR-enabling trustworthy repositories

Icons by Freepik from Flaticon



FAIR data over time



1. A. M. A. A. A.

See also: FAIRsFAIR M4.2 Draft Maturity Model Based on Extensions and or Additions to CoreTrustSeal Requirements,



CoreTrustSeal+FAIR



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Repository support programme



Image sources: https://www.fairsfair.eu/news/journey-coretrustseal-certification-begins-ten-repositories& https://icon-library.net/icon/icon-help-23.html



CoreTrustSeal+FAIR





Impact of CoreTrustSeal+FAIR

Alignment between object FAIRness and trustworthy repository standards will benefit:

Researchers - repositories can take the burden of individual researchers in making data FAIR

funders

depositors

repository data services

It improves repository practices! It increases FAIRness of digital objects!



Icon by Freepik from Flaticon



FAIR Assessment, Metrics & Certification



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FAIRness of Software

- Software is an essential part of modern research, in a number of possible roles:
 - A tool
 - A research outcome or result
 - The object of study
- Create a bridge between the research software community and the FAIR community at large





M2.15 Assessment report on 'FAIRness of software'

- 1. Overview of current solutions, challenges and practices in research software
- 2. Literature review on the application of FAIR principles to research software
- **3. 10 recommendations** for the creation (or adaptation) of FAIR guiding principles for research software



Report available on https://doi.org/10.5281/zenodo.4095092



FAIR Assessment for Services



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Guidance for service owners to enable FAIR

 Growing awareness that FAIR-enabling services are also a driver and enabler of open science

- For service owners, there is currently little guidance on how to make their service fit in the FAIR data ecosystem
- Proposed basic framework for FAIR service assessment



(illustration from vecteezy)

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Technically-orientedSocially-orientedFAIR enablementUser centricityQuality of serviceTrustworthinessOpen & ConnectedEthical & Legal

"M2.10 Report on basic framework on FAIRness of services", available at: <u>https://doi.org/10.5281/zenodo.4292599</u>

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FAIR enablement

Objective:

The service enables FAIR data by elevating the FAIRness of digital objects and/or supporting the FAIRification process. FAIR enablement is actively driven through the implementation of community-supported standards and interoperability frameworks.

Recommendations:

- Perform a self-assessment on how the function(s) of the service enable, respect or reduce each of the FAIR principles for the data that it operates on.¹² Make the results of the self-assessment publicly available, together with an outlook on the desired state for the service (including a cost/benefit analysis).¹³
- Use automated tests that show bow the service increments FAIRness of digital objects in a
 verifiable, measurable, repeat
 and scalable way. Root such tests in
 community-supported methy
 is that measure the FAIRness of digital objects in an
 objective way.
- In consultation with the schemas and other st be adopted. Consid

nunity (or communities), identify which metadata chnical and semantic aspects of data encoding) should main-specific standards and practices. Strive to include able, generate and capture metadata

High-level objectives + actionable, more detailed recommendations ervice providers to improve tention here are authentication & nd metadata encoding specifications. e registries and interoperability /ork.

ervice, specifically with a view towards on of digital objects.





Outlook and next activities

FAIR data object assessment

- → Test, improve, consult metrics
- → Release F-UJI tool, machine actionable and GUI
- → Further liaise with other EOSC and FAIR initiatives on testing

FAIR-enabling repository certification

- → TRUST+FAIR: internal testing, integration ongoing initiatives
- → Recommendations FAIR into CoreTrustSeal
- → Repository guidance and support

FAIR assessment for Software and Services

- →Iterative improvement through workshops
- →Publication of Framework for assessing FAIR-enabling services

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