



FAIR Implementation Profile

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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”



FER Types II: Services

15:40-16:00
(Sander)

FAIR Supporting Services

FAIR Enabling Resources

- 🌐 Identifier services
- 🌐 Registry
- 🌐 Authentication and authorization service

FAIR Supporting Resources

- 🌐 Editor
- 🌐 FAIR Representation service
- 🌐 Provenance tracking service
- 🌐 Validation service
- 🌐 Web-API



<https://github.com/gofair-foundation/FIP-training/wiki>



Examples – Identifier Service

Identifier Service

A service that guarantees or references the identification of digital objects. It always provides the following for any digital object:

- 1) algorithms guaranteeing global uniqueness
- 2) policy document that guarantees persistence
- 3) resolution of the identifier to machine-actionable metadata describing the object and its location.

So **not** for the identity of a person or an organisation but for example the identifier of a file or document.

For example if you have a passport, a service that creates the identity of the person (national identification number) would not be considered here, but a service that gives each instance of a passport a globally unique number would be considered here. Because it is an algorithm that guarantees global uniqueness.



Examples – Registry



Registry

A service that indexes metadata and data and provides search over that index.



Search the world's most comprehensive index of full-text books.

[My library](#)

Welcome to DEIMS-SDR

DEIMS-SDR (Dynamic Ecological Information Management System - Site and dataset registry) is an information management system powered by eLTER. It allows you to discover long-term ecosystem research sites around the globe, along with the data gathered at those sites and the people and networks associated with them. DEIMS-SDR describes a wide range of sites, providing a wealth of information, including each site's location, ecosystems, facilities, parameters measured and research themes. It is also possible to access a growing number of datasets and data products associated with the sites.

DEIMS-SDR belongs to the service components of the emerging eLTER Research Infrastructure. While being used as eLTER site registry it also offers services to European peers and the global user communities.

- [Read more about DEIMS](#)
- [Explore the European LTER](#)

Resources

- [Sites](#)
- [Datasets](#)
- [Sensors](#)
- [Activities](#)



Examples – Authentication and authorization service

Authentication and authorization service

A service that mediates access to digital objects according to specified conditions.

Passport example: Someone has to check your global unique passport number in a database but before that logs into the application using their credentials and a password.

But also: Company X does not gain access to certain citizen information because those citizens have in their access license not given consent for commercial use of their data.



Examples – Editor

Editor

A service that provides a user-friendly interface for easy editing of metadata, vocabularies or crosswalks.



Examples – FAIR Representation service



FAIR Representation service

A transformation service that converts non-FAIR data into a FAIR representation using machine-readable knowledge representation languages.

The screenshot displays the VocBench web interface. At the top, there is a navigation bar with 'VocBench' and menu items: 'Projects', 'Data', 'Metadata', 'SPARQL', 'History', 'Validation', and 'Tools'. Below the navigation bar, the 'Source' is set to 'Spreadsheet file' and the file 'Agrovoc.xlsx' is selected. The interface is split into two main panels. The left panel, titled 'Spreadsheet preview', shows a table with three columns: 'Concept Name@en', 'Concept Name@it', and 'skos:topConceptOf'. The right panel, titled 'Pearl', contains a code editor with the following Pearl script:

```
6 rule it.uniroma2.art.Sheet2RDFAnnotation id:row {
7   nodes = {
8     @Memoized
9     subject uri(coda:randIdGen('concept')) col_0/value .
10    col_0_literalForm literal@en col_0/value .
11    col_0_xlabel uri(coda:randIdGen('xLabel',{lexicalForm = $col_0_literalForm})) col_0/value .
12    col_1_literalForm literal@it col_1/value .
13    col_1_xlabel uri(coda:randIdGen('xLabel',{lexicalForm = $col_1_literalForm})) col_1/value .
14    @Memoized
15    scheme uri(coda:randIdGen('conceptScheme')) col_2/value .
16  }
17  graph = {
18    $subject rdf:type skos:Concept .
19    OPTIONAL {
20      $subject <http://www.w3.org/2008/05/skos-xl#prefLabel> $col_0_xlabel .
21      $col_0_xlabel a skosxl:Label .
22      $col_0_xlabel skosxl:literalForm $col_0_literalForm .
23    }
24    OPTIONAL {
25      $subject <http://www.w3.org/2008/05/skos-xl#prefLabel> $col_1_xlabel .
26      $col_1_xlabel a skosxl:Label .
27      $col_1_xlabel skosxl:literalForm $col_1_literalForm .
```



Examples – Provenance tracking service



Provenance tracking service

A system that systematically captures, stores and manages detailed information about the origin, history, and lifecycle of digital objects creating metadata based on a provenance model.

```
<success>
  <accessedResource>/bioportal/ontologies/metrics/42031</accessedResource>
  <accessDate>2010-01-25 15:15:36.742 PST</accessDate>
  <data>
    <ontologyMetricsBean>
      <id>42031</id>
      <numberOfAxioms>0</numberOfAxioms>

      <numberOfClasses>293</numberOfClasses>
      <numberOfIndividuals>0</numberOfIndividuals>
      <numberOfProperties>8</numberOfProperties>
      <maximumDepth>6</maximumDepth>
      <maximumNumberOfSiblings>19</maximumNumberOfSiblings>
      <averageNumberOfSiblings>1</averageNumberOfSiblings>

      <classesWithOneSubclass>
        <string>APO:0000003</string>
        <string>APO:0000039</string>
        <string>APO:0000064</string>
        <string>APO:0000084</string>
        <string>APO:0000101</string>

        <string>APO:0000105</string>
        <string>APO:0000210</string>
        <string>APO:0000213</string>
        <string>APO:0000215</string>
        <string>APO:0000255</string>
      </classesWithOneSubclass>

      <classesWithMoreThanXSubclasses/>
      <classesWithNoDocumentation/>
      <classesWithNoAuthor/>
      <classesWithMoreThanOnePropertyValue/>
    </ontologyMetricsBean>
  </data>
</success>
```

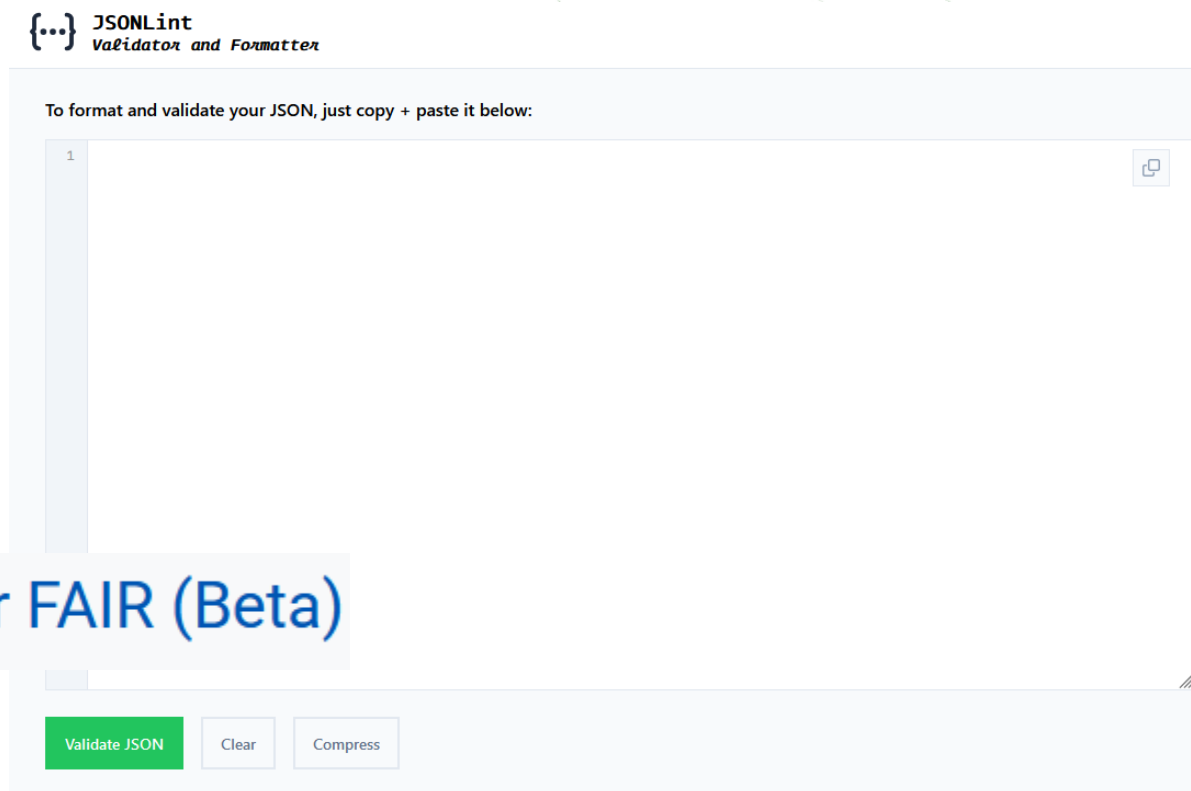
https://www.bioontology.org/wiki/Ontology_Metric




Examples – Validation service

Validation Service

A system that automatically verifies the accuracy, completeness, or compliance of data, code or processes against predefined criteria or standards.



 **Ontology Pitfall Scanner for FAIR (Beta)**

<https://foops.linkeddata.es/about.html>



Examples – Web-API

Web-API

An Application Programming Interface (API) for the World Wide Web that allows different software applications to communicate with each other.

Astronomy Picture of the Day

[Discover the cosmos!](#) Each day a different image or photograph of our fascinating universe is featured, along with a brief explanation written by a professional astronomer.

2025 January 19



Titan Touchdown: Huygens Descent Movie
Video Credit: [ESA](#), [NASA](#), [JPL](#), [U. Arizona](#), [E. Karkoschka](#)

Explanation: What would it look like to land on Saturn's moon Titan? The [European Space Agency's](#) Huygens probe set down on the Solar System's cloudiest moon in 2005, and a [time-lapse video](#) of its descent images was created. [Huygens](#) separated from the robotic [Cassini spacecraft](#) soon after it achieved orbit around Saturn in late 2004 and began approaching [Titan](#). For two hours after arriving, Huygens plummeted toward [Titan's](#) surface, recording at first only the shrouded moon's opaque atmosphere. The computerized [truck-tire sized probe](#) soon deployed a parachute to slow its descent, pierced the thick clouds, and began transmitting images of a [strange surface](#) far below [never before seen](#) in [visible light](#). Landing in a [dried sea](#) and [surviving](#) for 90 minutes, Huygen's returned unique images of a [strange plain](#) of dark sandy soil strewn with smooth, bright, fist-sized rocks of ice.

Tomorrow's picture: ATLAS tails

```
JSON  Onbewerkte gegevens  Headers
Opslaan  Kopiëren  Alles samenvouwen  Alles uitvouwen  JSON filteren
date: "1996-12-03"
▼ explanation: `Like a butterfly,\r a white dwarf star begins its life\r by casting off a cocoon that enclosed its former self. 2440, contains one of the hottest white dwarf stars known.\r The white dwarf can be seen as the bright dot near 1 and was post-processed by F. Hamilton.\r`
▼ hdurl: "https://apod.nasa.gov/apod/image/9612/nac2440_hst2_big.jpg"
media_type: "image"
service_version: "v1"
title: "Cocoon of a New White Dwarf\r\r\nCredit:"
▼ url: "https://apod.nasa.gov/apod/image/9612/nac2440_hst2.jpg"
```

https://api.nasa.gov/planetary/apod?api_key=DEMO_KEY&date=1996-12-03

