eosc | FAIR-IMPACT
Expanding FAIR solutions across EOSC

An overview of FAIR4RS and existing tools to assess FAIRness of software

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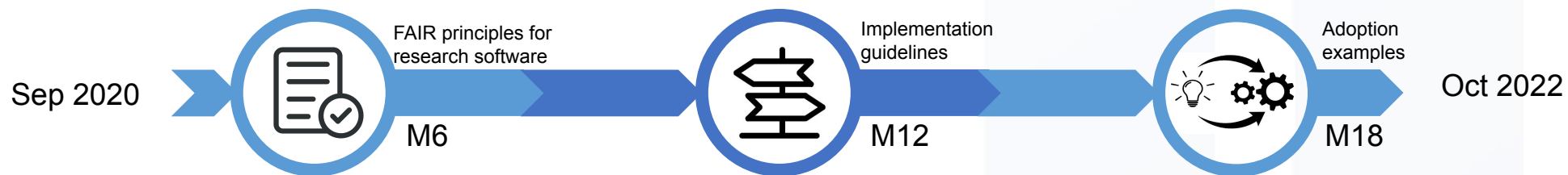Software Sustainability Institute
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FAIR Principles for Research Software (FAIR4RS)

- A joint RDA Working Group, FORCE11 Working Group, and Research Software Alliance (ReSA) Taskforce.
  - 250 members, 80 active contributors.
- Coordinating of a range of existing community-led discussions on:
  - How to define and effectively apply FAIR principles to research software,
  - How to achieve adoption of these principles.

Sep 2020 ——— **FAIR principles for research software** M6 ——— **Implementation guidelines** M12 ——— **Adoption examples** M18 ——— Oct 2022

- [Introducing the FAIR Principles for research software](#) (Scientific Data)
- [FAIR Principles for Research Software](#) (FAIR4RS Principles) v1.0 (RDA)

FAIR4RS Principles v1.0

F: Software, and its associated metadata, is easy for both humans and machines to find

F1. Software is assigned a globally unique and persistent identifier.

F1.1. Components of the software representing levels of granularity are assigned distinct identifiers.

F1.2. Different versions of the software are assigned distinct identifiers.

F2. Software is described with rich metadata.

F3. Metadata clearly and explicitly include the identifier of the software they describe.

F4. Metadata are FAIR, searchable and indexable.

A: Software, and its metadata, is retrievable via standardized protocols.

A1. Software is retrievable by its 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 software is no longer available.

I: Software interoperates with other software by exchanging data and/or metadata, and/or through interaction via application programming interfaces (APIs), described through standards.

I1. Software reads, writes and exchanges data in a way that meets domain-relevant community standards.

I2. Software includes qualified references to other objects

R: Software is both usable (can be executed) and reusable (can be understood, modified, built upon, or incorporated into other software).

R1. Software is described with a plurality of accurate and relevant attributes.

R1.1. Software is given a clear and accessible license.

R1.2. Software is associated with detailed provenance.

R2. Software includes qualified references to other software.

R3. Software meets domain-relevant community standards.

FAIR metrics for software

- Assessing FAIRness of software principally for self-improvement, not comparison

- Existing related work on FAIR metrics for data, and software metrics
  - [FAIRMetrics.org](), [FAIR Metrics for EOSC](), [FAIRsFAIR FAIRness of software](), FAIR Metrics for FAIR Software (NL), [CHAOSS]()

- In FAIR-Impact, we are investigating:
  - How suitable are existing tools for assessing FAIRness, when applied to software? E.g. howfairis, FAIR enough metrics, F-UJI, Somef
  - What are suitable metrics to help improve the findability, accessibility, interoperability and reusability of software?

- Metrics often related to metadata

Session B: Metrics for FAIR Research Software

FAIR metrics

A good metric (from fairmetrics.org) should be:

- Clear: anyone can understand the purpose of the metric
- Realistic: it should not be unduly complicated for a resource to comply with the metric
- Discriminating: the metric should measure something important for FAIRness; distinguish the degree to which that resource meets that objective; and be able to provide instruction as to what would maximize that value
- Measurable: the assessment can be made in an objective, quantitative, machine-interpretable, scalable and reproducible manner, ensuring transparency of what is being measured, and how.
- *Universal: The metric should be applicable to all digital resources.*

Session B: Metrics for FAIR Research Software

- How can metrics can be used to improve the discoverability, access, interoperability and reuse of research software

- How to extend interoperability and improve the quality of metadata through the use of the vocabulary

- What are the criteria for trustworthy research software repositories?

- **Activity: collect indicators that can be used for FAIR research software metrics**

Activity Instructions

Each group (online and in-person) will write down existing or new ideas for metrics for research software for a specific topic.

- Descriptive name
- What's being measured?
- What counts as success / improvement?

Activity	On site	Online
1st Task	F2 and R1: Descriptive metadata	Trustworthy repositories for research software
2nd Task	F1.1, F1.2 and R2: identifiers and references	I1 & R3: Community standards

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