



FAIRsFAIR
Fostering Fair Data Practices in Europe

FAIRsFAIR Workshop

Validating the FAIRsFAIR assessment framework for FAIR enabling services

Workshop's activity

20 May 2021

Dear participants,

Welcome to the FAIRsFAIR final workshop regarding the assessment framework for FAIR enabling services. During this workshop we will review the assessment framework step by step and validate it before the community review of the final version.

During the last workshop, we received valuable feedback which has impacted the assessment framework structure and content. We strive that this process will be as transparent as possible and will yield a result which will be useful for the community and for the service providers that handle research data or act in the FAIR ecosystem.

We invite you to prepare for the session by reviewing this document.

During the May workshop we will go through each aspect, objective and recommendation in the assessment framework and you will have the opportunity to comment and propose existing services that already meet the proposed recommendations.

Thank you for your precious time and help to improve the assessment framework.

Kind regards,

Task 2.4, Work Package 2, FAIRsFAIR project

Zoom link:

<https://us02web.zoom.us/j/81911070838?pwd=T3M5Y05E VG92RThnNmE0eHhHMS8wQT09>

Notes

[Link to this document](#)

Short link: <http://bit.ly/fsfAFservices>



Useful links & references

FAIR & Services

1. M2.10 Report on basic framework on FAIRness of services”, available at: <https://doi.org/10.5281/zenodo.4292599> (first iteration of the Assessment Framework)
2. M2.7 Assessment report on 'FAIRness of services', available at: <https://doi.org/10.5281/zenodo.3688762> (first milestone of T2.4 where the terminology of FAIR enabling is introduced)
3. [Webinar](#) video - introducing the FAIRsFAIR assessment framework for FAIR enabling services

Internal documents:

1. [Iteration 2B](#) - feedback from WP4 and February workshop
2. [Iteration 3](#) - which is presented today (also available on Zenodo at <http://doi.org/10.5281/zenodo.4771937>)

FAIR & Software

(Isn't part of the Services Assessment Framework)

1. M2.15 Assessment report on 'FAIRness of software' (Version 1.1). Zenodo. <https://doi.org/10.5281/zenodo.4095092> (separating software objects and services, in this report we discuss only software objects which are research results)
2. [Webinar video](#)- introducing the FAIRsFAIR report on software and the recommendations on how to create the FAIR principles to research software (direct [YouTube link](#))
3. FAIR for Research Software Working Group - is now working on the FAIR principles for research software



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Agenda

15.00	Welcome <ul style="list-style-type: none">• Previous milestones• The structure of the assessment framework
15.10	Focus on each technical aspect: validate the current recommendations <ul style="list-style-type: none">• FAIR enabling• Quality of service• Open & Connected
16.00	Break
16.05	Focus on each social aspect: validate the current recommendations <ul style="list-style-type: none">• User centricity• Transparency• Longevity• Ethical & Legal
16.45	Next steps <ul style="list-style-type: none">• How can we make the assessment framework format of most value to you?
17.00	End



Participants

- Add your name, institution, country, job title (we will anonymize your name and institution if we disseminate this document. We will also anonymize your comments on this document)
- Please tell us if you want to be listed as a contributor to the workshop results deposit

Name	Institution	Country	Job title	Add me as contributor
Patricia Herterich	DCC, University of Edinburgh	UK	Research Data Specialist	
Morane Gruenpeter	Inria, Software Heritage	France	Software engineer & metadata specialist	
Sara Ramezani	SURF	Netherlands	Technical Consultant of Data Services	
Joseph Wafula	JKUAT	Kenya	Associate Professor	Yes
Sebastiano Giorgi Scalari	UOC, Open University of Catalunya	Spain	Research librarian	Yes
anonymized		Slovenia	Researcher	
Maggie Hellström	Lund University and ICOS ERIC	Sweden	Research data management specialist	Yes
Ian Bruno	CCDC	UK	Director of Data Initiatives	Yes
anonymized		ET	Education Scientist	
Natalie Meyers	University of Notre Dame	USA	Research Librarian	yes



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Context

Assessment framework Structure

ASPECTS	ITERATION 1&2	ITERATION 3
Technically-oriented	FAIR enablement	FAIR enablement
	Quality of service	Quality of service
	Open & connected	Open & connected
Socially-oriented	User centricity	User centricity
	Trustworthiness	Transparency
		Longevity
Ethical & Legal	Ethical & Legal	

FAIR enabling terminology

- **Enable:**
 - **Augment:** the service provides elements improving FAIRness of the digital object- for example automatically minting a DOI;
 - **Facilitate:** the service actively helps to realize a particular FAIR principle — for example by allowing the user to add metadata or enabling discoverability;
- **Respect:** the service does not actively enable a particular FAIR principle, but also does not interfere with it — it can be said to respect the “FAIR-in-FAIR-out” principle;
- **Reduce:** the service actually makes data less FAIR — at least for a particular principle — for example by detaching metadata or a PID when it acts on a digital object;



Workshop activity

Validating the framework

We'll answer these questions by writing in parallel in the document, then discuss our responses.
Please comment on others' answers by using the Google Doc commenting function.

For each aspect we will review its objective and each recommendation by answering the following questions in the table:

1. Is this objective/recommendation relevant for services in a FAIR ecosystem?
2. Should this recommendation be prioritized?
 - a. Essential (high) E / highly recommended (medium) H / desired (low) L / redundant (not needed) R ?
3. Do you know services that already answer this specific recommendation? Please add a link.

Technically-oriented aspects

FAIR enablement

	relevant	priority	"Good" services examples
Aspect: FAIR enablement			
<p>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.</p> <p>Comments:</p> <ul style="list-style-type: none"> - Why do we concentrate only on data? Wouldn't it be better to refer to digital objects (software service, workflows, 	+1, +1 +1 +1 +1 +1, +1 +1	E/H H	



<p>learning objects, bibliographic items (papers, books, theses...), semantic artefacts, laboratory notebooks, interactive resources, datasets...)</p> <p>I propose that you use digital objects instead of data in all recommendations. In this case you can use the term "metadata" instead of the term "data".</p> <ul style="list-style-type: none"> - BOTH data and metadata as actionable elements? for FAIR systems? - I guess FAIR should also include scale repositories. In this way, I prefer using digital objects, too. - I support the first comment. Much work is now being done on setting up a FAIR Digital Object Framework (not the least by the FAIR DO Forum, https://fairdo.org) 			
<p>Recommendations</p>			
<p>In consultation with the target community (or communities), identify which metadata schemas and other standards (e.g. technical and semantic aspects of data encoding) should be adopted. Consider in particular domain-specific standards and practices. Strive to include accessibility conditions in metadata. Where applicable, generate and capture metadata automatically and be transparent about the concepts the service can provide an answer to.</p>	<p>+1, +1, +1 +1 +1</p>	<p>+1 for "generate and capture metadata automatically", H/E Essential H</p>	
<p>Engage with both the user community and other service providers to improve interoperability between services. Of particular attention here are authentication & authorization infrastructure (AAI), PIDs, and data and metadata encoding specifications. Seek alignment with existing or emerging data</p>	<p>+1 +1 +1</p>	<p>H, E H</p>	



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<p>type registries and interoperability frameworks, e.g. the EOSC interoperability framework.</p> <p>Comment:</p> <ul style="list-style-type: none"> - Difficult to achieve, but still worthwhile to work towards. EOSC services should strive to use a common approach 			
<p>Consider both human and machine access to the service, specifically with a view towards supporting automated pipelines for the FAIRification of digital objects.</p>	<p>+1, 1+ +1</p>	<p>HIGH, H+H + m</p>	
<p>Use automated tests that show how the service increments FAIRness of digital objects in a verifiable, measurable, repeatable and scalable way. Root such tests in community-supported methodologies that measure the FAIRness of digital objects in an objective way.</p>	<p>+1 +1 +1</p>	<p>Reasonably important, but not essential, Desired (low) M</p>	<p>FAIR Evaluator Service PresQT takes advantage of FAIRshare's prebuilt maturity indicator tests. Our PresQT API calls use an approved collection of tests identified by the PI's and community. FAIRshake Assessment Service PresQT takes advantage of FAIRshake's manual assessment functionality to allow users to assess the FAIRness of their research projects. presqt.crc.nd.edu & https://presqt.reaidthedocs.io/en/lat</p>



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			<p>est/ga.html#fairshare-evaluator-service (what we aim to do with our FAIRshare and FAIRShake integrations is help people test and see FAIRness of “same” objects when they move them to systems that have different FAIR strengths and weaknesses)</p>
<p>Perform a self-assessment on how the function(s) of the service <i>enable, respect or reduce</i> each of the FAIR principles for the data that it operates on.¹ 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).²</p>	<p>+1</p>	<p>Medium, Medium, Medium H</p>	<p>It is not a good idea to “Make the results of the self-assessment publicly available”</p> <p>Not sure if this goes here or in the “first” metadata section, but https://metadatagamechangers.com/blog/2021/4/14/can-communities-improve-metadata shows how metadata metrics related to the FAIR</p>

¹ The case studies presented in Ref. (3) offer a suggested format for this self-assessment. Of course other formats are acceptable as well, however we do recommend to include all of the aspects listed in the case studies (i.e.: Summary; Users; Purpose; Adoption; Services; Target Digital Objects; Examples; FAIR enablement mapping).

² Note that a service does not need to address all aspects of FAIR, and integration with other FAIR-enabling services (e.g. PID minting) is often preferable over developing your own solutions.



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			<p>use cases have changed since the Arctic Data Center began using the metrics in the data ingest process. A figure in the work shows how Metric values are recorded on initial submission (dots) and on final publication (solid). Metadata metrics and improvement efforts in repositories can flow upstream and affect communities! For this community, The next step is applying the metrics to the entire DataOne network of repositories to find other good examples of metadata that support all of the FAIR use cases.</p>
<p>Use persistent identifiers to refer to data and metadata.</p> <p>Comments:</p> <ul style="list-style-type: none">- As well as implementing PID registry kernel metadata profiles!!!	<p>+1 , +1 +1, +1, +1 +1</p>	<p>+1, +1 Absolutely essential, Essential H</p>	<p>Open PID infrastructure is a core community asset(https://www.arl.org/wp-content/uploads/2020/09/2020.09.25-implementing-effective-data-practices.pdf)</p>



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			<p>Comment: This is a report, not a service, but emphasizes importance of adopting this recommendation in university information systems</p> <p>Open PID infrastructure is a core community asset</p> <p>Unbundle the DMP PIDs will unlock discovery</p> <p>Core PIDs to Power Findability</p> <ol style="list-style-type: none">1. Digital object identifiers (DOIs)2. Open Researcher and Contributor (ORCID) iDs3. Research Organization Registry (ROR) IDs4. Crossref Funder Registry IDs5. Crossref Grant IDs <p>Core Recommendations to Stakeholders</p> <ol style="list-style-type: none">1. Design tools and services to support the use of PIDs.2. Incorporate PIDs into policies.3. Invest in infrastructure and initiatives that support the use of PIDs
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			and maDMPs. 4.Minimize the burden on researchers
**** additional recommendations****			

Comments & questions:



Quality of Service

	relevant	priority	“Good” services examples
Aspect: Quality of service			
Objective: The service is delivered in a reliable, secure, high-quality way, consistent with its specifications.	+1 +1 +1 +1 +1	H H	
Recommendations			
Codify the service’s availability and other non-functional aspects in a public Service Level Agreement (SLA) which is easy to understand by users from different communities.	+1 +1	M H M	Depends on services’ maturity? & agreements with its user community?
Deploy the service on appropriate and well-supported hardware or virtual (cloud) infrastructure. Define operational-level agreements (OLA) with 3rd-party infrastructure services that enable service delivery.	+1 +1 +1 +1	E/H Essential H	Depends on services’ maturity & agreements with its user community?
Take reasonable technical and non-technical measures to prevent, detect, and respond to cyber or physical security threats; securing the service and protecting sensitive information resources (e.g. only using secure HTTP connections). Organize security audits and pen-tests at regular intervals, ideally at least every two years. Assess whether the service deals with sensitive data (e.g. patient records) and, if so, take	+1 +1 +1 +1 +1	E/H Essential H	Depends on services’ maturity & agreements with its user community?



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additional measures in line with both applicable legislation and expectations from the user community.			
Implement service management processes to bolster a reliable and predictable service delivery (including but not limited to capacity planning).	+1 +1 +1	High-to-medium H Comment: important for core services, but not essential for community-supplied services	
Implement service management processes to govern changes in a controlled way. Make release notes and documentation publicly available. Announce maintenance breaks well ahead of time. Maintain backward compatibility when possible.	+1 +1 +1 +	High-to-medium L Managing communication about breaking releases is crucial H	
Implement (ideally automated) testing procedures for every change to the service or a service (component) that it integrates with. Testing should ideally include not only functional testing, but also performance and stress testing.	+1 +1	Useful Medium M	Depends on services' maturity budget, & agreements with its user community?
Consider service scalability , if applicable.	+1+1 +1	M	
Implement service management processes to deal with incidents or vulnerabilities in an	+1 +1	H	



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effective and transparent way. Implement and test disaster recovery procedures. In case of service interruptions, aim to restore service as soon as possible even if that requires workarounds or other temporary measures.			
Implement a service monitoring system that generates alerts in case of unexpected behavior, including functional, performance and security-related issues.	+1, +1 +1	H	
Implement and make available a set of metrics as indicators for the performance, stability and adoption of the service.	+1, +1 +1	H M	
In addition to single services, also consider service networks and interdependencies.	+1, +1	High	
**** additional recommendations****			
There should be transparent & open service evaluation and assessment procedures in place where *end users* can provide feedback	+1	H	On this topic, I refer to deliverables from the ENVRIplus project: D9.2 (http://www.envriplus.eu/wp-content/uploads/2015/08/D9.2-Service-deployment-in-computing-and-data-e-Infrastructures-Version-3.pdf) and D9.4 (http://www.envriplus.eu/wp-content/uploads/2019/07/D9.4.pdf)



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Comments & questions:

All of the recommendations reflect good practice but it may not be appropriate or necessary for a service to implement all of them.



Open & Connected

	relevant	priority	“Good” services examples
Aspect: Open & Connected			
Objective: The service is operated in a low-barrier and inclusive way; seeking integrations and connections with other services; and championing principles of openness consistent with Open Science and Open Research.	+1 +1	H H	
Recommendations			
Publish clear, inclusive and non-discriminatory licences and/or terms of use. Enable wide access to the service.	+1 +1 +1 +1 +1 +1	E/H H H	
Provide guidance about the service licensing to better understand the limitations in usage.	+1+1 +1	H H	
Seek integrations with other services rather than replicating functionality, especially for common reusable infrastructure components. Provide documentation to ensure better sustainability for the network of integrations. Adopt EOSC architectural components and standards as enablers for deep interoperability with other services in the EOSC portfolio. ³ Comment: - This of course only works if those "other services" are sustainable and do not	+1 +1 +1 +1	High-to-medium H HIGH H	

³ Part of the EOSC interoperability framework, the EOSC Profiles (<https://data.d4science.net/13af>) specify common data models for EOSC entities (Providers, Resources, etc) which helps drive interoperability of resources within EOSC.



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(suddenly) change their functionality, cost model or usage conditions...			
Adopt well-documented and community-supported open standards and specifications, in particular for API's and other interfaces to better understand the service's usage.	+1 +1 +1 +1	H	
Make the service and all documentation available online through URLs that are fully qualified domain names and assign PIDs where applicable.	+1, +1 +1 +1	H H H	
Offer the service with the lowest possible entry barrier for end-users (which does not preclude monetization or cost-recovery models)	+1 +1 +1	H H H	
Use community-supported PIDs to integrate with other services; keep data, metadata and PID's tightly connected. Consider implementing the FAIR Digital Object model to enable interoperability with other data services. Comment: - This is a first step, but I think only a couple of PID systems (Handles, PURLs) should be universally used towards ensuring FAIRness	+1 +1 +1 +1	E/H H H	
Where possible, make any source code that is used to run the service available under a common open-source licence. ⁴	+1 +1 +1	H H	

⁴ See e.g. <https://spdx.org/licenses/> for a list of relevant software licences.



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Seek inclusion in relevant service catalogs, ideally obtaining and using a PID for the service.	+1 +1 +1	H H H	
**** additional recommendations****			

Comments & questions:



Socially-oriented aspects

User centrality

	relevant	priority	“Good” services examples
Aspect: User centrality			
Objective: The service is managed such that it serves the (possibly evolving) goals of the user community, and maximises usability while minimizing burden.	+1? +1	M	
Recommendations			
Invest in user training and outreach activities to help users understand the service’s value proposition and how to effectively use it.	+1 +1	M	
Ensure the service provider organization has adequate support staff available to assist users where needed.	+1 +1	H H	
Determine and monitor your target user community to understand how the service fits within its data management norms and expectations.	+1 +1	M	
Ensure that there is an ongoing, consistent dialogue between the service and its user community, such that users can optimally make use of the service and influence its development.	+1 +1	H	



<p>Ensure that sufficient documentation is available for users and organize a process to regularly review and update (at least with every change to the service). Documentation should cover functional aspects, a description of the various service components and their relationship, and explain which phases of the data life cycle and data management processes are supported by the service. Ideally documentation should be version-controlled, have a PID and an (open) licence.</p>	<p>+1 +1</p>	<p>H H</p>	
<p>Strive for continual improvements to the user experience. In addition to making use of data and service usage statistics, actively work with the community to understand and improve usability, for example through user tests or design studios.</p>	<p>+1 +1</p>	<p>H H</p>	
<p>Include multi-lingual support and accessibility features⁵, both for the service and its documentation, to the extent relevant for the service's (potential) user base. Key information must be available in English if the service is intended to be included within EOSC.</p>	<p>+1 +1</p>	<p>H H</p>	
<p>Engage the user community in establishing and prioritizing the service's backlog and roadmap.</p>	<p>+1 +1</p>	<p>H</p>	
<p>**** additional recommendations****</p>			

⁵ For accessibility on the web, we specifically recommend the Web Content Accessibility Guidelines (WCAG) overview: <https://www.w3.org/WAI/standards-guidelines/wcag/>



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Comments & questions:



Transparency

	Relevant (should it stay as a single aspect?)	priority	“Good” services examples
Aspect: <i>Transparency</i>			
Objective: The service provider communicates with its user community in a transparent manner.	Y +1	H H	
Recommendations			
Clearly communicate the service’s core value proposition and any pertinent (technical or non-technical) features, as well as its limitations.	+1 +1	H H	
Be open and transparent about organisational mission, business model, legal status and target user communities. Be transparent and accountable about costs, profits and cost-recovery models. Comment: <ul style="list-style-type: none"> - The cost: could we transfer it as a separate aspect? - What would you call it? - It is an economical aspect, so we should define the financial and legal transparency separately, I think. This is because financial transparency gathers many specific sub-aspects such as profit definition. 	+1 +1	H H	



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For services that are meant to preserve research objects over a longer period of time (such as data repositories), state a clear minimum preservation timeframe and provide a contingency and/or preservation plan.	+1 +1	H H	
Implement an appropriate and transparent governance structure that includes representation of the service's target user community.	+1 +1	H M	
Be clear about how the service implements community standards. Comments: <ul style="list-style-type: none"> - Community standards get referenced in other criteria. I do wonder if including it here adds much. - True, we have several of these overlaps. Will probably map them all out after this exercise 	+1 +1	H	
Seek to attain certification where relevant community-endorsed certification mechanisms exist.	+1 +1		
**** additional recommendations****			

Comments & questions:



Longevity

	relevant	priority	“Good” services examples
Aspect: <i>Longevity</i>			
Objective: The service provider designs the service with a timeframe for the maintenance and sustainability of the service in mind and implements measures accordingly, considering the researcher's necessity for reproducible research.	+1	M	
Recommendations			
Take reasonable measures to ensure a sustainable long-term operation — including both financial and organisational aspects. Aim to reduce long-term operational dependencies on short-lived project funding. If available, provide clear information to indicate how long the service will minimally be available and maintained.	+1 +1	H H	
Implement technical measures to safeguard the continuity of the service, and the longevity and integrity of any (meta)data that is stored as part of the service. This includes keeping backups on independent systems, implementing fail-over mechanisms and exercising proper life cycle service management.	+1 +1 +1	H	



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Ensure that the service provider organization has sufficient staff with knowledge to operate the service, now and in the future.	+1 +1	H H	
**** additional recommendations****			

Comments & questions:



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Ethical & Legal

	relevant	priority	“Good” services examples
Aspect: <i>Ethical & Legal</i>			
Objective: The service complies with all applicable legal and ethical guidelines, in a transparent and auditable way.	+1	H	
Recommendations			
Take reasonable measures to manage the intellectual property rights of data producers.	+1 +1 +1	H	
Define, publish and adhere to a code of conduct that is in accordance with commonly agreed principles regarding the conduct of research in the service’s user community.	+1 +1	H H	
Take reasonable measures to ensure data is handled in compliance with disciplinary and ethical norms, and that data licences are clearly defined and respected within global and local legislation.	+1 +1	H H	
Provide clear and user friendly information about the extent of the data usage/access, in addition to data licences.	+1	H	https://www.softwareheritage.org/legal/users-ethical-charter/
Maintain a publicly available privacy policy.	+1 +1	M	https://www.softwareheritage.org/legal/content-policy/



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Clearly communicate a contact address for security issues including hacks, vulnerabilities and privacy breaches. Ensure the address is actively monitored by multiple staff members.	+1 +1	H	
Implement auditable measures to ensure that the service respects all applicable legislation and regulations around user privacy and sensitive data (including but not limited to GDPR in Europe). In particular, when processing personal data, roles and responsibilities must always be well-defined and data subjects must be provided with the name and contact details of the data controller and of the Data Protection Officer.	+1 +1	H	
**** additional recommendations****			

Comments & questions:



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Making the Assessment framework useful

Question: How can we make the assessment framework format of most value to you?

(anonymized)	How can we make the assessment framework format of most value to you?
	Prioritization would yield different results if compared.
	Examples, case studies with different services (repositories to see how it compares to CoreTrustSeal etc and other data services), conveys an aspiration of professionalisation of services that should be helpful going forward,
	Get some info from EOSC how they want to use it going forward?