



FAIR Implementation Profile

Barbara Magagna

20 January 2025

IR0000032 – ITINERIS, Italian Integrated Environmental Research Infrastructures System
(D.D. n. 130/2022 - CUP B53C22002150006) Funded by EU - Next Generation EU PNRR-
Mission 4 “Education and Research” - Component 2: “From research to business” - Investment
3.1: “Fund for the realisation of an integrated system of research and innovation infrastructures”



Agenda

- 13:00-13:15 (15 minutes) Welcome - Recap (Erik)
- 13:15-13:30 (15 minutes) What are nanopublications (Barbara)
- 13:30-14:00 (30 minutes) The role of nanopublications in FIPs (Barbara)
- 14:00-14:30 (30 minutes) **Explore nanopublications**
- 14:30-14:45 (15 minutes) **Break**
- 14:45-15:10 (25 minutes) Managing nanopublications in the FIP Wizard (Barbara)
- 15:10- 15:50 (40 minutes) **Create Nanopublications in the Wizard**
- 15:50-16:00 (10 minutes) **Break**
- 16:00 -16:45 (45 minutes) Managing nanopublications in nanodash - events (Barbara)
- 16:45-17:00 (10 minutes) Nanopubs and FDOs (Erik)

[OSF Project Space](#)
[Common notes](#)



What are Nanopublications



13:15-13:30
(Barbara)

History of nanopublications

2009

Nano-Publication in the e-science era

Barend Mons^{1,2,3} and Jan Velterop^{1,2},

¹ Concept Web Alliance, ² Netherlands BioInformatics Centre, ³ Leiden University Medical Center.

barend.mons@nbic.nl, velterop@conceptweballiance.org

Abstract. The rate of data production in the Life Sciences has now reached such proportions that to consider it irresponsible to fund data generation without proper concomitant funding and infrastructure for storing, analyzing and exchanging the information and knowledge contained in, and extracted from, those data, is not an exaggerated position any longer. The chasm between data production and data handling has become so wide, that many data go unnoticed or at least run the risk of relative obscurity, fail to reveal the information contained in the data set or remains inaccessible due to ambiguity, or financial or legal toll-barriers. As a result, inconsistency, ambiguity and redundancy of data and information on the Web are becoming impediments to the performance of comprehensive information extraction and analysis. This paper attempts a stepwise explanation of the use of richly annotated RDF-statements as carriers of unambiguous, meta-analyzed information in the form of traceable nano-publications.



History of nanopublications

2009 Nano-Publication in the e-science era

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The anatomy of a nanopublication

Issue title: Selected Papers from the ICSTI Interactive Publications Conference 2010

Article type: Research Article

Authors: Groth, Paul^a | Gibson, Andrew^b | Velterop, Jan^{c,*}

Affiliations: [a] Free University Amsterdam, Amsterdam, The Netherlands | [b] University of Amsterdam, Amsterdam, The Netherlands | [c] Concept Web Alliance, NBIC, Nijmegen, The Netherlands

Correspondence: [*] Corresponding author: Jan Velterop, Concept Web Alliance, NBIC, Nijmegen, The Netherlands. E-mail: velterop@conceptweballiance.org.

Keywords: Semantic Web, rich RDF-triples, disambiguation, publication

DOI: 10.3233/ISU-2010-0613

Journal: *Information Services & Use*, vol. 30, no. 1-2, pp. 51-56, 2010

Published: 21 September 2010

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Abstract. The rate of data production is increasing such proportions that to consider data without proper concomitant funding and exchanging the information from, those data, is not an exaggeration. The rate of data production and data handling is increasing unnoticed or at least run the risk of being unnoticed. The information contained in the data is often lost or obscured by redundancy of data and information. This paper attempts a stepwise explanation of the performance of comprehensive statements as carriers of unambiguous of traceable nano-publications.

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```
@prefix swan: <http://swan.mindinformatics.org/ontologies/1.2/pav.owl> .
@prefix cw: <http://conceptwiki.org/index.php/Concept> .
@prefix swp: <http://www.w3.org/2004/03/trix/swp-1/> .
@prefix : <http://www.example.org/thisDocument#> .

:G1 = { cw:malaria cw:isTransmittedBy cw:mosquitoes }

:G2 = { :G1 swan:importedBy cw:TextExtractor,
        :G1 swan:createdOn "2009-09-03"^^xsd:date,
        :G1 swan:authoredBy cw:BobSmith }

:G3 = { :G2 ann:assertedBy cw:SomeOrganization }

:G9 = { :G1 ann:isApprovedBy cw:JohnSmith }
:G10 = { :G9 ann:isAssertedBy cw:ApprovalTrackingSystem }
```

Fig. 2. Example of nanopublication.

History of nanopublications

Lizio et al. *Genome Biology* (2015) 16:22
DOI 10.1186/s13059-014-0566-6

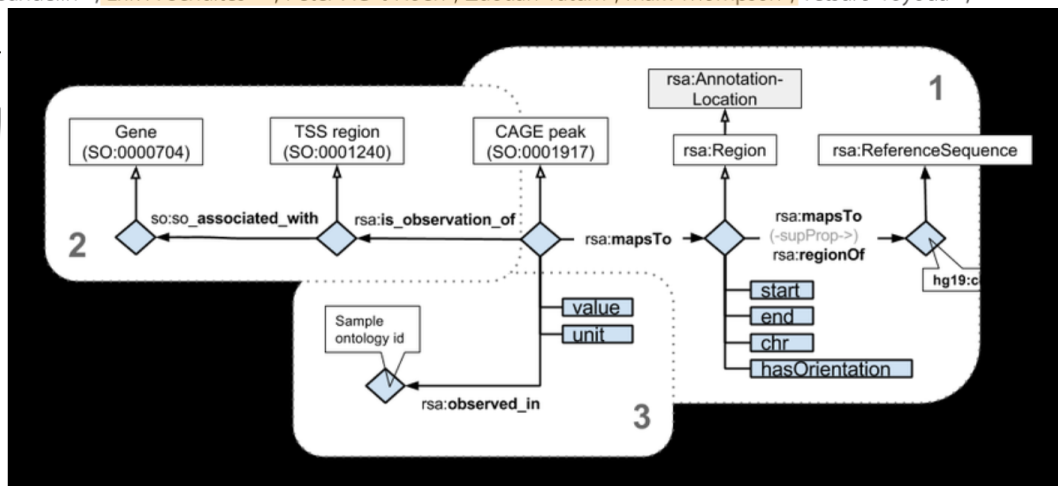


SOFTWARE

Open Access

Gateways to the FANTOM5 promoter level mammalian expression atlas

Marina Lizio^{1,2}, Jayson Harshbarger^{1,2}, Hisashi Shimoji^{1,2}, Jessica Severin^{1,2}, Takeya Kasukawa², Serkan Sahin^{1,2}, Imad Abugessaisa², Shiro Fukuda¹, Fumi Hori^{1,2}, Sachi Ishikawa-Kato^{1,2}, Christopher J Mungall⁵, Erik Arner^{1,2}, J Kenneth Baillie⁷, Nicolas Bertin^{1,2,19}, Hidemasa Bono¹⁰, Michiel de Hoon^{1,2}, Alexander D Diehl¹³, Emmanuel Dimont¹², Tom C Freeman⁷, Kaori Fujieda¹⁰, Winston Hide^{12,17}, Rajaram Kaliyaperumal⁸, Toshiaki Katayama¹⁵, Timo Lassmann^{1,2,18}, Terrence F Meehan⁶, Koro Nishikata¹⁶, Hiromasa Ono¹⁰, Michael Rehli⁹, Albin Sandelin¹¹, Erik A Schultes^{8,14}, Peter AC 't Hoen⁸, Zuotian Tatum⁸, Mark Thompson⁸, Tetsuro Toyoda¹⁶, Derek Alistair



Combined assertion models of the FANTOM5 nanopublications. Type 1 – cage cluster; type 2 – transcriptional start sites and gene associations; type 3 – cage peak level for muscle cell samples. Instances of these classes (represented by a diamond shape) are the RDF resources from which a nanopublication assertion is constructed. Sequence ontology (SO), reference sequence annotation (RSA) ontology and human genome 19 reference sequence (HG19) RDF resource were used for these assertions models.



History of nanopublications

Lizio et al. *Genome Biology* (2015) 16:22
DOI 10.1186/s13059-014-0566-5

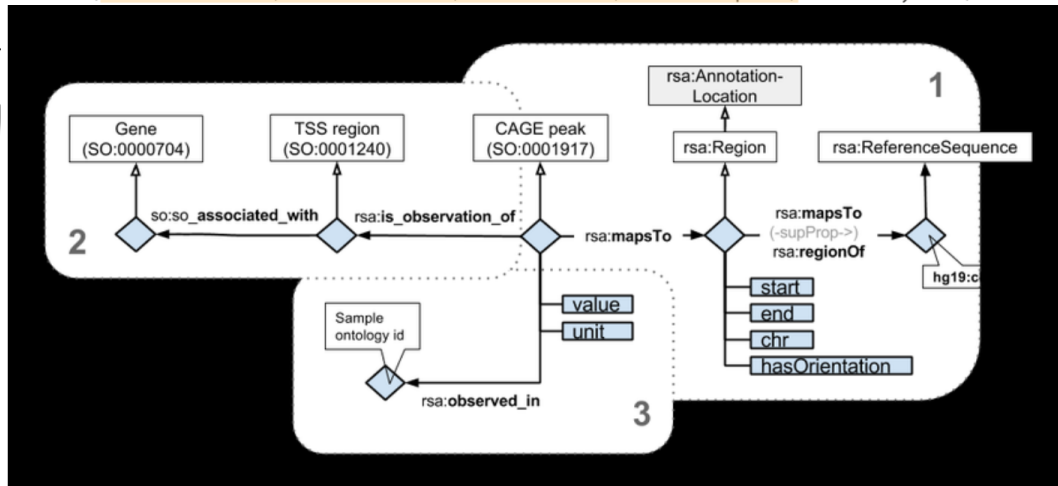


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DOI: 10.1007/978-3-319-07443-6_27 • Corpus ID: 8769734

Trusty URIs: Verifiable, Immutable, and Permanent Digital Artifacts for Linked Data

Tobias Kuhn, M. Dumontier • Published in *Extended Semantic Web* 16 January 2014 • Computer Science

TLDR Evaluation of the reference implementations of the trusty URIs shows that these desired properties are indeed accomplished by the approach, and that it remains practical even for very large files.



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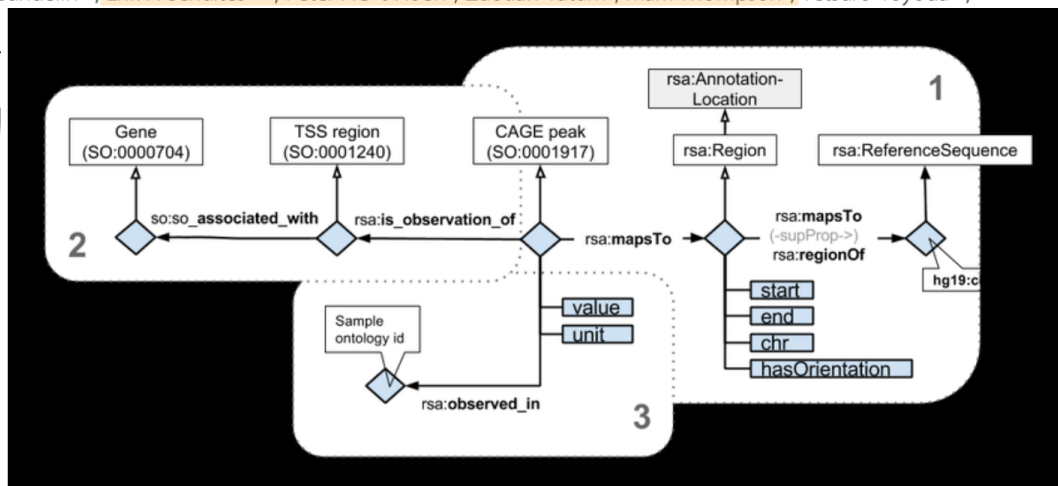


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Nanopub Monitor

32 nanopub services running on approximately 10 distinct servers



| URL | Type | Status | OK Ratio | Resp Time (Dist) | Last Seen OK | IP Address | Server Location | Parameters | Description |
|---------------------------------------|---------|--------|-----------|-------------------|---------------------|----------------|--------------------------|------------|-------------|
| https://query.np.trustylife.net/ | nanopub | OK | 99.49748% | 840 ms (8398 km) | 2025-01-23 09:06:17 | 104.237.0.136 | Dallas, United States | | |
| https://nanopub.sdsc.edu/ | nanopub | OK | 100.0% | 1882 ms (9110 km) | 2025-01-23 09:06:05 | 132.249.238.54 | San Diego, United States | | |
| https://query.np.kpi.pl/ | nanopub | DOWN | 89.94975% | 714 ms (608 km) | 2025-01-22 15:20:12 | 80.209.228.199 | Vilnius, Lithuania | | |
| https://query.knowledgepixels.com/ | nanopub | OK | 98.99498% | 1068 ms (1908 km) | 2025-01-23 09:06:19 | 85.31.237.7 | Paris, France | | |
| https://nanodash.np.trustylife.net/ | nanopub | OK | 100.0% | 522 ms (8398 km) | 2025-01-23 09:06:18 | 104.237.0.136 | Dallas, United States | | |
| https://nanodash.knowledgepixels.com/ | nanopub | OK | 100.0% | 196 ms (1908 km) | 2025-01-23 09:06:19 | 85.31.237.7 | Paris, France | | |
| https://nanodash.petapico.org/ | nanopub | OK | 100.0% | 72 ms (0 km) | 2025-01-23 09:05:37 | 95.217.225.119 | Helsinki, Finland | | |

<https://nanopub.net/>



History of nanopublications

[Home](#) > [Advances in Conceptual Modeling](#) > [Conference paper](#)

Reusable FAIR Implementation Profiles as Accelerators of FAIR Convergence

[Erik Schultes](#), [Barbara Magagna](#) , [Kristina Maria Hettne](#), [Robert Pergl](#), [Marek Suchánek](#) & [Tobias Kuhn](#)

Conference paper | [First Online: 22 December 2020](#)

1516 Accesses | **14** Citations

Part of the book series: [Lecture Notes in Computer Science](#) ((LNPSE,volume 12584))



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Part of the book

Conference Abstract

Research Ideas and Outcomes 8: e94451

<https://doi.org/10.3897/rio.8.e94451> (1 Oct 2022)

Reviewable v1



FIPs and Practice

▼ [Barbara Magagna](#), [Erik Anthony S](#)

Conference Abstract

Research Ideas and Outcomes 8: e94150

<https://doi.org/10.3897/rio.8.e94150> (12 Oct 2022)

Reviewable v1



The Comparative Anatomy of Nanopublications and FAIR Digital Objects


▼ [Erik Anthony Schultes](#), [Barbara Magagna](#), [Tobias Kuhn](#), [Marek Suchánek](#), [Luiz Olavo Bonino da Silva Santos](#), [Barend Mons](#)



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Reviewable v1 

The Comparative Anatomy of Nanopublications and FAIR Digital Objects

▼ [Erik Anthony Schultes](#), [Barbara Magagna](#), [Tobias Kuhn](#), [Marek Suchánek](#), [Luiz Olavo Bonino da Silva Santos](#), [Barend Mons](#)



International FAIR Digital Objects Implementation Summit






TIBconferenceession

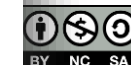
TIB-OP will set DOI with \TIBdoi

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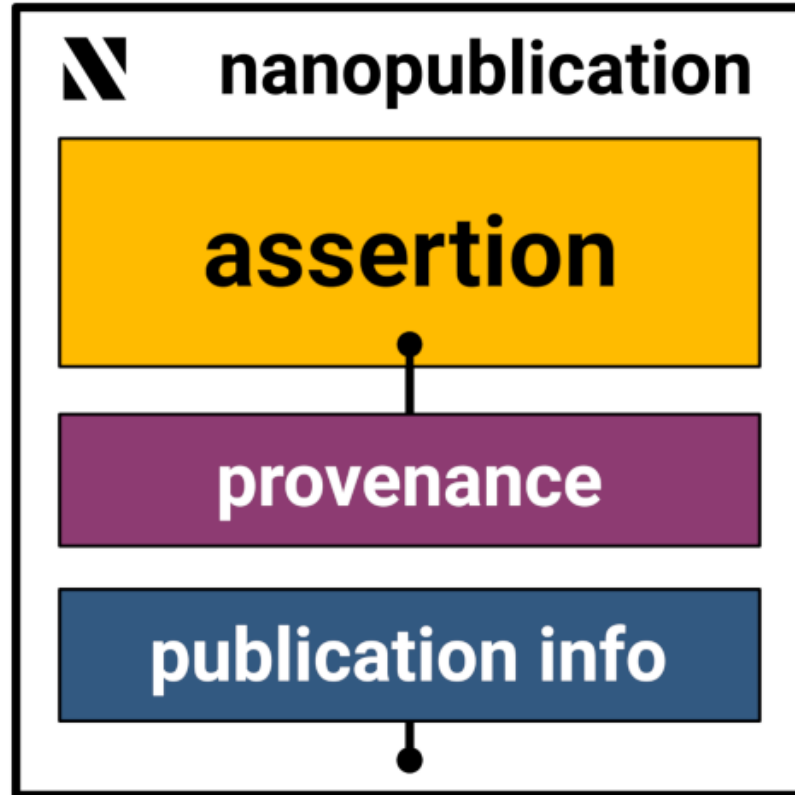
Submitted [2024-11-05](#)

Nanopublications as FAIR Digital Object Implementations

[Barbara Magagna](#)^{12*} , [Luiz Olavo Bonino da Silva Santos](#)¹³ , [Tobias Kuhn](#)⁴ ,
[Luís Ferreira Pires](#)¹ , and [Erik Schultes](#)²⁵ 



Structure of nanopublications



Implemented in RDF as knowledge graphs

Assertion: main content as small atomic unit of information

Provenance: How the assertion came to be

Publication info: metadata about the nanopublication, when, by whom, license

Structure of nanopublications (looking deeper)

AgroPortal FER Registry

| | | |
|---------------------------------|------------|---|
| doi:10.25504/FAIRsharing.z4pxxx | url | agroportal.lirmm.fr |
| doi:10.25504/FAIRsharing.z4pxxx | implements | OWL |
| doi:10.25504/FAIRsharing.z4pxxx | type | Available-FAIR-Enabling-Resource |
| doi:10.25504/FAIRsharing.z4pxxx | type | FAIR-Enabling-Resource |
| doi:10.25504/FAIRsharing.z4pxxx | type | Registry |
| doi:10.25504/FAIRsharing.z4pxxx | comment | "AgroPortal is an ontology repository for agronomy as well as food, plant, agriculture and biodiversity sciences. It provides ontology hosting, search, versioning, visualization, comment, and recommendation; enables semantic annotation; stores and exploits ontology alignments; and enables interoperation with the semantic web. To align with the needs of the agronomy community, AgroPortal uses SKOS vocabularies and trait dictionaries) and supported features (offering detailed metadata and advanced annotation capabilities)." |
| doi:10.25504/FAIRsharing.z4pxxx | label | "AgroPortal" |
| doi:10.25504/FAIRsharing.z4pxxx | seeAlso | doi:10.25504/FAIRsharing.z4pxxx |

The assertion above creator Barbara Magagna

The assertion above wasDerivedFrom doi:10.25504/FAIRsharing.z4pxxx

This nanopublication was created on "2025-01-23T09:43:28Z"

FIP Wizard, 23 Jan 2025, 09:43:28 UTC



Structure of nanopublications (looking deeper)

```
@prefix this: <http://purl.org/np/RATHRbabCA2r58Xmj5uXdIIziAc_4HVjKedXZswAdQdKY> .
@prefix sub: <http://purl.org/np/RATHRbabCA2r58Xmj5uXdIIziAc_4HVjKedXZswAdQdKY#> .
@prefix np: <http://www.nanopub.org/nschema#> .
@prefix dct: <http://purl.org/dc/terms/> .
@prefix nt: <https://w3id.org/np/o/ntemplate/> .
@prefix npx: <http://purl.org/nanopub/x/> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix orcid: <https://orcid.org/> .
@prefix prov: <http://www.w3.org/ns/prov#> .
```

Prefixes

```
sub:Head {
  this: np:hasAssertion sub:assertion ;
  np:hasProvenance sub:provenance ;
  np:hasPublicationInfo sub:pubinfo ;
  a np:Nanopublication .
}
```

Header

```
sub:assertion {
  sub:FIP.15.T7 dct:date "2023-03-29" ;
  a <https://w3id.org/fair/3pff/3PFF-event> , <https://w3id.org/fair/3pff/post-FIP-training> , <https://w3id.org/fair/3pff/virtual-event> ;
  rdfs:label "FIP.15.T7 | PARC FIP Training - nanopublications" ;
  rdfs:seeAlso <https://osf.io/g2xy5/> ;
  <https://schema.org/endTime> "12:00" ;
  <https://schema.org/startTime> "08:30" ;
  <https://w3id.org/fair/3pff/has-event-organizer> <https://ror.org/056j50v04> ;
  <https://w3id.org/fair/3pff/has-event-sponsor> <https://www.anses.fr/en/content/european-partnership-assessment-risks-chemicals-parc> ;
  <https://w3id.org/fair/connect/has-participating-community> <http://purl.org/np/RAvuwR9iDrKdPeDCZAxMhw_wDmwuIYD5ocQaZ_QBFZs8M#PARC> ;
  <https://www.w3.org/TR/owl-time/#time:hours> "3.5" .
}
```

Assertion

```
sub:provenance {
  sub:assertion prov:wasAttributedTo <https://ror.org/056j50v04> .
}
```

Provenance

```
sub:pubinfo {
  sub:sig npx:hasAlgorithm "RSA" ;
  npx:hasPublicKey
  "MIGfMA0GCsqGSIb3DQEBAAQAA4GNADCBiQKBgQCtpcfTn7kbe6toJb0TDQaCcsEFSWqt6J4rZ02w+TfY7/eIOgJZY01pLGG3A02RmVYwRPS1MiykaFuaRuBitvk1GKfGdprfzvbXwmeOxpqCTRBOX9EnFyQyd+Ra/ajfw/UsG8skeu1xnUEpnbpgbQYc/fvhJNN0UwEc77m0wIDAQAB" ;
  npx:hasSignature "E+txPBUuQ90J5uvH3MUjk5grdNHJJ0on0yS1u55Gey/n1VDVF+EJ61xES7+nUxyZCmA66c1k1Hzq9HumyV0kuFIEq3Mij4Cr6zY9eJQRzF316/nlNp0tpF3q+V7XvdYBy3LVQ0AFrftMSztlSVOw5fCu0ZQyhr7sVLqB14rq0Wnc=" ;
  npx:hasSignatureTarget this .
  this: dct:created "2023-03-26T08:18:13.834+02:00"^^xsd:dateTime ;
  dct:creator orcid:0000-0003-2195-3997 ;
  npx:introduces sub:FIP.15.T7 ;
  nt:wasCreatedFromProvenanceTemplate <http://purl.org/np/RANUBzTXWga5sX6dA3MhSVb4M8bdc74zvsfN_z6I5Ka1I> ;
  nt:wasCreatedFromPubinfoTemplate <http://purl.org/np/RAA2MfQdBCzm29yVnJkLXNbyfBNcwsMmOqcNUxkk1maIM> ;
  nt:wasCreatedFromTemplate <http://purl.org/np/RAJsdG1v68PR6B_nR456HmfjrRTjyqP4oeejqCQdT3IM> .
}
```

Pub info



RDF structure

SUBJECT PREDICATE OBJECT

The taxon concept has the name *Voglia serrata* (Moser, 1925) (species) .

assertion [nanopub](#)

URI URI URI or literal

<https://w3id.org/np/RAf83V7ZkiZoswcmoeWSXPImJCclmQ3tZb6Kt93xelQyk#taxon>

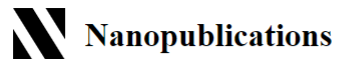
<https://w3id.org/kpxl/biodiv/terms/hasTaxonName>

<https://www.checklistbank.org/dataset/2169/taxon/499912-s3>

"*Voglia serrate* (Moser, 1925) (species)"



Nanopublication specifications



Nanopublication Guidelines

Nanopublications Working Draft 19 February 2024

This version:

<http://www.nanopub.org/2024/WD-guidelines-20240219/>

Latest published version:

<http://www.nanopub.org/guidelines/>

Latest editor's draft:

http://nanopub.org/guidelines/working_draft

Previous version:

<http://www.nanopub.org/guidelines/1.8>

Editors:

[Paul Groth, VU University Amsterdam](#)

[Erik Schultes, LUMC](#)

[Mark Thompson, LUMC](#)

[Zuotian Tatum, LUMC](#)

[Michel Dumontier, Stanford University](#)

[Tobias Kuhn, VU University Amsterdam](#)

[Christine Chichester, Swiss Institute of Bioinformatics \(SIB\)](#)

<http://www.nanopub.org/guidelines/>

A nanopublication *must* comply with all of the following criteria to be considered well-formed:

- A nanopublication consists of a set of RDF quads (i.e. subject-predicate-object + context)
- The context (i.e. graph) of each triple has to be specified as a valid URI (i.e. no null values)
- There is exactly one quad of the form '[N] rdf:type np:Nanopublication [H]', which identifies [N] as the nanopublication URI, and [H] as the head URI
- Given the nanopublication URI [N] and its head URI [H], there is exactly one quad of the form '[N] np:hasAssertion [A] [H]', which identifies [A] as the assertion URI
- Given the nanopublication URI [N] and its head URI [H], there is exactly one quad of the form '[N] np:hasProvenance [P] [H]', which identifies [P] as the provenance URI
- Given the nanopublication URI [N] and its head URI [H], there is exactly one quad of the form '[N] np:hasPublicationInfo [I] [H]', which identifies [I] as the publication information URI
- The URIs for [N], [H], [A], [P], [I] must all be different
- All triples must be placed in one of [H] or [A] or [P] or [I]
- Triples in [P] have at least one reference to [A]
- Triples in [I] have at least one reference to [N]

<https://github.com/Nanopublication/Guidelines>

Nanopublication schema:

```
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>.
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#>.
@prefix rdfg: <http://www.w3.org/2004/03/trix/rdfg-1/>.
@prefix owl: <http://www.w3.org/2002/07/owl#>.
@prefix np: <http://www.nanopub.org/nschema#>.
@prefix dc: <http://purl.org/dc/elements/1.1/>.
@prefix xsd: <http://www.w3.org/2001/XMLSchema#>.

<http://www.nanopub.org/nschema> a owl:Ontology ;
  dc:created "2012-10-26"^^xsd:date;
  dc:modified "2013-10-23"^^xsd:date;
  dc:description <http://www.nanopub.org/2013/WD-guidelines-20131215/> ;
  owl:priorVersion <http://www.nanopub.org/nschema-1.9> .

## A nanopublication should be associated with at most one assertion,
## provenance of assertion, and provenance of the nanopublication (publicationInfo)
## We use rdfg:Graph to denote a graph as used in the RDF 1.1. Trig syntax.
## Each sub class of rdfg:Graph should be separate Named Graph

np:Nanopublication rdf:type owl:Class.
np:Assertion rdfs:subClassOf rdfg:Graph.
np:Provenance rdfs:subClassOf rdfg:Graph.
np:PublicationInfo rdfs:subClassOf rdfg:Graph.

np:hasAssertion a owl:FunctionalProperty.
np:hasAssertion rdfs:domain np:Nanopublication.
np:hasAssertion rdfs:range np:Assertion.

np:hasProvenance a owl:FunctionalProperty.
np:hasProvenance rdfs:domain np:Nanopublication.
np:hasProvenance rdfs:range np:Provenance.

np:hasPublicationInfo a owl:FunctionalProperty.
np:hasPublicationInfo rdfs:domain np:Nanopublication.
np:hasPublicationInfo rdfs:range np:PublicationInfo.
```

<https://nanopub.net/nschema>



Applications for nanopublications

Nanopublications were mostly used for:

- Scientific assertional statements in the past

But new areas of implementations are being explored:

- Metadata about any digital object
- Paper submission workflows
- Structured claims of papers
- ...

The role of Nanopublications in FIPs



13:30-13:45
(Barbara)

What they are good for in the FIP ecosystem

Nanopublications in the FIP ecosystem are used to

- Create minimal metadata about a resource
- Provide globally, unique, persistent and resolvable identifier for a resource
- Provide machine actionable FAIR Digital Objects

A deeper look

The nanopub is the metadata of an FSR

AgroPortal

Full identifier: <https://w3id.org/np/RAwSQWkn0rpOn7VtVNN523rJkFSMhr0zV0Kz94yY9K1cl>

Assigned to 1 class:

- [Nanopublication](#) (N)

Status

This is the latest version.

Nanopublication

 [AgroPortal](#) [FER](#) [Registry](#) 

| | | |
|---|------------|--|
| doi:10.25504/FAIRsharing.z4xpxx | url | agroportal.lirmm.fr |
| doi:10.25504/FAIRsharing.z4xpxx | implements | OWL |
| doi:10.25504/FAIRsharing.z4xpxx | type | Available-FAIR-Enabling-Resource |
| doi:10.25504/FAIRsharing.z4xpxx | type | FAIR-Enabling-Resource |
| doi:10.25504/FAIRsharing.z4xpxx | type | Registry |
| doi:10.25504/FAIRsharing.z4xpxx | comment | |

"AgroPortal is an ontology repository for agronomy as well as food, plant, agriculture and biodiversity sciences. It provides ontology hosting, search, versioning, visualization, comment, and recommendation; enables semantic annotation; stores and exploits ontology alignments; and enables interoperation with the semantic web. To align with the needs of the agronomy community, AgroPortal uses SKOS vocabularies and trait dictionaries) and supported features (offering detailed metadata and advanced annotation capabilities)."

| | | |
|---|---------|---|
| doi:10.25504/FAIRsharing.z4xpxx | label | "AgroPortal" |
| doi:10.25504/FAIRsharing.z4xpxx | seeAlso | doi:10.25504/FAIRsharing.z4xpxx |

| | | |
|---------------------|----------------|---|
| The assertion above | creator | Barbara Magagna |
| The assertion above | wasDerivedFrom | doi:10.25504/FAIRsharing.z4xpxx |

This nanopublication was created on "2025-01-23T09:43:28Z"

FIP Wizard, 23 Jan 2025, 09:43:28 UTC

References

| Nanopublication | Part | Subject | Predicate | Object | Published By | Published On |
|---------------------------------|----------------------|-------------------------|---------------------------|------------------------|------------------------------|------------------------------|
|---------------------------------|----------------------|-------------------------|---------------------------|------------------------|------------------------------|------------------------------|

No Records Found

Raw

[TriG\(txt\)](#), [JSON-LD\(txt\)](#), [N-Quads\(txt\)](#), [XML\(txt\)](#)



A deeper look

The name (or label)
of the nanopub

AgroPortal

Full identifier: <https://w3id.org/np/RAwSQWkn0rpOn7VtVNN523rJkFSMhr0zV0Kz94yY9K1cl>

Assigned to 1 class:

- [Nanopublication](#) (N)

Status

This is the latest version.

Nanopublication

AgroPortal FER Registry

| | | |
|---------------------------------|------------|---|
| doi:10.25504/FAIRsharing.z4xpxx | url | agroportal.lirmm.fr |
| doi:10.25504/FAIRsharing.z4xpxx | implements | OWL |
| doi:10.25504/FAIRsharing.z4xpxx | type | Available-FAIR-Enabling-Resource |
| doi:10.25504/FAIRsharing.z4xpxx | type | FAIR-Enabling-Resource |
| doi:10.25504/FAIRsharing.z4xpxx | type | Registry |
| doi:10.25504/FAIRsharing.z4xpxx | comment | "AgroPortal is an ontology repository for agronomy as well as food, plant, agriculture and biodiversity sciences. It provides ontology hosting, search, versioning, visualization, comment, and recommendation; enables semantic annotation; stores and exploits ontology alignments; and enables interoperability with the semantic web. To align with the needs of the agronomy community, AgroPortal uses SKOS vocabularies and trait dictionaries) and supported features (offering detailed metadata and advanced annotation capabilities)." |
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| doi:10.25504/FAIRsharing.z4xpxx | seeAlso | doi:10.25504/FAIRsharing.z4xpxx |

The assertion above creator Barbara Magagna

The assertion above wasDerivedFrom doi:10.25504/FAIRsharing.z4xpxx

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FIP Wizard, 23 Jan 2025, 09:43:28 UTC

References

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|------------------|------|---------|-----------|--------|--------------|--------------|
| No Records Found | | | | | | |

Raw

[TriG\(txt\)](#), [JSON-LD\(txt\)](#), [N-Quads\(txt\)](#), [XML\(txt\)](#)

A deeper look

The identifier of the nanopub

AgroPortal

Full identifier: <https://w3id.org/np/RAwSQWkn0rpOn7VtVNN523rJkFSMhr0zV0Kz94yY9K1cl>

Assigned to 1 class:

- Nanopublication (N)

Status

This is the latest version.

Nanopublication

 AgroPortal  

| | | |
|---------------------------------|------------|----------------------------------|
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| doi:10.25504/FAIRsharing.z4xpxx | implements | OWL |
| doi:10.25504/FAIRsharing.z4xpxx | type | Available-FAIR-Enabling-Resource |
| doi:10.25504/FAIRsharing.z4xpxx | type | FAIR-Enabling-Resource |
| doi:10.25504/FAIRsharing.z4xpxx | type | Registry |
| doi:10.25504/FAIRsharing.z4xpxx | comment | |

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| doi:10.25504/FAIRsharing.z4xpxx | seeAlso | doi:10.25504/FAIRsharing.z4xpxx |

| | | |
|---------------------|----------------|---------------------------------|
| The assertion above | creator | Barbara Magagna |
| The assertion above | wasDerivedFrom | doi:10.25504/FAIRsharing.z4xpxx |

This nanopublication was created on "2025-01-23T09:43:28Z"

FIP Wizard, 23 Jan 2025, 09:43:28 UTC

References

| Nanopublication | Part | Subject | Predicate | Object | Published By | Published On |
|-----------------|------|---------|-----------|--------|--------------|--------------|
|-----------------|------|---------|-----------|--------|--------------|--------------|

No Records Found

Raw

TriG(txt), JSON-LD(txt), N-Quads(txt), XML(txt)



A deeper look

- The status can be:
- latest
 - refer to a newer version
 - retracted

RAzOrZaCaw

Full identifier: https://w3id.org/np/RAzOrZaCawaYMQhZBdQWs_MEBWi_-HKI41TyTVXhgpwhg


Status

This nanopublication has **newer versions**: [RAEwZaQsed](#) [RAkFULv6WU](#)

Nanopublication

 Nanopublication FIP  

| | | |
|-----|-----------------------|-------------------------------|
| qip | description | "Nanopublication FIP" . |
| qip | type | FAIR-Implementation-Profile . |
| qip | label | "Nanopublication FIP" . |
| qip | version | "1.0.0" . |
| qip | declared-by | NP_Com . |
| qip | has-declaration-index | RANeSo2hle . |

The assertion above  creator [Barbara Magagna](#) .

This nanopublication was created on ["2025-01-23T11:25:54Z"](#) . 

[FIP Wizard](#), 23 Jan 2025, 11:25:54 UTC

References

| Nanopublication | Part | Subject | Predicate | Object | Published By | Published On |
|---------------------------------|----------------------|-------------------------|---------------------------|------------------------|------------------------------|------------------------------|
|---------------------------------|----------------------|-------------------------|---------------------------|------------------------|------------------------------|------------------------------|

No Records Found

Raw

[TriG\(txt\)](#), [JSON-LD\(txt\)](#), [N-Quads\(txt\)](#), [XML\(txt\)](#)



A deeper look

The FSR itself
(= Thing URI)

AgroPortal

Full identifier: <https://w3id.org/np/RAwSQWkn0rpOn7VtVNN523rJkFSMhr0zV0Kz94yY9K1cl>

Assigned to 1 class:

- [Nanopublication](#) (N)

Status

This is the latest version.

Nanopublication

[N](#) [AgroPortal](#) [FER](#) [Registry](#) [▼](#)

| | | |
|--|------------|--|
| doi:10.25504/FAIRsharing.z4xpxx | uri | agroportal.lirmm.fr |
| doi:10.25504/FAIRsharing.z4xpxx | implements | OWL |
| doi:10.25504/FAIRsharing.z4xpxx | type | Available-FAIR-Enabling-Resource |
| doi:10.25504/FAIRsharing.z4xpxx | type | FAIR-Enabling-Resource |
| doi:10.25504/FAIRsharing.z4xpxx | type | Registry |
| doi:10.25504/FAIRsharing.z4xpxx | comment | |
| <p>"AgroPortal is an ontology repository for agronomy as well as food, plant, agriculture and biodiversity sciences. It provides ontology hosting, search, versioning, visualization, comment, and recommendation; enables semantic annotation; stores and exploits ontology alignments; and enables interoperation with the semantic web. To align with the needs of the agronomy community, AgroPortal uses SKOS vocabularies and trait dictionaries) and supported features (offering detailed metadata and advanced annotation capabilities)."</p> | | |
| doi:10.25504/FAIRsharing.z4xpxx | label | "AgroPortal" |
| doi:10.25504/FAIRsharing.z4xpxx | seeAlso | doi:10.25504/FAIRsharing.z4xpxx |

The assertion above [creator](#) [Barbara Magagna](#)

The assertion above [wasDerivedFrom](#) [doi:10.25504/FAIRsharing.z4xpxx](#)

This nanopublication was created on "2025-01-23T09:43:28Z"

FIP Wizard, 23 Jan 2025, 09:43:28 UTC

References

| Nanopublication | Part | Subject | Predicate | Object | Published By | Published On |
|---------------------------------|----------------------|-------------------------|---------------------------|------------------------|------------------------------|------------------------------|
|---------------------------------|----------------------|-------------------------|---------------------------|------------------------|------------------------------|------------------------------|

No Records Found

Raw

[TriG\(txt\)](#), [JSON-LD\(txt\)](#), [N-Quads\(txt\)](#), [XML\(txt\)](#)



A deeper look

Where and when the nanopub has been created

AgroPortal

Full identifier: <https://w3id.org/np/RAwSQWkn0rpOn7VtVNN523rJkFSMhr0zV0Kz94yY9K1cl>

Assigned to 1 class:

- [Nanopublication](#) (N)

Status

This is the latest version.

Nanopublication

[N](#) [AgroPortal](#) [FER](#) [Registry](#) ▼

| | | |
|---------------------------------|------------|----------------------------------|
| doi:10.25504/FAIRsharing.z4xpxx | url | agroportal.lirmm.fr |
| doi:10.25504/FAIRsharing.z4xpxx | implements | OWL |
| doi:10.25504/FAIRsharing.z4xpxx | type | Available-FAIR-Enabling-Resource |
| doi:10.25504/FAIRsharing.z4xpxx | type | FAIR-Enabling-Resource |
| doi:10.25504/FAIRsharing.z4xpxx | type | Registry |
| doi:10.25504/FAIRsharing.z4xpxx | comment | |

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| | | |
|---------------------------------|---------|---------------------------------|
| doi:10.25504/FAIRsharing.z4xpxx | label | "AgroPortal" |
| doi:10.25504/FAIRsharing.z4xpxx | seeAlso | doi:10.25504/FAIRsharing.z4xpxx |

| | | |
|---------------------|----------------|---------------------------------|
| The assertion above | creator | Barbara Magagna |
| The assertion above | wasDerivedFrom | doi:10.25504/FAIRsharing.z4xpxx |

This nanopublication was created on "2025-01-23T09:43:28Z"

FIP Wizard, 23 Jan 2025, 09:43:28 UTC

References

| Nanopublication | Part | Subject | Predicate | Object | Published By | Published On |
|-----------------|------|---------|-----------|--------|--------------|--------------|
|-----------------|------|---------|-----------|--------|--------------|--------------|

No Records Found

Raw

[TriG\(txt\)](#), [JSON-LD\(txt\)](#), [N-Quads\(txt\)](#), [XML\(txt\)](#)



A deeper look

Where
(if there is a person
name = Nanodash)
and
when the nanopub
has been created

RAh0UxI-HQ

Full identifier: <http://purl.org/np/RAh0Uxl-HQseaz4wKxvvn3TVufOC1J6MVjiBAbYShoHEc>

Assigned to 1 class:

- Nanopublication (N)

Status

This is the latest version.

Nanopublication

EnvThes | Environmental Thesaurus FER Structured-vocabulary

EnvThes is a FAIR-Enabling Resource .

EnvThes is called "EnvThes | Environmental Thesaurus" .

EnvThes has the description

"The Environmental Thesaurus is a controlled vocabulary built to aid integration of the data resulting from long term ecological research and monitoring in Europe (eLTER). It provides described and semantically well defined terms for later analysis and it serves as harmonized specification of parameters in the observation and measurement of ecosystem processes."

EnvThes is a available FAIR-enabling resource .

EnvThes is a Structured vocabulary .

EnvThes is further described by EnvThes .

EnvThes can in some situations be considered the same as doi:10.25504/FAIRsharing.dS2o69 .

The assertion above is attributed to me (Barbara Magagna) .

The assertion above was derived from doi:10.25504/FAIRsharing.dS2o69 .

This nanopublication is created by me (Barbara Magagna) .

Barbara Magagna, 8 Jan 2023, 15:07:39 UTC

References

| Nanopublication | Part | Subject | Predicate | Object | Published By | Published On |
|-----------------|-----------|-----------|-----------|------------|-----------------|--------------------------|
| RAhLs_7IYo | assertion | 056j50v04 | qualifies | RAh0Uxl-HQ | Barbara Magagna | 2023-01-08T15:10:38.701Z |

Raw

TriG(txt), JSON-LD(txt), N-Quads(txt), XML(txt)



A deeper look

The creator of this nanopublication

AgroPortal

Full identifier: <https://w3id.org/np/RAwSQWkn0rpOn7VtVNN523rJkFSMhr0zV0Kz94yY9K1cl>

Assigned to 1 class:

- [Nanopublication](#) (N)

Status

This is the latest version.

Nanopublication

[N](#) [AgroPortal](#) [FER](#) [Registry](#)

| | | |
|---------------------------------|------------|----------------------------------|
| doi:10.25504/FAIRsharing.z4xpxx | url | agroportal.lirmm.fr |
| doi:10.25504/FAIRsharing.z4xpxx | implements | OWL |
| doi:10.25504/FAIRsharing.z4xpxx | type | Available-FAIR-Enabling-Resource |
| doi:10.25504/FAIRsharing.z4xpxx | type | FAIR-Enabling-Resource |
| doi:10.25504/FAIRsharing.z4xpxx | type | Registry |
| doi:10.25504/FAIRsharing.z4xpxx | comment | |

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| | | |
|---------------------------------|---------|---------------------------------|
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| doi:10.25504/FAIRsharing.z4xpxx | seeAlso | doi:10.25504/FAIRsharing.z4xpxx |

| | | |
|---------------------|----------------|---------------------------------|
| The assertion above | creator | Barbara Magagna |
| The assertion above | wasDerivedFrom | doi:10.25504/FAIRsharing.z4xpxx |

This nanopublication was created on "2025-01-23T09:43:28Z"

FIP Wizard, 23 Jan 2025, 09:43:28 UTC

References

| Nanopublication | Part | Subject | Predicate | Object | Published By | Published On |
|-----------------|------|---------|-----------|--------|--------------|--------------|
|-----------------|------|---------|-----------|--------|--------------|--------------|

No Records Found

Raw

[TriG\(txt\)](#), [JSON-LD\(txt\)](#), [N-Quads\(txt\)](#), [XML\(txt\)](#)



A deeper look

The source for this nanopublication

AgroPortal

Full identifier: <https://w3id.org/np/RAwSQWkn0rpOn7VtVNN523rJkFSMhr0zV0Kz94yY9K1cl>

Assigned to 1 class:

- [Nanopublication](#) (N)

Status

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Nanopublication

[N](#) [AgroPortal](#) [FER](#) [Registry](#)

| | | |
|---------------------------------|------------|----------------------------------|
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| | | |
|---------------------|----------------|---------------------------------|
| The assertion above | creator | Barbara Magagna |
| The assertion above | wasDerivedFrom | doi:10.25504/FAIRsharing.z4xpxx |

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FIP Wizard, 23 Jan 2025, 09:43:28 UTC

References

| Nanopublication | Part | Subject | Predicate | Object | Published By | Published On |
|-----------------|------|---------|-----------|--------|--------------|--------------|
|-----------------|------|---------|-----------|--------|--------------|--------------|

No Records Found

Raw

[TriG\(txt\)](#), [JSON-LD\(txt\)](#), [N-Quads\(txt\)](#), [XML\(txt\)](#)



A deeper look

The reference to the template used (in this case the FIP project)

AgroPortal

Full identifier: <https://w3id.org/np/RAwSQWkn0rpOn7vtVNN523rJkFSMhr0zV0Kz94yY9K1cl>

Assigned to 1 class:

- [Nanopublication](#) (N)

Status

This is the latest version.

Nanopublication

[N](#) [AgroPortal](#) [FER](#) [Registry](#) [▼](#)

| | | |
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| doi:10.25504/FAIRsharing.z4xpxx | seeAlso | doi:10.25504/FAIRsharing.z4xpxx |

The assertion above [creator](#) [Barbara Magagna](#)

The assertion above [wasDerivedFrom](#) [doi:10.25504/FAIRsharing.z4xpxx](#)

[sig](#) has the signature

"OeEyoEqx8EhKyn7B8P1NvG2FS8bh/koMfk9PmeuUw3Tp2i6rOEVlSkR+u0PV6cxNFQLUULR7yF8Ds1OqiZhD8C4x11fWpuzbbwdA1j130dudAaa/EQ/H7qIKdVikPmd+WpyG0nNTjntvhAd/vCi hWRbil9TirbPZ1m/3QERDI="

this nanopublication [creator](#) [FIP Wizard](#)

this nanopublication [license](#) [1.0](#)

this nanopublication [wasDerivedFrom](#) [11507813-5319-4d4d-88d0-9def64783728](#)

FIP Wizard, 23 Jan 2025, 09:43:28 UTC



A deeper look

The reference to the template used (in this case the nanopub template)

RAh0UxI-HQ

Full identifier: <http://purl.org/np/RAh0UxI-HQseaz4wKxvvn3TVufOC1J6MvjBAbYShoHEc>

Assigned to 1 class:

- Nanopublication (N)

Status

This is the latest version.

Nanopublication

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EnvThes is a Structured vocabulary

EnvThes is further described by EnvThes

EnvThes can in some situations be considered the same as doi:10.25504/FAIRsharing.dS2o69

The assertion above is attributed to me (Barbara Magagna)

The assertion above was derived from doi:10.25504/FAIRsharing.dS2o69

This nanopublication was created from the assertion template RA2plcFAUD

This nanopublication was created from the provenance template RAdpM4VHC

This nanopublication was created from the publication info template RAA2MfqdBC

This nanopublication was created from the publication info template RAjpBMlw3o

This nanopublication introduces EnvThes

sig has as target this nanopublication

sig has the algorithm "RSA"

sig has the public key

"MIGfMA0GCSqGSIb3DQEBAQUAA4GNADCBiQKBgQCtpcf1n7kbe8toJbOTDQaCcCcsEF5Wqt6J4rZ02w+TfY7/elOgJZYOlpl6G3AzO2RNmVYWRPSIMiykaFuaRuBitvk1GKfGdprfZbvXwmeOxpqCTRBQX9EnFyQyd+Ra/ajfw/UsG8skeu1xnUEpnQbpgbQYc/FvhJNNDUwEc77mOwDAQAB"

sig has the signature

"Jlx3GZjkS9rXjilmgBRqdnmZHeRgk2lwk1pg8uHNXLWZySCSV+6VcPXyWacBgRRtsUMIbQlpDzf9CwSwq09xK4oOXL1dwUJdPw5JzFXmiGMgCTtgAgdKLyujx2WvgmLls4o+Q2GuW3gK09I2qylD5poiZjJIGkv+Ux7NQBAI="

Barbara Magagna, 8 Jan 2023, 15:07:39 UTC



A deeper look

References to other nanopublications that are related to this one

RAh0UxI-HQ

Full identifier: <http://purl.org/np/RAh0UxI-HQseaz4wKxvvn3TVufOC1J6MVjiBAbYShoHEc>

Assigned to 1 class:

- Nanopublication (N)

Status

This is the latest version.

Nanopublication

EnvThes | Environmental Thesaurus FER Structured-vocabulary

EnvThes is a FAIR-Enabling Resource .

EnvThes is called "EnvThes | Environmental Thesaurus" .

EnvThes has the description

"The Environmental Thesaurus is a controlled vocabulary built to aid integration of the data resulting from long term ecological research and monitoring in Europe (eLTER). It provides described and semantically well defined terms for later analysis and it serves as harmonized specification of parameters in the observation and measurement of ecosystem processes."

EnvThes is a available FAIR-enabling resource .

EnvThes is a Structured vocabulary .

EnvThes is further described by EnvThes .

EnvThes can in some situations be considered the same as doi:10.25504/FAIRsharing.dS2o69 .

The assertion above is attributed to me (Barbara Magagna) .

The assertion above was derived from doi:10.25504/FAIRsharing.dS2o69 .

This nanopublication is created by me (Barbara Magagna) .

Barbara Magagna, 8 Jan 2023, 15:07:39 UTC

References

| Nanopublication | Part | Subject | Predicate | Object | Published By | Published On |
|-----------------|-----------|-----------|-----------|------------|-----------------|--------------------------|
| RAhLs_7iYo | assertion | 056j50v04 | qualifies | RAh0UxI-HQ | Barbara Magagna | 2023-01-08T15:10:38.701Z |

Raw

TriG(txt), JSON-LD(txt), N-Quads(txt), XML(txt)



A deeper look

Formats available to express this nanopublication

AgroPortal

Full identifier: <https://w3id.org/np/RAwSQWkn0rpOn7VtVNN523rJkFSMhr0zV0Kz94yY9K1cl>

Assigned to 1 class:

- [Nanopublication](#) (N)

Status

This is the latest version.

Nanopublication

[N](#) [AgroPortal](#) [FER](#) [Registry](#) [▼](#)

| | | |
|---------------------------------|------------|----------------------------------|
| doi:10.25504/FAIRsharing.z4xpxx | url | agroportal.lirmm.fr |
| doi:10.25504/FAIRsharing.z4xpxx | implements | OWL |
| doi:10.25504/FAIRsharing.z4xpxx | type | Available-FAIR-Enabling-Resource |
| doi:10.25504/FAIRsharing.z4xpxx | type | FAIR-Enabling-Resource |
| doi:10.25504/FAIRsharing.z4xpxx | type | Registry |
| doi:10.25504/FAIRsharing.z4xpxx | comment | |

"AgroPortal is an ontology repository for agronomy as well as food, plant, agriculture and biodiversity sciences. It provides ontology hosting, search, versioning, visualization, comment, and recommendation; enables semantic annotation; stores and exploits ontology alignments; and enables interoperation with the semantic web. To align with the needs of the agronomy community, AgroPortal uses SKOS vocabularies and trait dictionaries) and supported features (offering detailed metadata and advanced annotation capabilities)."

| | | |
|---------------------------------|---------|---------------------------------|
| doi:10.25504/FAIRsharing.z4xpxx | label | "AgroPortal" |
| doi:10.25504/FAIRsharing.z4xpxx | seeAlso | doi:10.25504/FAIRsharing.z4xpxx |

| | | |
|---------------------|----------------|---------------------------------|
| The assertion above | creator | Barbara Magagna |
| The assertion above | wasDerivedFrom | doi:10.25504/FAIRsharing.z4xpxx |

This nanopublication was created on "2025-01-23T09:43:28Z"

FIP Wizard, 23 Jan 2025, 09:43:28 UTC

References

| Nanopublication | Part | Subject | Predicate | Object | Published By | Published On |
|-----------------|------|---------|-----------|--------|--------------|--------------|
|-----------------|------|---------|-----------|--------|--------------|--------------|

No Records Found

Raw

[TriG\(txt\)](#), [JSON-LD\(txt\)](#), [N-Quads\(txt\)](#), [XML\(txt\)](#)



Nanopublications for FAIR Supporting Resources



Nanopublications in the FIP ecosystem are used to

- FAIR Implementation Profile (FIP)
- The Nanopublication Index
- The FIP declaration
- The FAIR Implementation Community
- The FAIR Enabling Resource (FER)



The FIP Nanopublication

RAkFULv6WU

Full identifier: https://w3id.org/np/RAkFULv6WUjXFsPfrWaN5lwgWF8Cciz3x8OvZVolsmZ_8

Assigned to 1 class:

- Nanopublication (N)

Status

This is the latest version.

Nanopublication

N Nanopublication FIP FIP ▼

| | | |
|-----|-----------------------|-----------------------------|
| fip | description | "Nanopublication FIP" |
| fip | type | FAIR-Implementation-Profile |
| fip | label | "Nanopublication FIP" |
| fip | version | "1.0.1" |
| fip | declared-by | NP_Com |
| fip | has-declaration-index | RAEwZaQsed |

The assertion above creator Barbara Magagna

This nanopublication was created on "2025-01-23T11:34:58Z"

FIP Wizard, 23 Jan 2025, 11:34:58 UTC

References

| Nanopublication | Part | Subject | Predicate | Object | Published By | Published On |
|-----------------|------|---------|-----------|--------|--------------|--------------|
|-----------------|------|---------|-----------|--------|--------------|--------------|

No Records Found

Raw

TriG(txt), JSON-LD(txt), N-Quads(txt), XML(txt)



RANeSo2h1e

Full identifier: https://w3id.org/np/RANeSo2hleyzR_J_MDT56B5IVI01syqOnyd2fFUHL9-I

Assigned to 2 classes:

- [Nanopublication](#) (N)
- [NanopubIndex](#) (N)

Status

This is the latest version.

Nanopublication

[N Nanopublication FIP](#) [NanopubIndex](#) [includesElement](#) ▼

| | | | |
|----------------------|-----------------|------------|---|
| this nanopublication | includesElement | RA-IVV3uEp | . |
| this nanopublication | includesElement | RA1EJoH417 | . |
| this nanopublication | includesElement | RA2iw9wqTe | . |
| this nanopublication | includesElement | RA7eStMLxy | . |
| this nanopublication | includesElement | RAAgDIQM5m | . |
| this nanopublication | includesElement | RADRfTZmrw | . |

The assertion above [creator](#) [Barbara Magagna](#) .

This nanopublication was created on ["2025-01-23T11:25:54Z"](#) .

[FIP Wizard](#), 23 Jan 2025, 11:25:54 UTC

References

| Nanopublication | Part | Subject | Predicate | Object | Published By | Published On |
|----------------------------|-----------|---------|-----------------------|----------------------------|--------------|--------------------------|
| RAzOrZaCaw | assertion | fip | has-declaration-index | RANeSo2h1e | FIP Wizard | 2025-01-23T11:25:54.000Z |

[Show All](#)

Raw

[TriG\(txt\)](#), [JSON-LD\(txt\)](#), [N-Quads\(txt\)](#), [XML\(txt\)](#)

ITINERIS



The FIP declaration

RA-4Tuf28t

Full identifier: https://w3id.org/np/RA-4Tuf28tQqCZKP0Q_Nj4vQPzf4ISGz8v-kvEm5KpxCs

Assigned to 1 class:

- [Nanopublication](#) (N)

Status

This is the latest version.

Nanopublication

N RA-4Tuf28t FIP-Declaration

| | | |
|-------------|-------------------------|---------------------|
| declaration | type | FIP-Declaration |
| declaration | version | "1.0.1" |
| declaration | considerations | "" |
| declaration | declared-by | NP_Com |
| declaration | declares-current-use-of | PROV-O |
| declaration | refers-to-question | FIP-Question-R1.2-D |

The assertion above **creator** Barbara Magagna

This nanopublication was created on "2025-01-23T11:34:58Z"

FIP Wizard, 23 Jan 2025, 11:34:58 UTC

References

| Nanopublication | Part | Subject | Predicate | Object | Published By | Published On |
|----------------------------|-----------|----------------------------|-----------------|------------|--------------|--------------------------|
| RAEwZaQsed | assertion | RAEwZaQsed | includesElement | RA-4Tuf28t | FIP Wizard | 2025-01-23T11:34:58.000Z |

Raw

[TriG\(txt\)](#), [JSON-LD\(txt\)](#), [N-Quads\(txt\)](#), [XML\(txt\)](#)

FINERIS



PROV-O

Full identifier: <http://purl.org/np/RAnkRRRbkigfQpL2ERK1jVqwA9Brwu1GcORFTbfQMWHfC4#PROV-O>

Assigned to 4 classes:

- [Available-FAIR-Enabling-Resource](#) (N)
- [FAIR-Enabling-Resource](#) (N)
- [Provenance-model](#) (N)
- [Semantic-model](#) (N)

Minted in Nanopublication

[PROV-O|The PROV Ontology](#) FER Data-schema Provenance-model

PROV-O is a [FAIR-Enabling Resource](#) .

PROV-O is called ["PROV-O|The PROV Ontology"](#) .

PROV-O has the description

"The PROV-O expresses the PROV Data Model [PROV-DM] using the OWL2 Web Ontology Language (OWL2). Provenance is information about entities, activities, and people involved in producing a piece of data or thing, which can be used to form assessments about its quality, reliability or trustworthiness."

PROV-O is a [available FAIR-enabling resource](#) .

PROV-O is a [Data schema](#) .

PROV-O is a [Provenance model](#) .

PROV-O is (almost) exactly the same as [prov-o](#) .

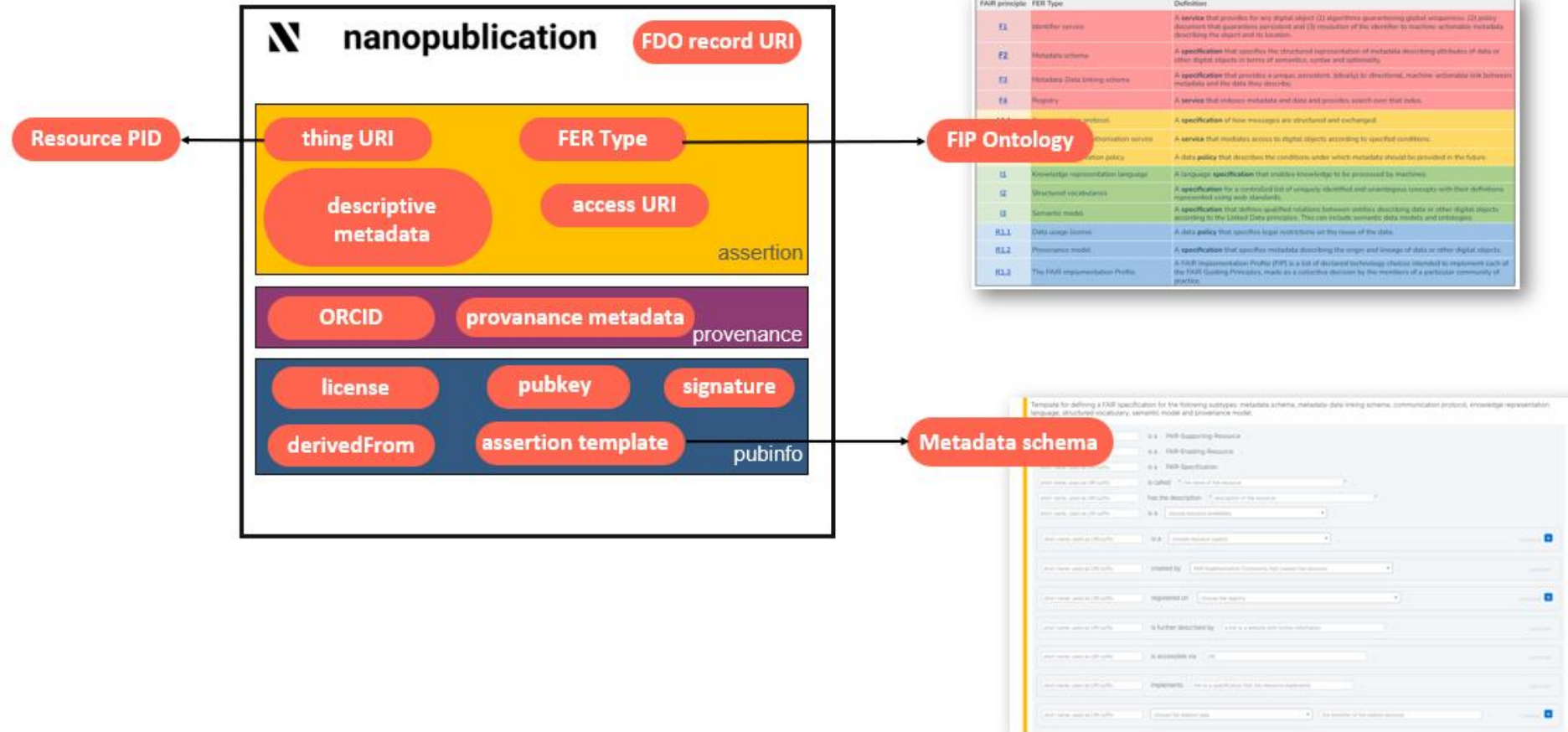
The assertion above is attributed to [me \(Barbara Magagna\)](#) .

This nanopublication is created by [me \(Barbara Magagna\)](#) .

[Barbara Magagna](#), 16 Jan 2022, 13:10:16 UTC



Structure of a FER Nanopublications



| FAIR principle | FER Type | Definition |
|----------------------|---|---|
| F1 | <i>Identifier Service</i> | A service that provides for any digital object (1) algorithms guaranteeing global uniqueness, (2) policy document that guarantees persistent and (3) resolution of the identifier to machine-actionable metadata describing the object and its location. |
| F2 | <i>Metadata Schema</i> | A specification that specifies the structured representation of metadata describing attributes of data or other digital objects in terms of semantics, syntax and optionality. |
| F3 | <i>Metadata-Data Linking Schema</i> | A specification that provides a unique, persistent, (ideally) bi-directional linking between metadata and the data they describe. |
| F4 | <i>Registry</i> | A service that indexes metadata and data and provides search over the indexed data. |
| A1.1 | <i>Communication Protocol</i> | A specification of how messages are structured and exchanged. |
| A1.2 | <i>Authentication & Authorisation Service</i> | A service that mediates access to digital objects according to specified policies. |
| A2 | <i>Metadata Preservation Policy</i> | A data policy that describes the conditions under which metadata should be preserved. |
| I1 | <i>Knowledge Representation Language</i> | A language specification that enables knowledge to be processed by machines. |
| I2 | <i>Structured Vocabularies</i> | A specification for a controlled list of uniquely identified and unambiguous concepts with their definitions represented using web standards. |
| I3 | <i>Semantic Model</i> | A specification that defines qualified relations between entities describing data or other digital objects according to the Linked Data principles. This can include semantic data models and ontologies. |
| R1.1 | <i>Data Usage License</i> | A data policy that specifies legal restrictions on the reuse of the data. |
| R1.2 | <i>Provenance Model</i> | A specification that specifies metadata describing the origin and lineage of data or other digital objects. |
| R1.3 | <i>The FAIR Implementation Profile</i> | A FAIR Implementation Profile (FIP) is a list of declared technology choices intended to implement each of the FAIR Guiding Principles, made as a collective decision by the members of a particular community of practice. |

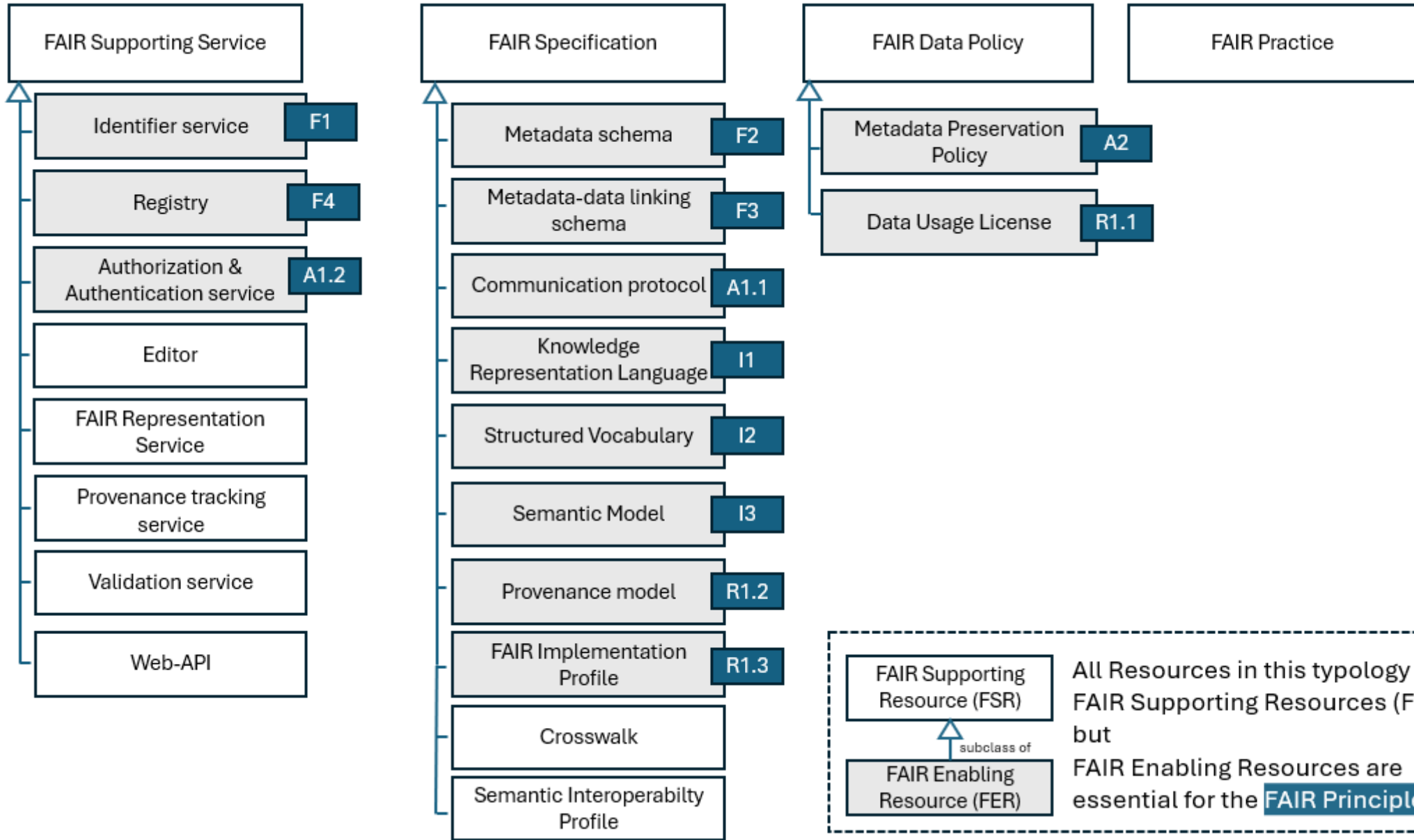
Specifications

Services

Data Policies



FAIR Supporting Resource Types



FAIR Supporting Resource (FSR) is a subclass of FAIR Enabling Resource (FER). All Resources in this typology are FAIR Supporting Resources (FSRs) but FAIR Enabling Resources are essential for the **FAIR Principles**.

