



FAIRsFAIR
Fostering Fair Data Practices in Europe

FAIR Semantics

Laying out the foundations for harmonizing practices across domains

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SciDataCon – 21/10/2021



FAIRsFAIR in a nutshell

- H2020 funded project
- 22 partners
- Runs from March 2019-Feb 2022
- Emphasis on fostering FAIR data culture and uptake of good practices.
- Playing a key role in the development of global standards for FAIR certification of repositories and the data within them.
- Helping to realise the European Open Science Cloud (EOSC) vision.



<https://www.fairsfair.eu/>

FAIR Semantics

FAIR Semantics, Interoperability, and Services

[Home](#) / FAIR Semantics, Interoperability, and Services



FAIRsFAIR is working actively to produce recommendations on technologies that support semantic interoperability in a sustainable way, and practices that support FAIRness.

Specifically, we aim to:

- Improve the semantic interoperability of research resources by specifying FAIR metadata schemas, vocabularies, protocols, and ontologies
- Provide solutions for interoperability requirements and machine accessibility for FAIR-aligned repositories
- Formulate guidelines and recommendations for FAIR-enabling services
- Assess to what extent the FAIR principles can be applied to research software

On this page you can find summary information about our key outputs in each of these areas as at December 2020. Click on the links to access comprehensive newspieces, the associated reports, and further reading material.

Improve the semantic interoperability of research resources by specifying FAIR metadata schemas, vocabularies, protocols, and ontologies

Based on studies of public information, especially EOSC infrastructure efforts, and on limited surveying and interviews, documented in [D2.1 Report on FAIR requirements for persistence and interoperability 2019](#), FAIRsFAIR published [D2.2 FAIR Semantics: First recommendations](#), the first iteration of a set of guidelines for creating FAIR semantic artefacts. The report proposes 17 preliminary recommendations related to one or more of the FAIR principles and 10 best practice recommendations to improve the global FAIRness of semantic artefacts. A comprehensive revision of the report, [D2.5 FAIR Semantics Recommendations Second Iteration](#) was published in December 2020.

[D2.4 2nd Report on FAIR requirements for persistence and interoperability](#), published in August 2020 and written specifically for researchers, data stewards, and service providers, is a guide to the use of PIDs, metadata, and semantic interoperability. A further iteration of these guidelines will be published later in the project. Feedback and suggestions for improvement will be most welcome as comments on the public Google Docs version of the report at https://docs.google.com/document/d/1h8yAlK8o3SCjG_tgE_fIB66F68aomMe6MuDv5oDK-4U/edit

Why FAIR Semantics?

- Semantic landscape heterogeneous:
 - Different levels of semantics (from weak to strong)
 - Different formats: RDF/XML, OWL, Turtle,...
 - Different views on what is an ontology
 - Different community's (best) practices
 - Different ways of sharing/publishing



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FAIR Principle I2. (meta)data use vocabularies that follow FAIR principles

What do we mean by FAIR Semantics?

FAIR Semantics means that **semantic artefacts** should adhere to the FAIR principles. We consider semantic artefacts as a specific type of data, used to describe or annotate other data, i.e. as metadata.



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A ***semantic artefact*** is defined within our work as a machine-actionable and -readable formalisation of a conceptualisation, enabling sharing and reuse by humans and machines. These artefacts may have a broad range of formalisation, from loose sets of terms, taxonomies, thesauri to higher-order logics. Moreover, semantic artefacts are serialised using a variety of digital representation formats, e.g., RDF Turtle, and OWL, using XML (RDF) and JSON-LD.

Applying FAIR to Semantic Artefacts

This approach allows us to consider each individual FAIR principle in the context of semantic artefacts. This implies the following:

- usage of globally unique persistent and resolvable identifiers for semantic artefacts, their content (i.e. concept/term/class and relation) and their version,
- machine-readable metadata to describe the semantic artefacts themselves and their content,
- usage of repositories to share, publish and retrieve semantic artefacts and their content
- defining common API(s) to access and index semantic artefacts and their content,
- interoperability approaches to make sure that semantic artefacts of various degrees of complexity and encoding format should work together including publishing mappings and crosswalks between semantic artefacts,
- semantic artefacts and their content should be retrievable through search engines.

The end goal of the FAIR Semantics team...

...is to co-create both recommendations for making semantic artefacts FAIR, and a set of agreed best practices to follow together with the semantics community at large

D2.5 FAIR Semantics Recommendations Second Iteration: <https://doi.org/10.5281/zenodo.4314321>

D2.5 supersedes D2.2.

D2.2 FAIR Semantics: First recommendations: <https://doi.org/10.5281/zenodo.3707984>

How do we work?



FAIRsFAIR workshop
co-located with RDA P14

BUILDING THE DATA LANDSCAPE OF THE FUTURE: FAIR SEMANTICS AND FAIR



Recommendations for FAIR Semantics

Online WORKSHOP

15 October 2020
13:00-17:00



Workshop Minimum metadata schema for semantic artefacts

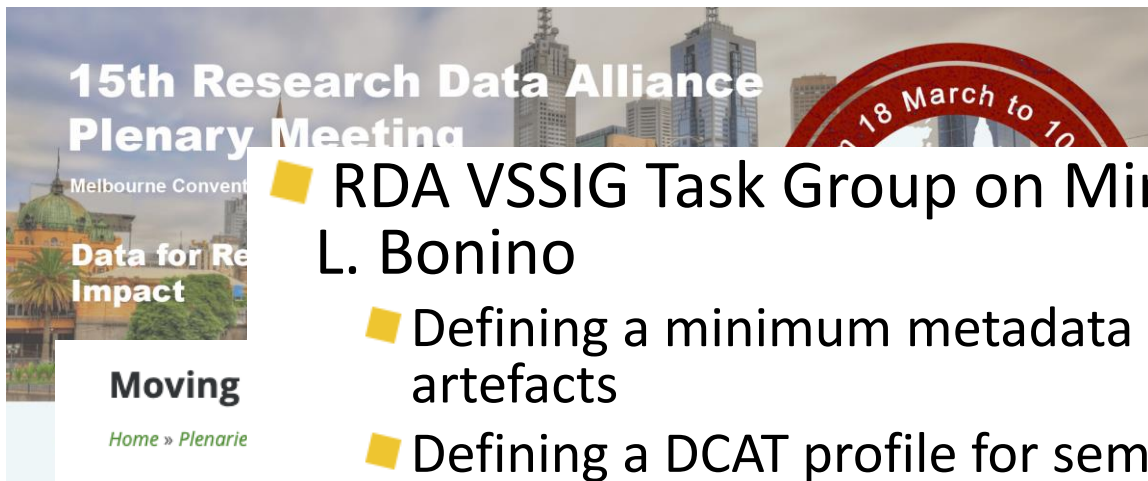


Common Minimum Metadata for Semantic Artefact

4 June 2021
09:30 - 13:00 CEST

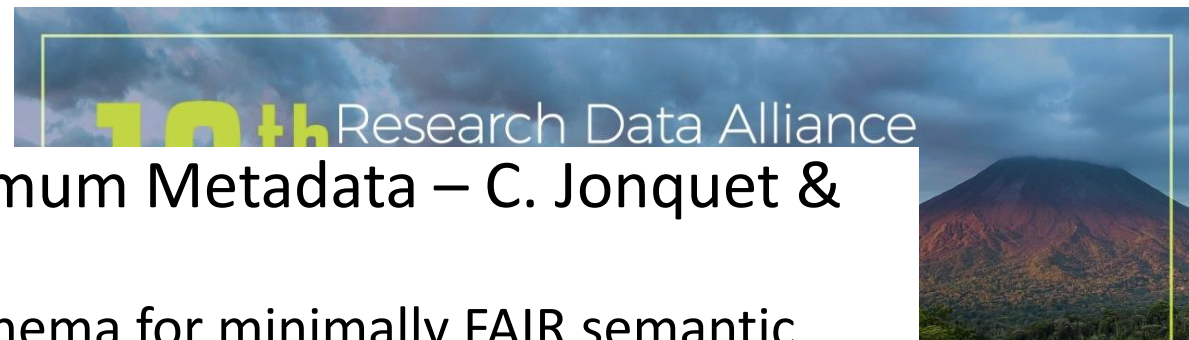


Working with the RDA VSSIG



■ RDA VSSIG Task Group on Minimum Metadata – C. Jonquet & L. Bonino

- Defining a minimum metadata schema for minimally FAIR semantic artefacts
- Defining a DCAT profile for semantic artefact



and Everything

■ RDA VSSIG Task Group on FAIR Semantic repositories – A. Kokkinaki & G. Coen

- Evaluate the recommendations from the perspective of the different repositories
- Establish a list of technical implementations for the recommendations



Recommendations v2

- 17 generic recommendations and 14 best practices
- Recommendation aligned with RFC 2119 (MUST, SHOULD, MAY)

- 9 MUST
- 7 SHOULD
- 1 MAY
- 1 Undetermined

December 18, 2020

Project deliverable Open Access

D2.5 FAIR Semantics Recommendations Second Iteration

 Hugo, Wim;  Le Franc, Yann;  Coen, Gerard;  Parland-von Essen, Jessica;  Bonino, Luiz

This document is the second iteration of recommendations for making semantic artefacts FAIR. These recommendations result from initial discussions during a brainstorming workshop organised by FAIRsFAIR as a co-located event with the 14th RDA Plenary meeting in Helsinki. Based on the feedback received there, 17 preliminary recommendations related to one or more of the FAIR principles, and 10 best practice recommendations on semantic artefacts were documented. These recommendations were first published as [Deliverable 2.2](#) at the beginning of 2020^[1]. Following various dissemination and stakeholder engagement activities, including an evaluation workshop held in October 2020, this second iteration of recommendations and best practices are proposed.

Deliverable 2.5 is a complete, reviewed and improved version of D2.2. D2.5 supersedes D2.2

^[1] <https://doi.org/10.5281/zenodo.3707984>

274

 views

225

 downloads

[See more details...](#)

Indexed in

OpenAIRE

Publication date:

December 18, 2020

DOI:

DOI [10.5281/zenodo.4314321](https://doi.org/10.5281/zenodo.4314321)

Preview



Page: 1 of 65



Automatic Zoom



Open for comments: github

GitHub is being used by the team to collect feedback:

<https://github.com/FAIRsFAIR/FAIRSemantics>

Use of labels:

Please use "Clarification Needed" where you feel like a recommendation lacks clarity

Clarification Needed

Please use "Relevance" to comment on the relevance (or lack thereof) for the stakeholder you represent.

Relevance

Please use "Implementation Example" to suggest practical implementations or initiatives that are missing for this recommendation.

Implementation Example

It is also possible to submit problems encountered, suggestions, questions, recommendation proposals etc. as issues.

New issue

Supporting the practical implementation of our own recommendations

- P-Rec 3: « A common minimum metadata schema **must** be used to describe semantic artefacts and their content »
- P- Rec. 6: « Build semantic artefacts' search engines that operate across different semantic repositories »



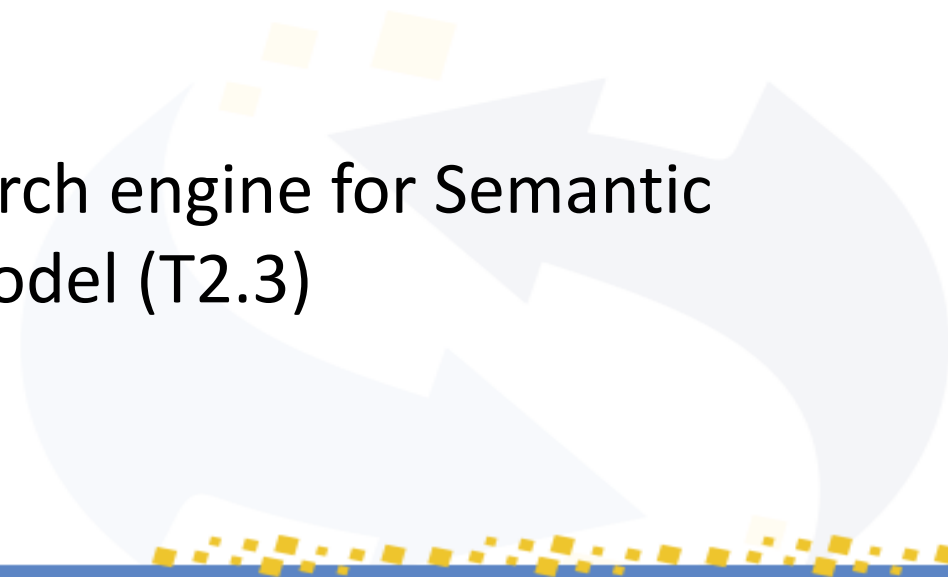
Supporting the realisations of our own recommendations

- P-Rec 3: « A common minimum metadata schema **must** be used to describe semantic artefacts and their content »

➡ Get a first community consensus on a minimal common metadata model for FAIR Semantic Artefacts

- P-Rec. 6: « Build semantic artefacts' search engines that operate across different semantic repositories »

➡ Develop a Proof-of-Concept search engine for Semantic Artefacts using the metadata model (T2.3)

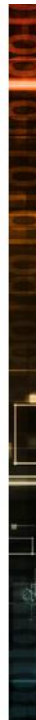


Minimum metadata for FAIR Semantic artefacts



Workshop Minimum metadata schema for semantic artefacts

29 April 2020
9:30 to 13:00 CEST

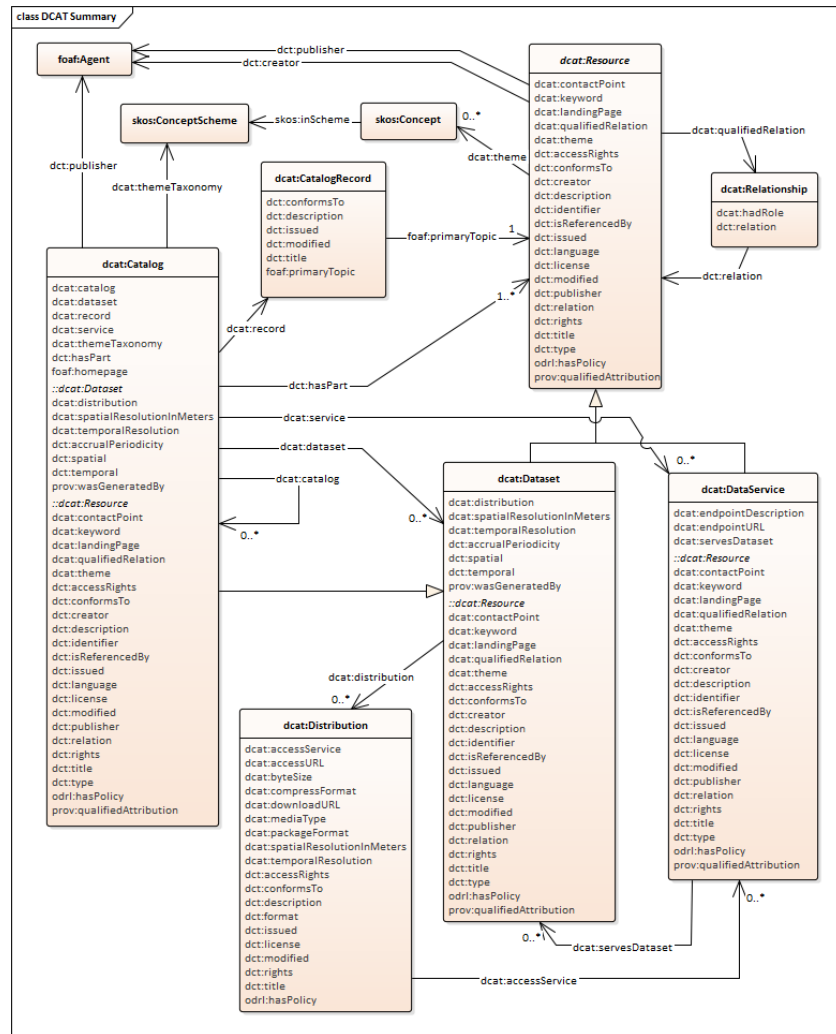


Common Minimum Metadata for Semantic Artefact

4 June 2021
09:30 - 13:00 CEST



Minimum metadata for FAIR Semantic artefacts



Stable

MOD: Metadata for Ontology Description and publication

Release August 2, 2018

This version:

<http://www.isibang.ac.in/ns/mod/1.4>

Latest version:

<http://www.isibang.ac.in/ns/mod/1.4>

Previous version:

<http://www.isibang.ac.in/ns/mod/1.2>

<https://www.isibang.ac.in/ns/mod/1.1>

<https://www.isibang.ac.in/ns/mod/1.0>

Revision:

1.4

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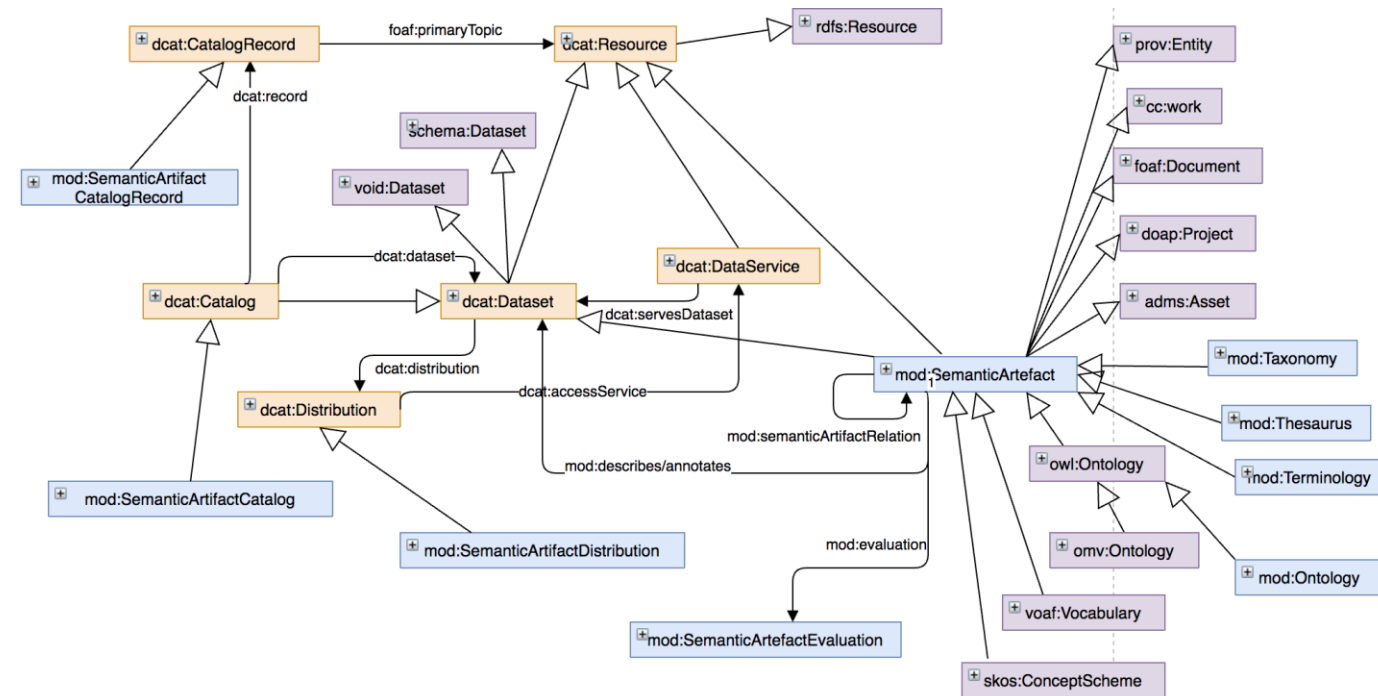
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Minimum metadata for FAIR Semantic artefacts

- Minimum metadata set used as threshold for FAIRness assessment
- Machine readable description of the metadata model
- Build a PoC search engine using the FAIR Data Point
- Report/Paper describing the model



Next steps

- Publish a final version of the recommendations – January 2022
- Workshop to discuss the future of the recommendations
- Publish minimum metadata model and DCAT profile for Semantic Artefacts – Nov./Dec. 2021
- Release PoC search engine



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 - Hanna Koivula (CSC)
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