



FAIR-IMPACT

Expanding FAIR solutions across EOSC



eosoc | FAIR-IMPACT

National Roadshow Series



HYBRID WORKSHOP

France

11th September 2024

Partner



INRAE

French data repositories and their use of semantics

Présentation des travaux et outils développés dans le cadre du projet

Agenda / Programme

15h - 15h05 : Welcome - *Volker Beckmann (MESR)*

15h05 - 15h25 : EOSC context & FAIR-IMPACT overview - *Ingrid Dillo (DANS)*

15h25 - 15h45 : Ontology repositories and semantic artefact catalogs in EOSC : the prism of FAIR-IMPACT - *Clément Jonquet (INRAE)*

15h45 - 16h05 : Data Interoperability into SLAs and MoUs - *Salomé Landel (CNRS)*

16h05 - 16h50 : Semantics in practice within French data repositories - Demonstration session

Use of semantic artefacts, via AgroPortal, within Research Data Gouv - *Dimitri Szabo (INRAE)*

Use of semantic artefacts, via AgroPortal, within PHIS - *Llorenç Cabrera-Bosquet (INRAE)*

Use of semantic artefacts, via EarthPortal, within EasyData - *Christelle Pierkot (CNRS)*

Use of semantic artefacts, via DataCite and HAL, about PerSCIDO - *Fabrice Jouanot (Univ Grenoble-Alpes)*

16h50 : Wrap up and closure - *Clément Jonquet (INRAE)*

EOSC and the FAIR-IMPACT Project

French National Roadshow FAIR-IMPACT

Ingrid Dillo, Project Coordinator - DANS

contact : ingrid.dillo@dans.knaw.nl





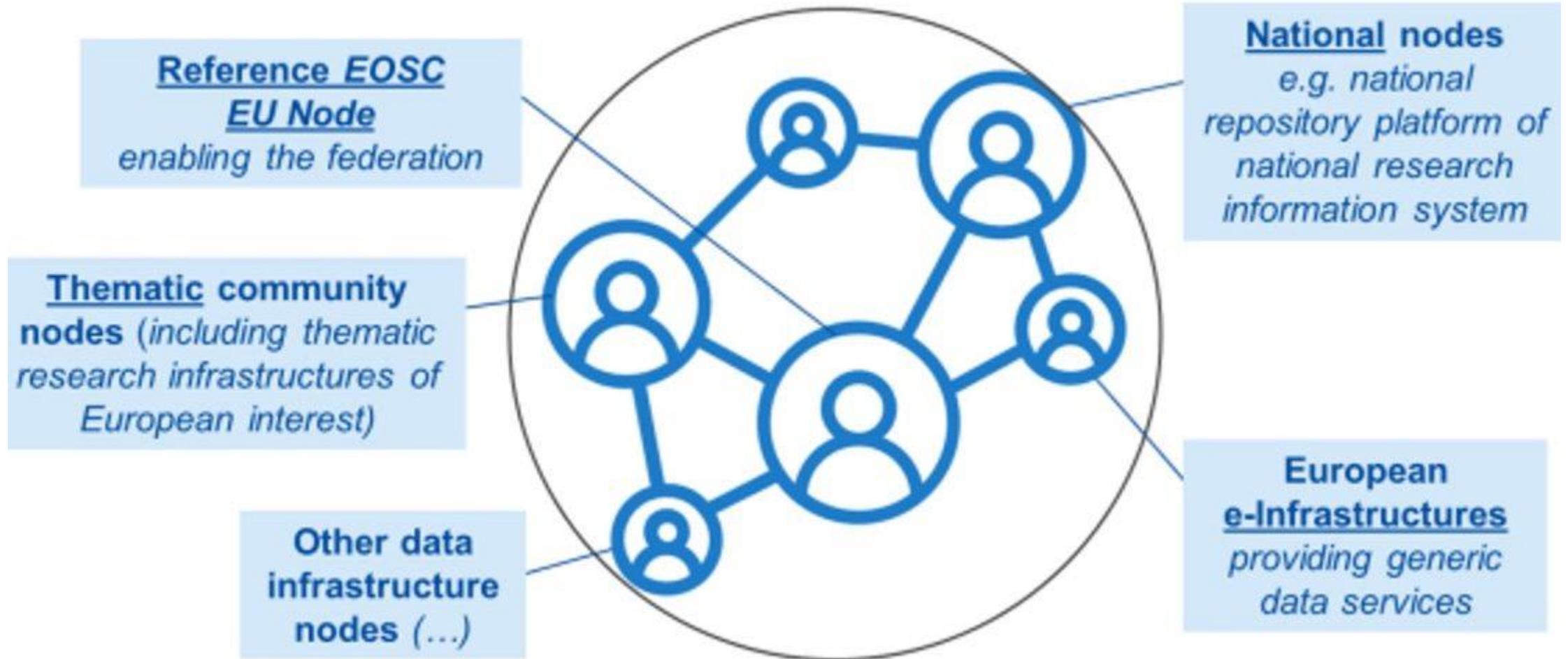
Building the EOSC Federation

The vision for EOSC is to put in place a system in Europe to find and access data and services for research and innovation. This is to help researchers store, share, process, analyse and reuse FAIR research outputs within and across disciplines and borders.

The deployment of a network between data repositories and services will be instrumental for Open Science to progress in Europe. For this, the EOSC Federation of nodes is being created.

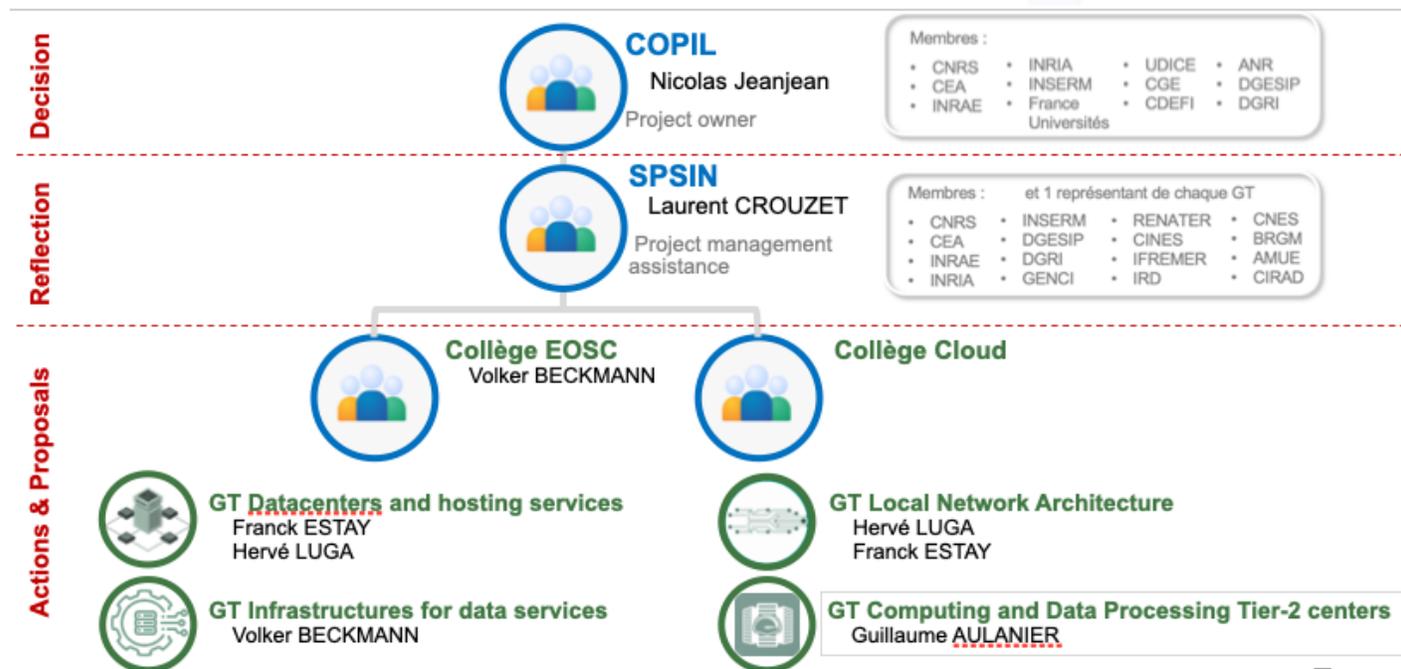
<https://eosc.eu/building-the-eosc-federation/>

EOSC as a Federation of Nodes



EOSC in France

- EOSC: a pillar of France's digital transition
- EOSC is part of the *Services et Infrastructures Numérique (CoSIN)* committee, led by MESR
- EOSC is coordinated by the *Collège EOSC-France* (since 02/2022): representatives of French member/observer organizations* of the EOSC Association + ministry (chair)
- The Collège EOSC-France provides advice and proposes actions to the *Comité Pilotage Services et Infrastructures Numérique (CoPil-SIN)*
- Strong link between communities and decision-makers



Digital Infrastructure and Services Committee (CoSIN)

*Members of the Collège EOSC-France: CEA, CINES, CNRS, ESRF, France Universités, GENCI, IFREMER, ILL, INRAE, INRIA, INSERM, Observatoire Paris, RENATER, Soleil, Université de Bordeaux, Université de Montpellier, Université Paris Cité, Université Paris-Saclay, Université Strasbourg, CGE, Couperin, ANR, IRD, Sorbonne Université, Udice, Université Clermont Auvergne, Université de Univ. Lorraine, Nantes Université, Université Grenoble Alpes, Université Paris 1 Panthéon-Sorbonne, MESR/DGRI

Collège EOSC-France : Ambitions

- Coordinate and strengthen the French position within the EOSC association,
- Communicate EOSC to all French stakeholders,
- Examine the possible forms of a permanent EOSC-France structure in the light of changes in the EOSC Association and operational objectives,
- Liaise and coordinate with other European initiatives involved in building the EOSC (RDA, OpenAIRE, EUDAT, EGI, GÉANT, etc.) or which are linked to EOSC (Gaia-X, EuroHPC, etc.).

*Members of the Collège EOSC-France: CEA, CINES, CNRS, ESRF, France Universités, GENCI, IFREMER, ILL, INRAE, INRIA, INSERM, Observatoire Paris, RENATER, Soleil, Université de Bordeaux, Université de Montpellier, Université Paris Cité, Université Paris-Saclay, Université Strasbourg, CGE, Couperin, ANR, IRD, Sorbonne Université, Udice, Université Clermont Auvergne, Université de Univ. Lorraine, Nantes Université, Université Grenoble Alpes, Université Paris 1 Panthéon-Sorbonne, MESR/DGRI

Direction générale de la recherche et de l'innovation (DGRI), Service de la Stratégie de la Recherche et de l'Innovation (SSRI), Département Services et Infrastructures Numériques (A7)

Collège EOSC-France 2024

Main discussion points this year:

- Which French research services are ready for EOSC?
- What (additional) actions are needed to make data and services FAIR and open?
- What is an EOSC node?
- EOSC nodes: What could be the thematic nodes in France? What can be identified as a national (infrastructure) node?
- EOSC after Horizon Europe — MS/AC* approval mandatory
- Cloud for research in France : storage and data processing cloud for higher education and research based on a federation of existing facilities with seed funding from MESR

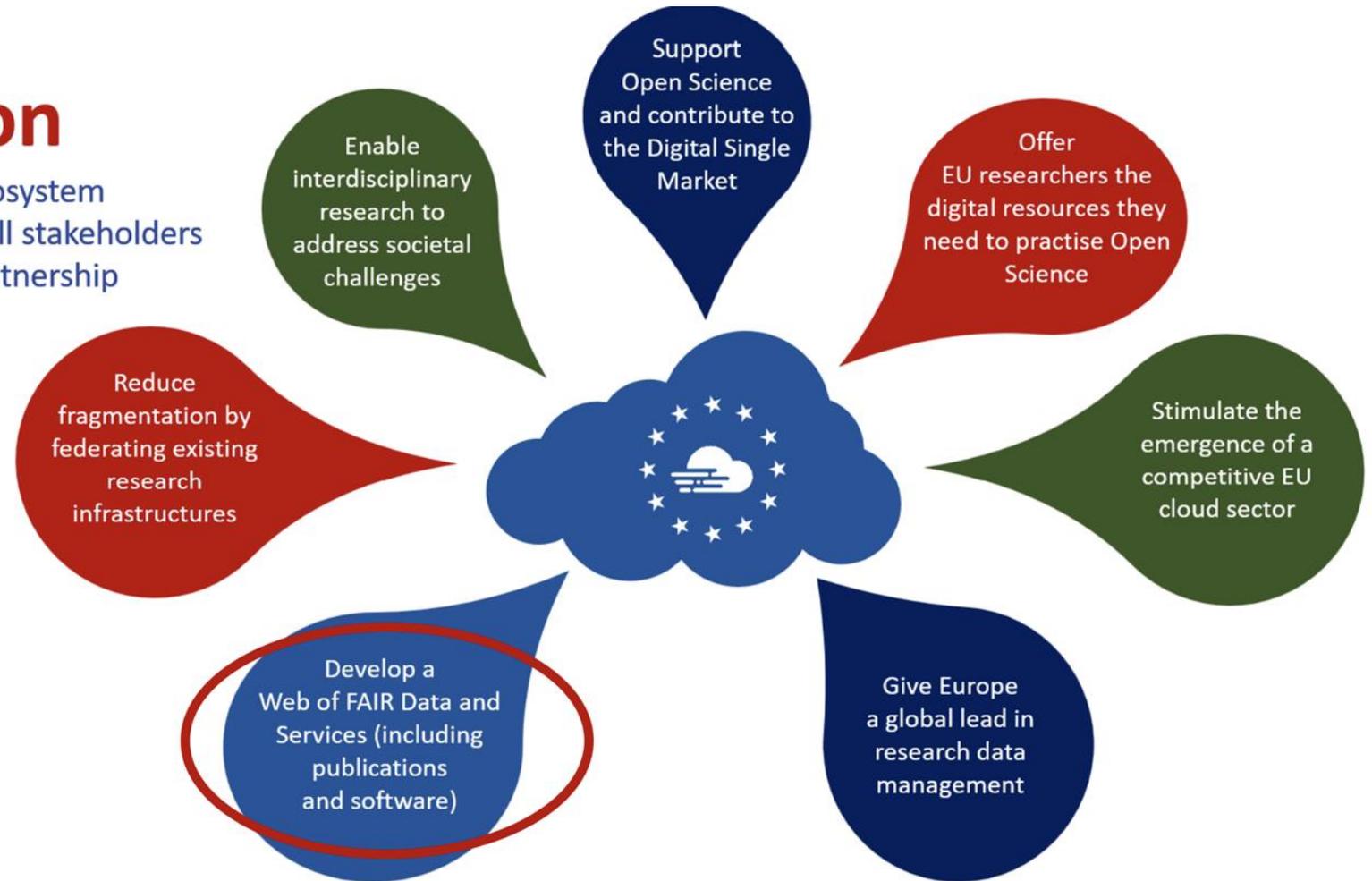
*MS/AC : Member States and Associated countries of Horizon Europe



<https://eosc-france.fr/>

The Vision

Building the EOSC ecosystem collaboratively with all stakeholders through the EOSC Partnership



Survey European Research Data Landscape



- 15,000 European researchers
- 31 European repositories

<https://op.europa.eu/en/publication-detail/-/publication/03b5562d-6a35-11ed-b14f-01aa75ed71a1>

<https://zenodo.org/communities/erdl21?page=1&size=20>

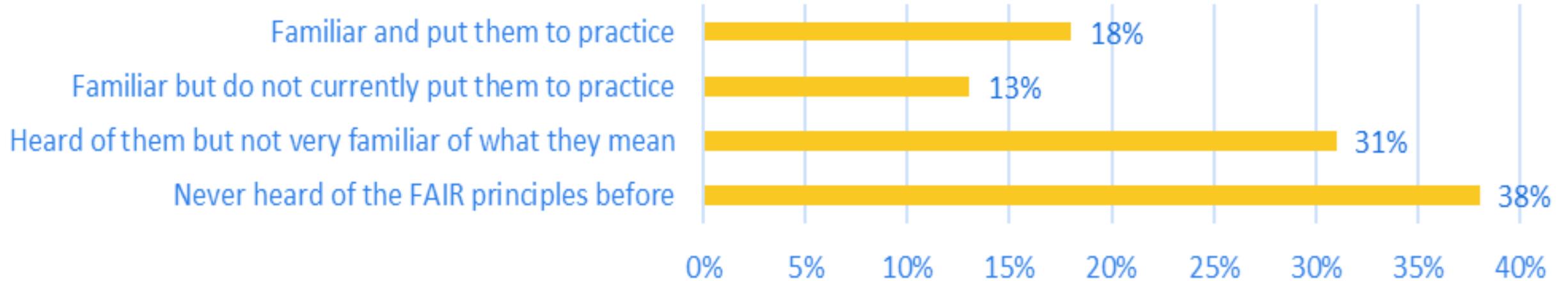
VISIONARY
ANALYTICS

Data Archiving and Networked Services
DANS

 | D | C | C

 EFISCENTRE

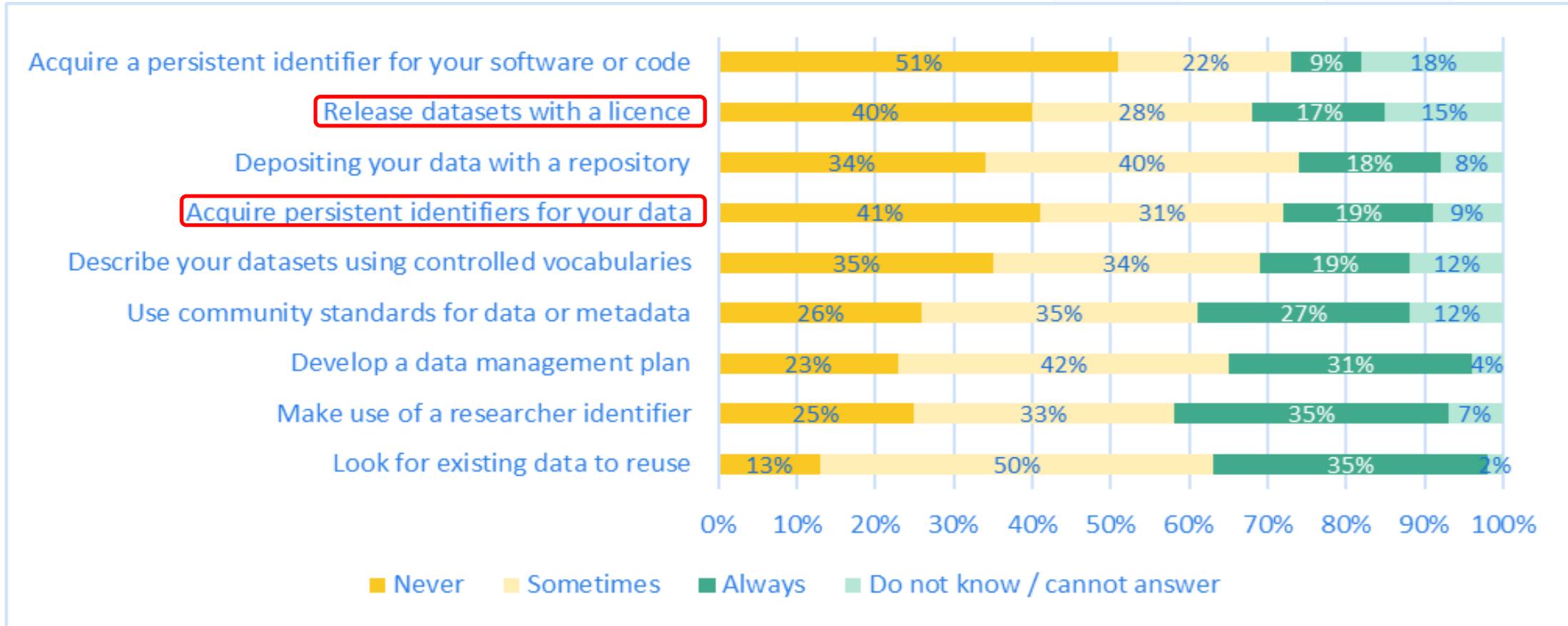
FAIR awareness



- About two thirds have some level of familiarity with the FAIR principles
- More than a third have never heard of them
- Less than 1 out of 5 puts them into practice

<https://op.europa.eu/en/publication-detail/-/publication/03b5562d-6a35-11ed-b14f-01aa75ed71a1>

FAIR aligned practices



<https://op.europa.eu/en/publication-detail/-/publication/03b5562d-6a35-11ed-b14f-01aa75ed71a1>

Data FAIRness in Europe



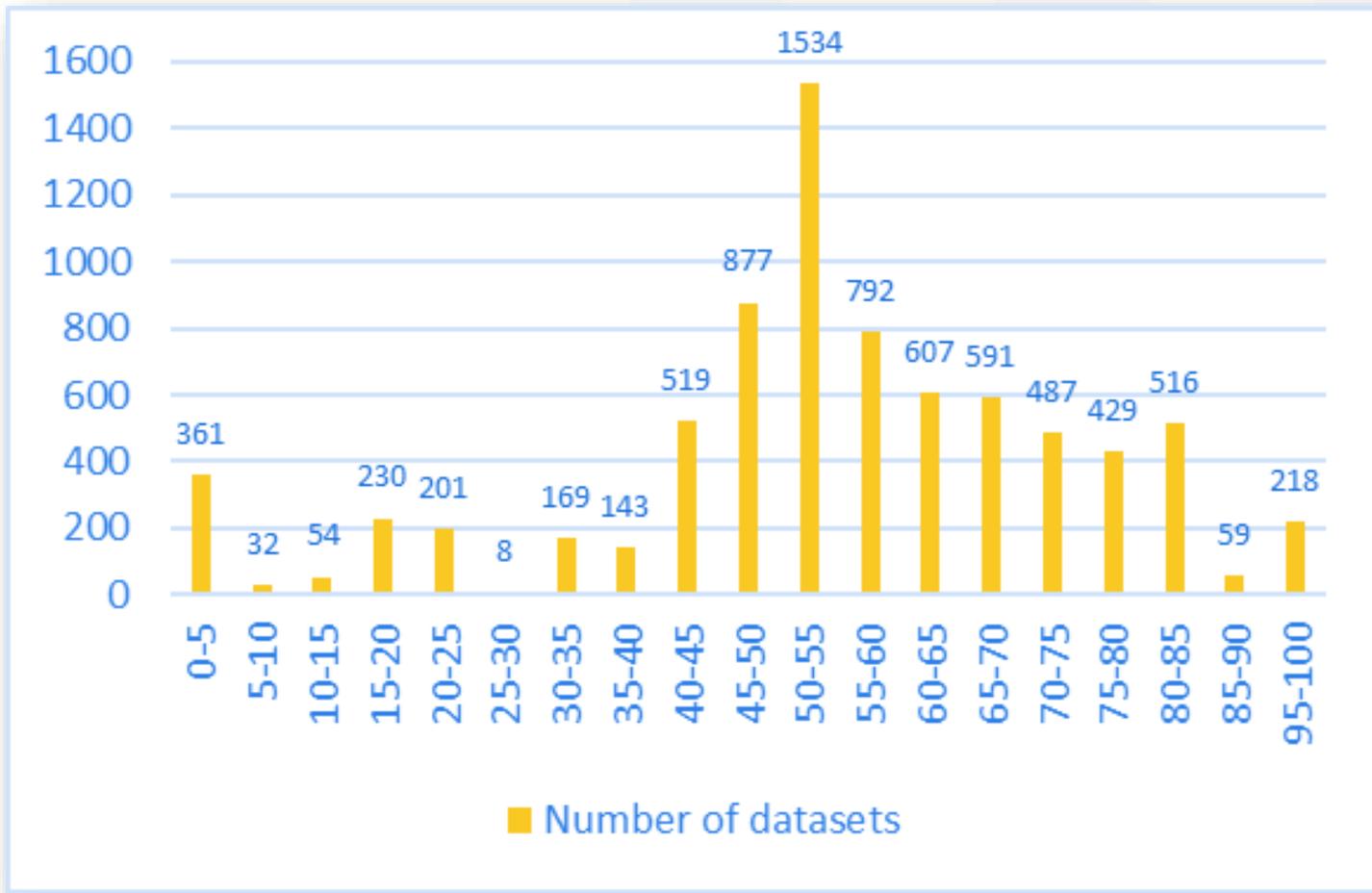
F-UJI

Automated FAIR Data Assessment Tool

Average FAIR score 54.6%

<https://op.europa.eu/en/publication-detail/-/publication/03b5562d-6a35-11ed-b14f-01aa75ed71a1>

<https://www.fairsfair.eu/f-uji-automated-fair-data-assessment-tool>



FAIR-IMPACT in a nutshell

Expanding FAIR Solutions across Europe



Call HORIZON-INFRA-
2021-EOSC-01-05

Enabling discovery and
interoperability of
federated research
objects across scientific
communities

Expanding FAIR
solutions in Europe

Partly following up on
FAIRsFAIR



EU funded project

Coordination and
Support Action

10 million euro

36 months, start 1
June 2022



28 partners and
affiliate entities

From 10 EU
member states:
NL, FI, FR, DK, IT,
DE, ES, NO, BE,
RO

and the UK

FAIR-IMPACT consortium



FAIR-IMPACT overall objective

WHAT:

FAIR-IMPACT supports the implementation of FAIR-enabling practices, tools and services,

- across scientific communities
- across research outputs
- at a European, national, and institutional level



<https://fair-impact.eu/>

FAIR-IMPACT overall objective: how

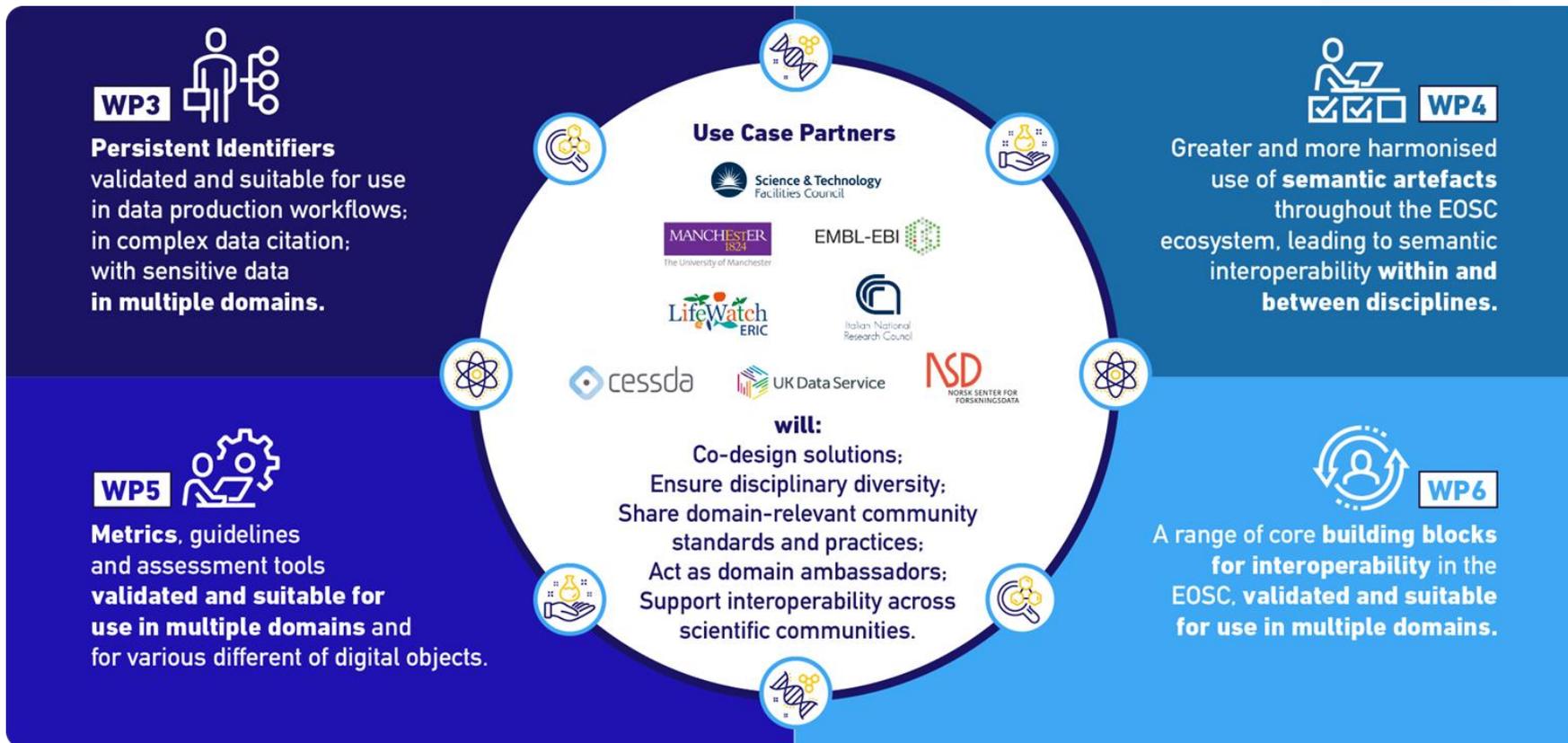
- Identify together with domain specific partners current and emerging FAIR-enabling components;
- Translate these to be adoptable in other domains or for other types of outputs and support the application in these other fields;
- Define the support, governance and coordination mechanisms that are needed to make sure that all of these what we call FAIR-enabling practices will also continue to function in the EOSC in the future.

FAIR-IMPACT project design

FAIR-IMPACT PROJECT DESIGN - WORK PACKAGES



Practical implementation of the FAIR principles starting with integrated use cases on four scientific domains



Social Sciences and Humanities
The F-UJI tool will be adapted to fit SSH relevant community standards for FAIR

Photon & Neutron science
A range of components for cross-domain research data description will be tested

Life science
Data provenance will be better documented by extending RO-Crate to practices on PID usage

Agri-food
Metadata providers will implement a common API for federating access to semantic artefacts

Engagement and support provided so far

- 32 teams joined the 1st round of financial support actions (Sept-Nov 2023)
- 30 teams currently in three in-kind support programmes (Jan-Oct 2024). Second running of programmes starts this month.
- 59 teams joined the 2nd round of financial support actions (May-Oct 2024)
- 944 registered participants for our FAIR Implementation Workshops series which are free and open to anyone

**121 teams of 285 participants
supported through financial
and in-kind support**

Final open call for financial support launches on September 30th!

FAIR Implementation Team >>> FAIR-IMPACT.eu <<<

Funded by the European Union

<https://fair-impact.eu/fair-impact-open-calls-support>

FAIR Implementation Workshops
Skills4EOSC Minimum Viable Skills Profiles: Implementation using FAIR Signposting

15:00 - 16.00 CEST
2 July 2024 Online

AUDIENCES
Repositories and Data Service Providers
Research Performing Organisations

With support of Skills4EOSC

eosc | FAIR-IMPACT FAIR-IMPACT.eu Funded by the European Union

<https://fair-impact.eu/events/fair-implementation-workshops>

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FAIR-IMPACT
<https://www.fair-impact.eu> Project
 Royal Netherlands Academy of Arts and Sciences ROR, CSC - IT Center for Science (Finland) ROR, National Research Institute for Agriculture, Food and Environment ROR, Technical University of Denmark ROR, Trust IT Services ROR, Commla SRL, French Institute for Research in Computer Science and Automation ROR, SURF ROR, University of Bremen ROR, Universidad Politécnica de Madrid ROR, Centre National de la Recherche Scientifique ROR, Aix-Marseille University ROR, Paris Observatory ROR, DataCite ROR, Karlsruhe Institute of Technology ROR, E-Science Data Factory, Consortium of European Social Science Data Archives ROR, Norwegian Centre for Research Data ROR, LifeWatch ERIC, National Research Council ROR, European Molecular Biology Laboratory ROR, Research Data Alliance ROR, Unitatea Executiva Pentru Finantarea Invatamantului Superior a Cercetarii Dezvoltarii si Inovarii ROR, CODATA, University of Edinburgh ROR, University of Essex ROR, UK Research and Innovation ROR, University of Manchester ROR

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Versions

View all versions

Access status

- Open 99
- Embargoed 1

Resource types

- Publication 42
- Presentation 39
- Other 7
- Poster 5
- Event 4
- Dataset 2
- Lesson 1

August 29, 2024 (1) Poster Embargoed

Exposing repository information to foster connections and trust: evaluating and implementing guidelines [Poster]

Dillo, Ingrid; Ulrich, Robert; Huber, Robert; and 10 others

FAIR-IMPACT is developing guidelines and a prototype to expose relevant information as metadata to facilitate discovery, provide context, support interoperability, and create a sense of trust in service providers and the services they offer. Transparent and linked information between objects, the repositories that hold or interact with them, and...

Part of FAIR-IMPACT, EU Open Research Repository (Pilot), IPRES 2024 Posters

Uploaded on August 30, 2024

26 2

August 22, 2024 (v2) Other Open

FAIR-IMPACT EOSC Policy Brief for FAIR-IMPACT_V2.0

Kalaizti, Vasso; Dillo, Ingrid; Ashley, Kevin; and 12 others

FAIR-IMPACT has the ambitious goal of realising an EOSC of FAIR data and services by supporting the implementation of FAIR-enabling practices, tools and services across scientific communities and at national, European and institutional level. The project places its focus on persistent identifiers (WP3), metadata and ontologies (WP4) metrics, gui...

Part of FAIR-IMPACT, EU Open Research Repository (Pilot)

Uploaded on August 22, 2024

1 more versions exist for this record

306 201

November 30, 2023 (1.0) Project milestone Open

M2.5 - Update of FAIR implementation framework (nr2)

Pittonet, Sara; Davidson, Joy

No description

Part of FAIR-IMPACT, EU Open Research Repository (Pilot)

<https://zenodo.org/communities/fair-impact/records?q=&l=list&p=1&s=10&sort=newest>

Today's focus



M4.4 (associated data) - FAIR-IMPACT Review of Semantic Artefact Catalogues and technologies

Published on: 31 July 2024

Jonquet, Clement; Grau, Nina

This dataset (version 1) takes the form of a spreadsheet corresponding to the associated data described by M4.4 - Review of Semantic Artefact Catalogues and guidelines for serving FAIR semantic artefacts in EOSC... [Read more](#)

47 views 5 downloads



D4.1 - Semantic artefact governance models and disciplinary approaches for inclusion within EOSC

Published on: 31 July 2024

Ramezani, Parham; Grau, Nina; Jonquet, Clement; Fiore, Nicola

Semantic artefacts (SAs - terminologies, taxonomies, thesauri, vocabularies, metadata schemas and standards) are essential for standardising data representation and annotation, encapsulating the highest level of meaningful knowledge within interoperability frameworks... [Read more](#)

59 views 43 downloads



M4.4 - Review of Semantic Artefact Catalogues and guidelines for serving FAIR semantic artefacts in EOSC

Published on: 31 July 2024

Jonquet, Clement; Grau, Nina

In the rapidly evolving landscape of scientific research, the proliferation of ontologies and semantic artefacts necessitates the development of robust systems to manage and utilise these resources effectively... [Read more](#)

54 views 43 downloads



D4.3 - Specification of shared metadata description of semantic artefacts and their catalogues including common reference API

Published on: 30 July 2024

Wilson, Antony; Jonquet, Clement

Semantic artefacts (SA) –a broad term to include ontologies, terminologies, taxonomies, thesauri, vocabularies, metadata schemas and semantic standards– are key for the description of data and for making data FAIR. Plus, describing SAs is fundamental to make them FAIR themselves... [Read more](#)

92 views 72 downloads



D6.2 - Core metadata schema for legal interoperability

Published on: 02 May 2024

Rouchon, Olivier; Kraaikamp, Emilie; Gonzalez, Esteban; Fink Kjeldgaard, Anne Sofie; Pedersen Tenderup, Nicolaj; Davidson, Joy; Hodson, Simon; Rettberg, Najla; Scharnhorst, Andrea

FAIR-IMPACT aims to support the implementation phase of the European Open Science Cloud. To this end, FAIR-IMPACT has a focus on the EOSC Interoperability Framework... [Read more](#)

224 views 193 downloads



Merci de votre attention!

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Expanding FAIR solutions across EOSC



[@fairimpact_eu](#) /company/fair-impact-eu-project

Ontology repositories and Semantic Artefact Catalogues in EOSC: the prism of FAIR-IMPACT

French National Roadshow FAIR-IMPACT

Clément Jonquet - INRAE

Contact : clement.jonquet@inrae.fr



Overview



Background elements on **ontologies** and **ontology repositories**



Semantic artefacts and their catalogues **in the EOSC context**



OntoPortal: a generic technology for ontology repositories



WP4's work on semantic artefact catalogues



FAIR-IMPACT

Expanding FAIR solutions across EOSC



**Semantic
Web**

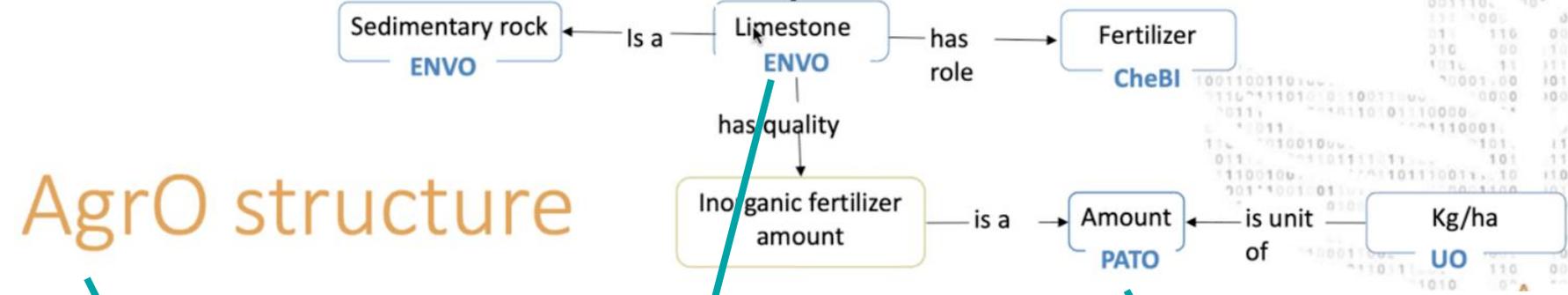
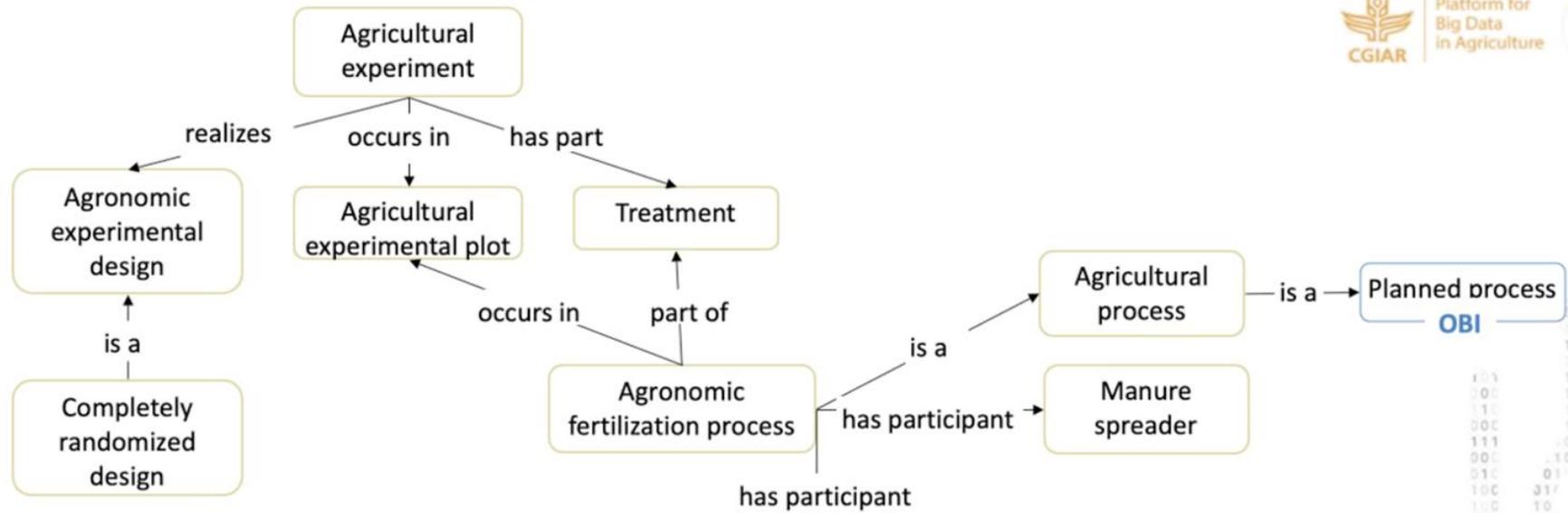
Background elements
on ontologies &
ontology repositories



Funded by
the European Union

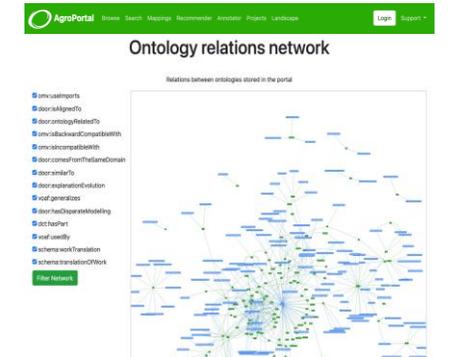
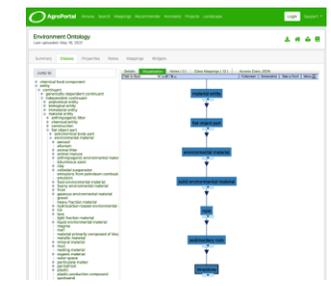
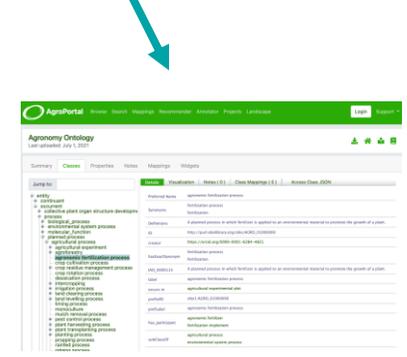
Ontologies

(e.g., Agronomy Ontology)



AgrO structure

Interdisciplinary research ... informaticians/ ontologists at the heart of the problems of the fields to be formalized... in collaboration with experts in these fields



Sprouting
Initial Vigor

- Color of unexpanded apical bud
- Color of first fully expanded leaf
- Leaf vein color
- Apical Pubescence
- Length of stipules
- Number of leaf lobes
- Leaf lobe position
- Angle of petiole insertion
- Petiole length
- Petiole color
- Anthocyanin pigmentation
- Growth habit of young stem
- Pubescence of young stem
- Stem color
- Leaf scar prominence
- Apical branching
- Branching levels
- Branching Angle
- Height of first apical branch
- Height of plant
- Total fresh weight foliage
- Total fresh weight root
- Number harvested
- Root number
- Fresh weight of storage root
- Fresh root yield
- Dry yield
- Harvest index
- Proportion of lodged plants

Source Name	Column1	Column2	Column3	Column4	Column5
NIFTY19D1210900PE.csv	20191212	9:53:57 AM	0.15	75	450
NIFTY19D1210900PE.csv	20191212	1:24:38 PM	0.1	375	525
NIFTY19D1210900PE.csv	20191212	1:25:42 PM	0.1	1275	525
NIFTY19D1210900PE.csv	20191212	1:26:14 PM	0.1	1650	525
NIFTY19D1210900PE.csv	20191212	1:26:29 PM	0.1	3300	525
NIFTY19D1210900PE.csv	20191212	1:27:39 PM	0.05	1725	525
NIFTY19D1210900PE.csv	20191212	1:36:50 PM	0.05	3000	7125
NIFTY19D1210900PE.csv	20191212	1:56:09 PM	0.1	750	7200
NIFTY19D1210900PE.csv	20191212	2:01:23 PM	0.1	750	7200
NIFTY19D1211000CE.csv	20191212	10:09:31 AM	977.05	1	2475
NIFTY19D1211000CE.csv	20191212	10:09:31 AM	977.05	75	2475
NIFTY19D1211000CE.csv	20191212	10:11:35 AM	955	75	2475
NIFTY19D1211000CE.csv	20191212	11:31:59 AM	955	525	2475
NIFTY19D1211000CE.csv	20191212	11:32:23 AM	960	525	2475
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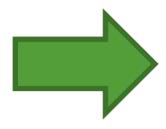


Annotator

The IBC AgroPortal Annotator processes text submitted by users on any button to see what it does. Click on the (?) to see a detailed description.

Subscribe to the [NCBO Annotator Users Google group](#) to learn more.

- Plant architecture
- Flowers (50%)
- Sepal Color
- Disc Color



Cassava Trait Ontology

Ontology filters

Select Ontologies

CO_334 x

[clear selection](#) [select from list](#)



```

- {
  - annotatedClass: {
    @id: "http://www.cropontology.org/rdf/CO_334:0000386",
    @type: "http://www.w3.org/2002/07/owl#Class"
  },
  hierarchy: [ ],
  - annotations: [
    - {
      from: 11,
      to: 23,
      matchType: "PREF",
      text: "INITIAL VIGOR"
    }
  ]
}

```



Cassava Trait Ontology

Summary Classes Properties Notes Mappings Widgets

Jump To:

- Cassava trait
 - Agronomical trait
 - Anthocyanin Pigmentation
 - Ease of Harvest
 - Female Stamenoids
 - Fresh Shoot Weight
 - Fruit Exocarp Texture
 - Fruit set presence
 - Initial Vigor**
 - Leaf weight
 - Male Sterile
 - Marketable root number

Preferred Name	Initial Vigor
Synonyms	Initial plant vigor
Definitions	Initial plant vigor at one month after planting

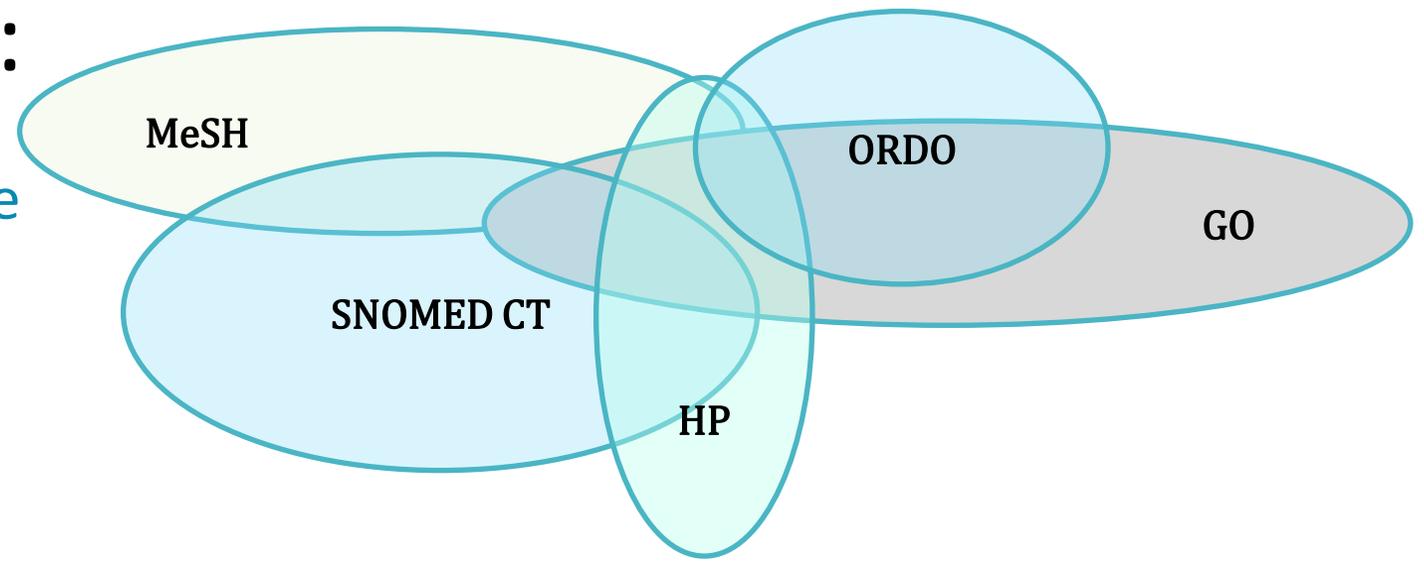
Why ontologies are important in science?

- To provide canonical **representation** of scientific knowledge
- To **annotate** experimental data to enable interpretation, comparison, and discovery across databases
- To facilitate **knowledge-based applications** for
 - Decision support
 - Natural language-processing
 - Data integration
- But ontologies are: **spread out, in different formats, of different size, with different structures**

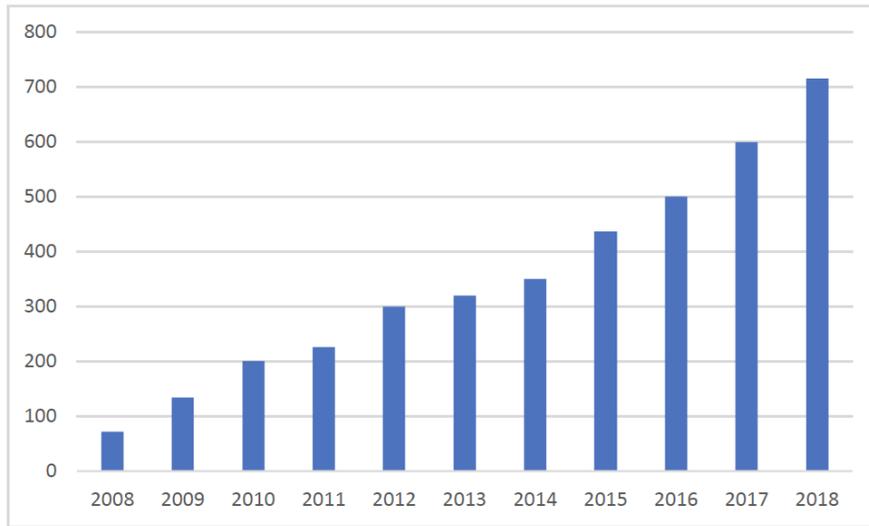


Issues with ontologies:

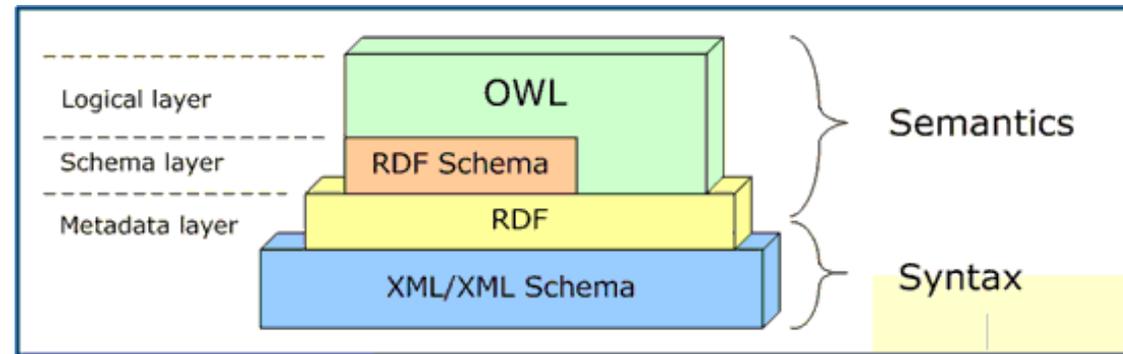
- spread out,
- in different formats, of different size
- with different structures
- increasing number
- overlapping



Overlapping ontologies



Number of ontologies in the NCBO BioPortal



Variety of representation languages

Why ontology repositories are important?

- You've built an ontology, how do you let the world **know**?
- You need an ontology, **where** do you go to get it?
- How do you know whether an ontology is any **good**?
- How do you find **data** resources that are relevant to the domain of the ontology?
- How could you leverage your ontology to enable new **science**?
- How could you use ontologies without **managing** them ?



Ontology repositories help to make ontologies FAIR

Findable

Accessible



Interoperable



Re-usable



AgroPortal Search Results for 'AGROVOC'.

Filters: Show ontology view, Show vetted ontologies, Categories, Ontology type, Language, etc.

AGROVOC (AGROVOC) - 1,235,531 concepts, 34 classes, 1 note, 7 projects.

DEMETER Agriculture Information Model (DEMETER-AIM) - 137 instances, 182 classes, 1 note, 1 project.

Soil Food Web Ontology (SFWO) - 188 instances, 834 classes, 1 note, 1 project.

INRAE Thesaurus (INRAETHES) - 3,247 concepts, 2 classes, 1 note, 4 projects.

API Documentation

General Usage

This API is comprised of a set of resources (Ontologies, Classes, etc) and related endpoints (Search, Annotator, Recommender) that are connected together via links, much like webpages. We recommend that you try browsing the API using a web browser (Chrome and Firefox work very well while IE does not) before you start writing code. For more information, please see the documentation on Media Types and Hypermedia Links or view our sample code, available in Java, Python, Ruby and other languages (please email help@bioontology.org if you would like examples in another language).

Common Parameters

Parameter	Possible Values	Description
apikey	(your api key)	An API Key is required to access any API call. It can be provided in three ways: 1. Using the <code>apikey</code> query string parameter 2. Providing an <code>Authorization</code> header: Authorization: <code>apikey token=your_apikey</code> (replace your <code>apikey</code> with your actual key) 3. When using a web browser to explore the API, if you provide your API Key once using method 1, it will be stored in a cookie for subsequent requests. You can override this by providing a different API Key in a

```

1 - PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
2 - PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
3 - SELECT ?sub ?obj WHERE {
4   ?sub rdfs:label ?obj .
5 } LIMIT 10
    
```

Summary Classes Properties Instances Notes Mappings Widgets Spargl

Query: `sub`

Response	Simple view	Filter query results
1 <http://purl.obolibrary.org/obo/RO_0002336>	obj	positively regulated by
2 <http://purl.obolibrary.org/obo/AGRO_00002011>	obj	bubbler irrigation process
3 <http://purl.obolibrary.org/obo/CHEBI_15022>	obj	"electron donor"
4 <http://purl.obolibrary.org/obo/ENVO_01001838>	obj	arid biome
5 <http://purl.obolibrary.org/obo/CHEBI_29036>	obj	"copper(2+)"
6 <http://purl.obolibrary.org/obo/AGRO_0000409>	obj	automatic irrigation

Details Visualization Notes (0) Mappings (52)

ID: http://opendata.inrae.fr/thesaurusINRAE/c_17739

Preferred name: leaf area index

Synonyms: LAI

Details Visualization Notes (0) Mappings (52)

Create New Mapping

MAPPING TO	ONTOLOGY	RELATIONS	SOURCE	TYPE
Leaf area index >	CO_321		LOOM	Internal

INRAE Thesaurus (INRAETHES) SKOS View Home

Summary Concepts Properties Schemes Collections Notes Mappings Widgets Spargl

General information: Abstract, Description, Version, Other Identifier.

FAIR score: Total score: 292.0 (61.0%)

Ontology relations network: Filter network

Views of INRAETHES: No views available for INRAETHES.



FAIR-IMPACT

Expanding FAIR solutions across EOSC

Semantic artefacts and their catalogues in the EOSC context

A couple of definitions (not absolute, but adopted in EOSC)

Semantic artefacts: a broader term to include ontologies, terminologies, taxonomies, thesauri, vocabularies, metadata schemas and standards.

Legacy of FAIRsFAIR and adopted in the EOSC Interoperability Framework

Semantic artefact catalogues: encompass any existing ontology repositories, registries, vocabulary/terminology services and metadata schemas catalogues.

(Semantic) Crosswalks and mappings: formal links between the content of these semantic artefacts.

FAIRsFAIR D2.5 FAIR Semantics Recommendations

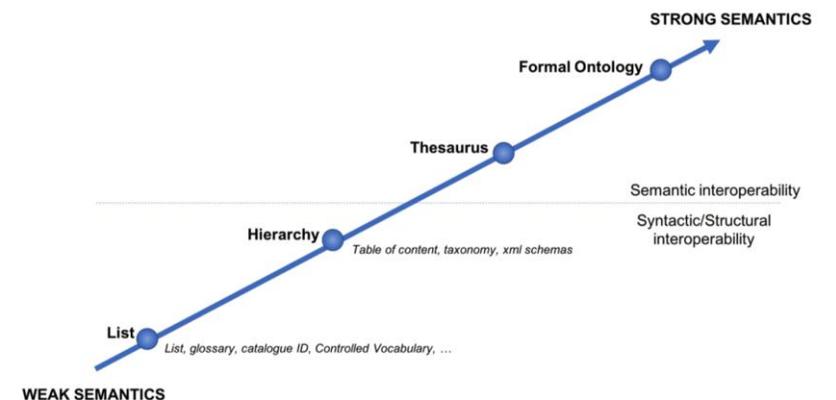


Figure 2: Semantic artefact spectrum. Derived from Leo Obrst, 2010

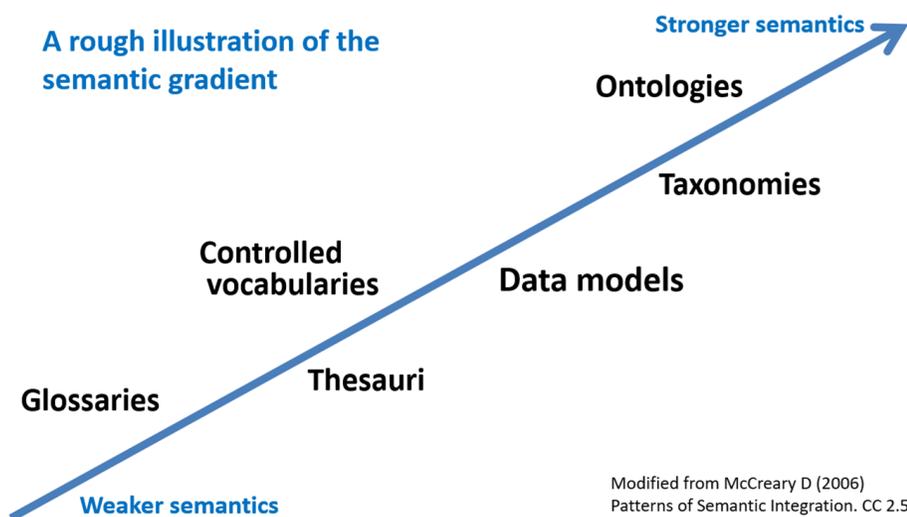
A semantic artefact is defined in this work as a machine-actionable and -readable formalisation of a conceptualisation, enabling sharing and reuse by humans and machines. These artefacts may have a broad range of formalisation, from loose sets of terms, taxonomies, thesauri to higher-order logics. Moreover,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

Semantic artefacts to support semantic interoperability

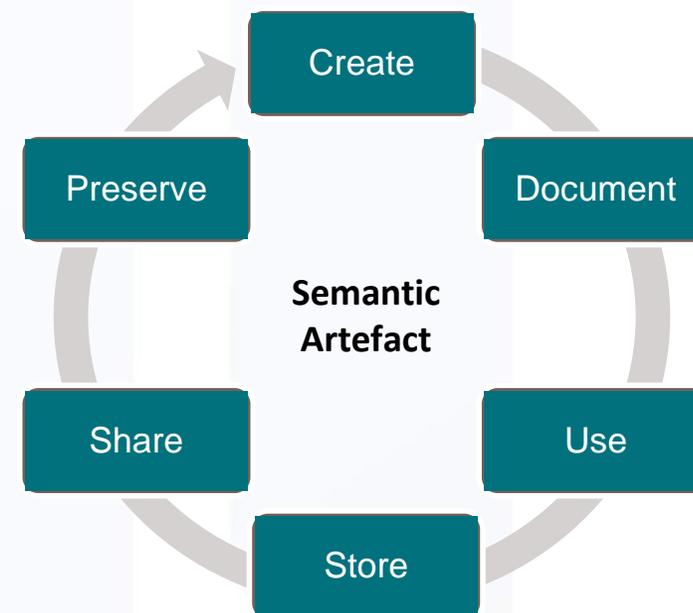
Semantic interoperability ensures that the precise format and meaning of exchanged data and information is preserved and understood throughout exchanges between parties, in other words 'what is sent is what is understood'.

Source : [Revised European Interoperability Framework](#)

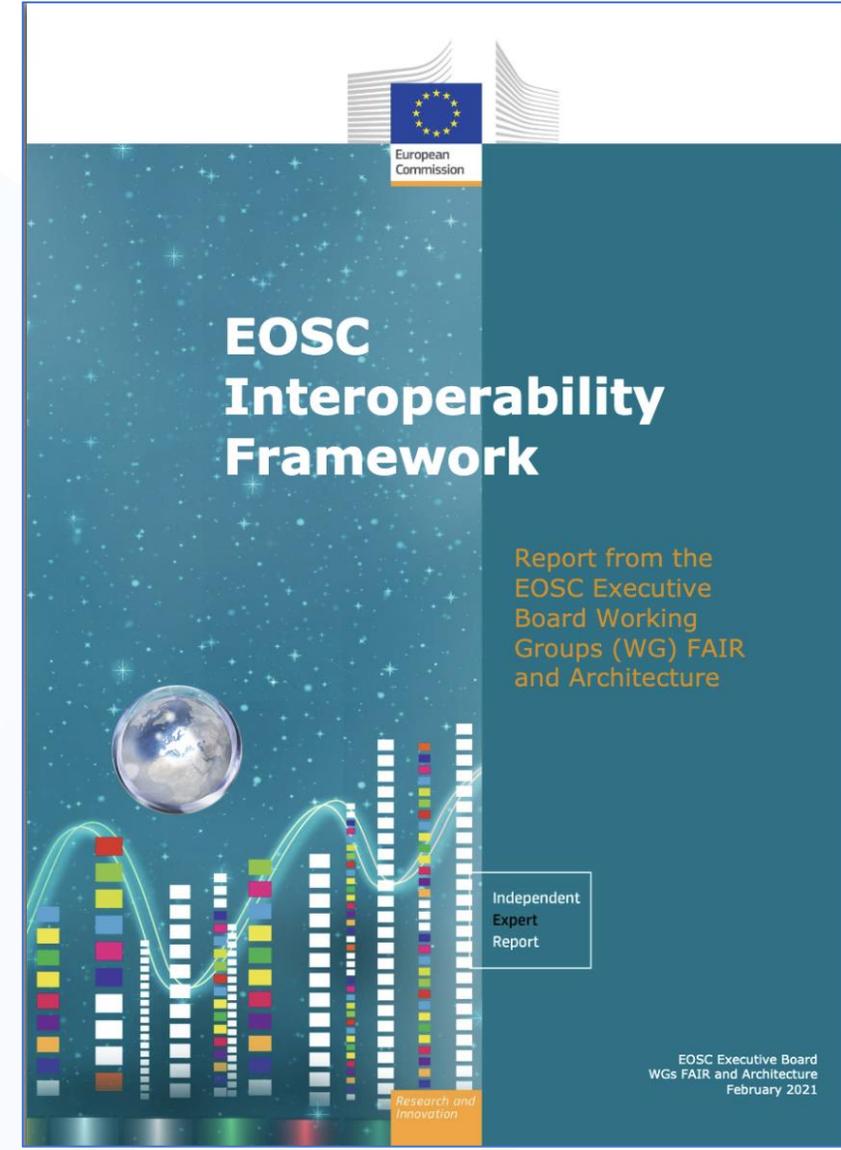
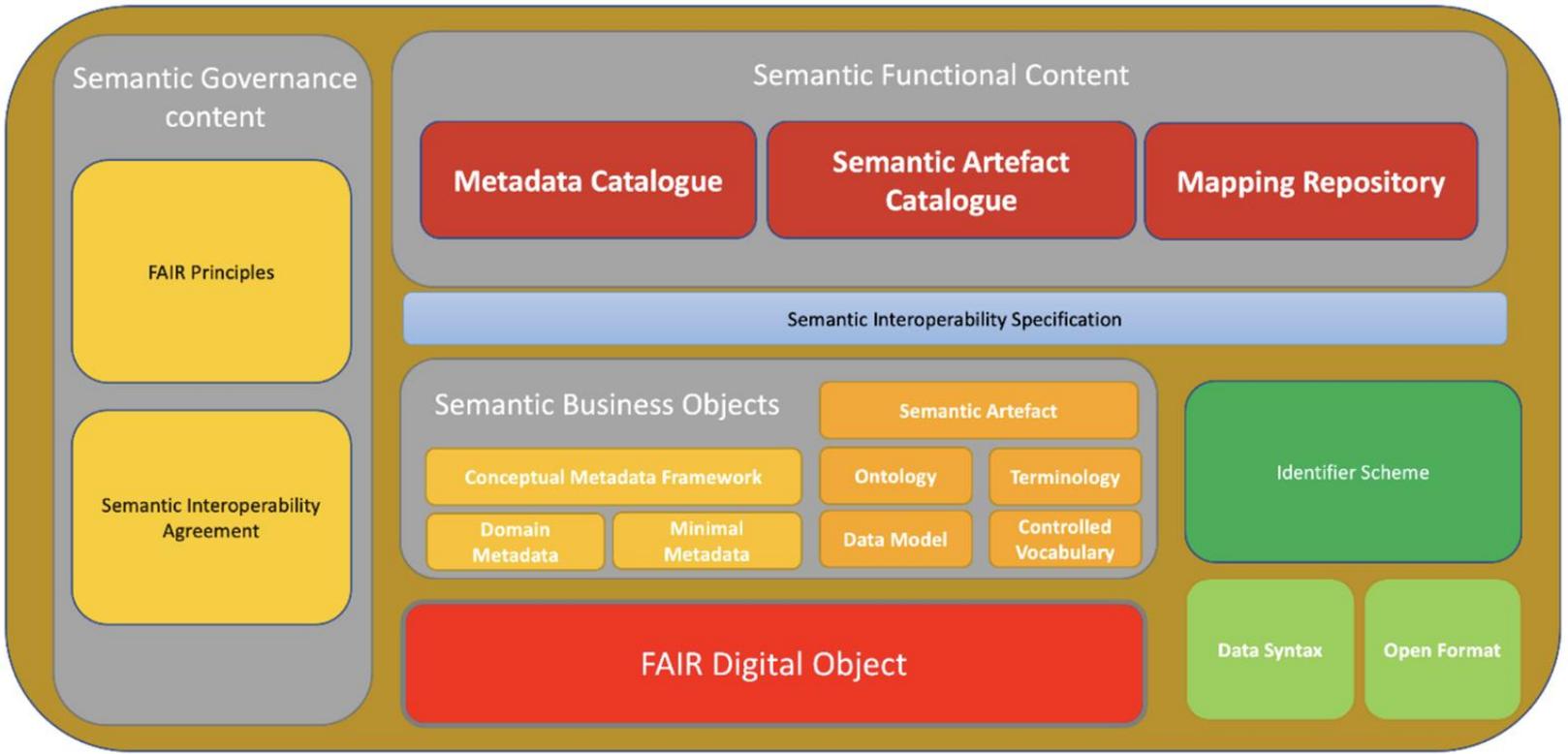
Semantic artefacts, what are we talking about?



Let's make semantic artefacts FAIR(er)!



Semantic Artefact Catalogue in the EOSC Interoperability Framework



Semantic Artefact Catalogue within EOSC

There is a **lack or over-abundance of metadata models** that allow the description, functional preservation and ultimately re-use of the data stored.

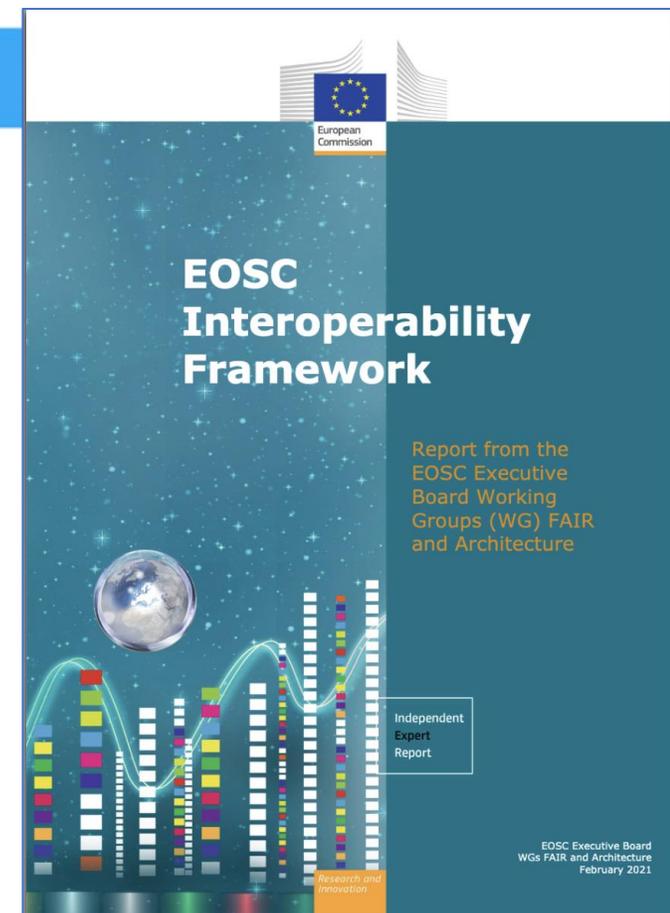
The need to have (...) **shared semantic artefacts (ontologies, thesauri) inside and across the communities**, which allow homogenising the interpretation and treatment of the exchanged data and all of its associated resources.

Not only term definitions are usually lacking, but also common semantic artefacts across communities (e.g., general ontologies that can be shared). And in case that they exist, **these artefacts may not be sufficiently well documented** (...) Every semantic artefact that is being maintained in EOSC must have sufficient associated documentation, with clear examples of usage and conceptual diagrams.

Need for principled approaches and tools for ontology and metadata schema creation, maintenance, governance and use (...) furthermore, any **semantic artefact should also be FAIR**.

Repositories of semantic artefacts, rules with a clear governance framework (...) Clear protocols and building blocks for the **federation/harvesting of semantic artefacts catalogues**.

...The functional content can be summarised as different types of knowledge bases/**repositories provisioning metadata, semantic artefacts and crosswalks/mappings** that enable translation between different metadata standards and semantic artefacts to enable an effective exchange. Implementation of a semantic mapping mechanism and linking to common concepts will support progress towards higher levels of interoperability.



A subject studied by the EOSC task forces


 Semantic Interoperability Task Force
 Version: 27 March 2024
DOI: 10.5281/zenodo.10843882

Developing and implementing the semantic interoperability recommendations of the EOSC Interoperability Framework

Deliverable of EOSC-A TF Semantic Interoperability (2021-2023)

Authorship Community:

Wolmar Nyberg Åkerström¹, Uppsala University (0000-0002-3890-6620),
 Kurt Baumann², Switch (0000-0003-0627-8110),

The Semantic Artefact Catalogue: <i>Twelve maturity dimensions</i>	13
The Mapping Repository: <i>Making a case for FAIR mappings and crosswalks</i>	15

Milan Ojsteršek², University of Maribor (0000-0003-1743-8300),
 Silvio Peroni², University of Bologna (0000-0003-0530-4305),
 Andrea Scharnhorst², DANS-KNAW (0000-0001-8879-8798),
 Lars Vogt², TIB (0000-0002-8280-0487),
 Heinrich Widmann², DKRZ (0000-0001-9871-2687)

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Article | [Open access](#) | Published: 10 May 2024

A maturity model for catalogues of semantic artefacts

[Oscar Corcho](#), [Fajar J. Ekaputra](#), [Ivan Heibi](#), [Clement Jonquet](#), [Andras Micsik](#), [Silvio Peroni](#) ✉ & [Emanuele Storti](#)

[Scientific Data](#) **11**, Article number: 479 (2024) | [Cite this article](#)

839 Accesses | **1** Citations | **5** Altmetric | [Metrics](#)

Abstract

This work presents a *maturity model* for assessing catalogues of semantic artefacts, one of the keystones that permit semantic interoperability of systems. We defined the dimensions and related features to include in the maturity model by analysing the current literature and existing catalogues of semantic artefacts provided by experts. In addition, we assessed 26 different catalogues to demonstrate the effectiveness of the maturity model, which includes 12 different dimensions (Metadata, Openness, Quality, Availability, Statistics, PID, Governance, Community, Sustainability, Technology, Transparency, and Assessment) and 43 related features (or sub-criteria) associated with these dimensions. Such a maturity model is one of the first attempts to provide recommendations for governance and processes for preserving and maintaining semantic artefacts and helps assess/address interoperability challenges.



FAIR-IMPACT

Expanding FAIR solutions across EOSC



OntoPortal: a generic
technology for
ontology repositories



Funded by
the European Union

Since 2006: BioPortal : a “one stop shop” for biomedical ontologies

- Web repository for biomedical ontologies
 - Make ontologies **accessible and usable** – abstraction on format, locations, structure, etc.
 - Users can **publish, download, browse, search, comment, align** ontologies and use them for **annotations** both online and via a web services API.

The screenshot shows the BioPortal homepage. At the top, there is a navigation bar with the BioPortal logo and links for Ontologies, Search, Annotator, Recommender, and Mappings. A 'Login' button and a 'Support' dropdown are also present. Below the navigation bar, a welcome message reads: 'Welcome to BioPortal, the world's most comprehensive repository of biomedical ontologies'. The main content area is divided into several sections: 'Search for a class' with a search input field and an 'Advanced search' link; 'Find an ontology' with a search input field and a 'Browse ontologies' button; 'Ontology visits (March 2024)' featuring a horizontal bar chart showing visits for MEDDRA, SNOMEDCT, RXNORM, NDDF, and FMA; and 'Statistics' displaying counts for Ontologies (1,105), Classes (14,852,056), Properties (36,286), and Mappings (95,334,171).



THE NATIONAL CENTER FOR
BIOMEDICAL ONTOLOGY

PRODUCTS

[BioPortal](#)
[BioPortal REST API](#)
[BioPortal Virtual Appliance](#)
[NCBO Web Widgets](#)

SUPPORT

[Contact Us](#)
[Documentation](#)
[NCBO Wiki](#)

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[About Us](#)
[Mission & Vision](#)
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CONNECT



The National Center for Biomedical Ontology was founded as one of the National Centers for Biomedical Computing, supported by the NHGRI, the NHLBI, and the NIH Common Fund under grant U54-HG004028.

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<http://bioportal.bioontology.org>

Ontology Services

- Search
- Traverse
- Comment
- Download

Mapping Services

- Create
- Upload
- Download

Widgets

- Tree-view
- Auto-complete
- Graph-view

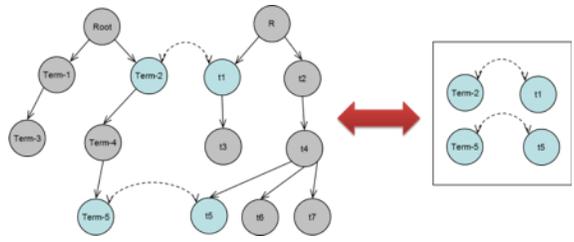
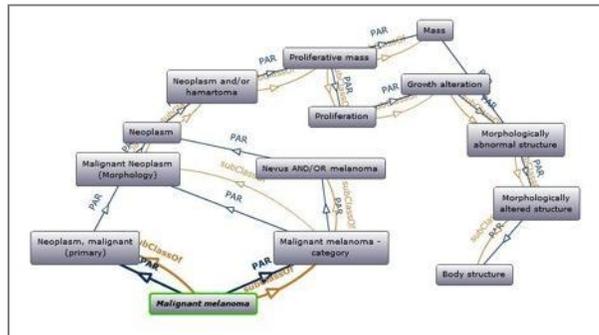
Annotation

Term recognition

Data Access

Search "data" annotated with a given term

<http://data.bioontology.org>

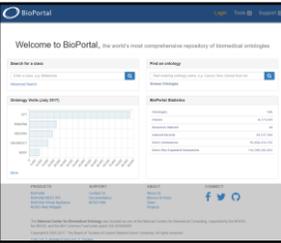
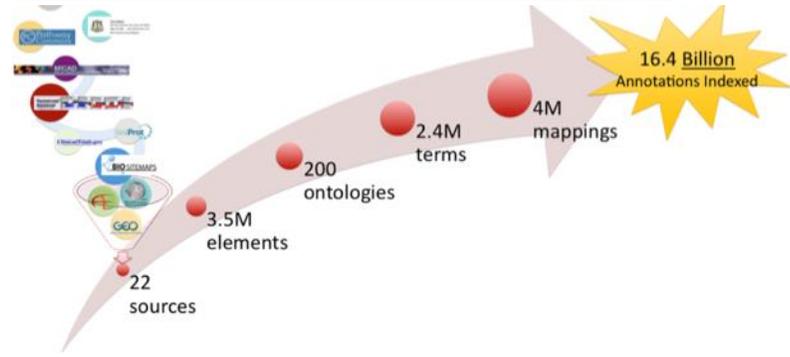


Jump To:

Legend

- Malignant melanoma (synonym)
- Amelanotic melanoma (preferred name)
- Excision of melanoma (preferred name)
- Melanoma in situ (preferred name)
- Melanoma vaccine (preferred name)

Expression, Expression of bladder, bladder, smooth, bladder muscle, muscle, smooth muscle, cells, mechanical, mechanical stimulation, stimulation, Chronic, results, bladder overdistension, associated, associated with, with, loss, genes, altered



OntoPortal Alliance: Generalize and reuse a shared ontology repository technology

Welcome to BioPortal, the world's most comprehensive repository of biomedical ontologies

Search for a class: Enter a class, e.g. Melanoma

Find an ontology: Start entering ontology name, e.g. Cancer, then choose from list

Ontology Visits (July 2017)

Ontology	Visits
CPT	~80,000
RINORM	~30,000
MEDDRA	~25,000
SINMEDCT	~15,000
NDCP	~10,000

BioPortal Statistics

Category	Count
Ontologies	596
Classes	6,173,420
Resources Indexed	48
Indexed Records	39,537,360
Direct Annotations	95,468,433,792
Direct Plus Expanded Annotations	144,789,582,912

Products: BioPortal, BioPortal REST API, BioPortal Virtual Appliance, NCBO Web Widgets

Support: Contact Us, Documentation, NCBO Wiki

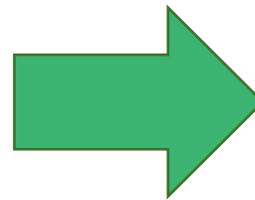
About: About Us, Mission & Vision, Team, Projects

Connect: Facebook, Twitter, LinkedIn

The National Center for Biomedical Ontology was founded as one of the National Centers for Biomedical Computing, supported by the NHGRI, the NHLBI, and the NIH Common Fund under grant U54-HG004026.

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CITE US | PRIVACY POLICY | TERMS



Welcome to AgroPortal, The home of ontologies and semantic artefacts in agriculture and related domains.

Search an ontology or a term (e.g., plant height)

Do you want to share an ontology?

Uploading an ontology or another type of semantic artefact (vocabulary, terminology, thesaurus, ...) is a way of sharing your knowledge with others. By uploading and sharing your ontology to AgroPortal, you can:

- Discover new insights and knowledge by exploring other ontologies or semantic resources in the repository.
- Map your ontology to other relevant ones in the domain and collaborate with other users.
- Precisely describe your ontology with relevant metadata and get a FAIR score for your ontology.
- Contribute to knowledge sharing and semantic interoperability in your domain.
- Get feedback and suggestions from other users who can use and comment on your ontology.

Submit ontology | Discover ontologies >

AgroPortal in figures

Metric	Value
Ontologies	175
Classes	1M
Individuals	3M
Properties	11K
Projects	60
Mappings	17M
Users	433

See details

Medical Subject Headings, version française

细胞系本体 (中文简化版)

EcoPortal

Search for a class: Enter a class, e.g. Shape, Trait, etc.

Find a semantic resource (ontology, thesaurus, etc.): Start entering ontology name, e.g. PhytoTraits, then choose from list

Ontology Visits (June 2019)

AgroPortal

Welcome to AgroPortal, The home of ontologies and semantic artefacts in agriculture and related domains.

Search an ontology or a term (e.g., plant height)

Do you want to share an ontology?

Uploading an ontology or another type of semantic artefact (vocabulary, terminology, thesaurus, ...) is a way of sharing your knowledge with others. By uploading and sharing your ontology to AgroPortal, you can:

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- Get feedback and suggestions from other users who can use and comment on your ontology.

Submit ontology | Discover ontologies >

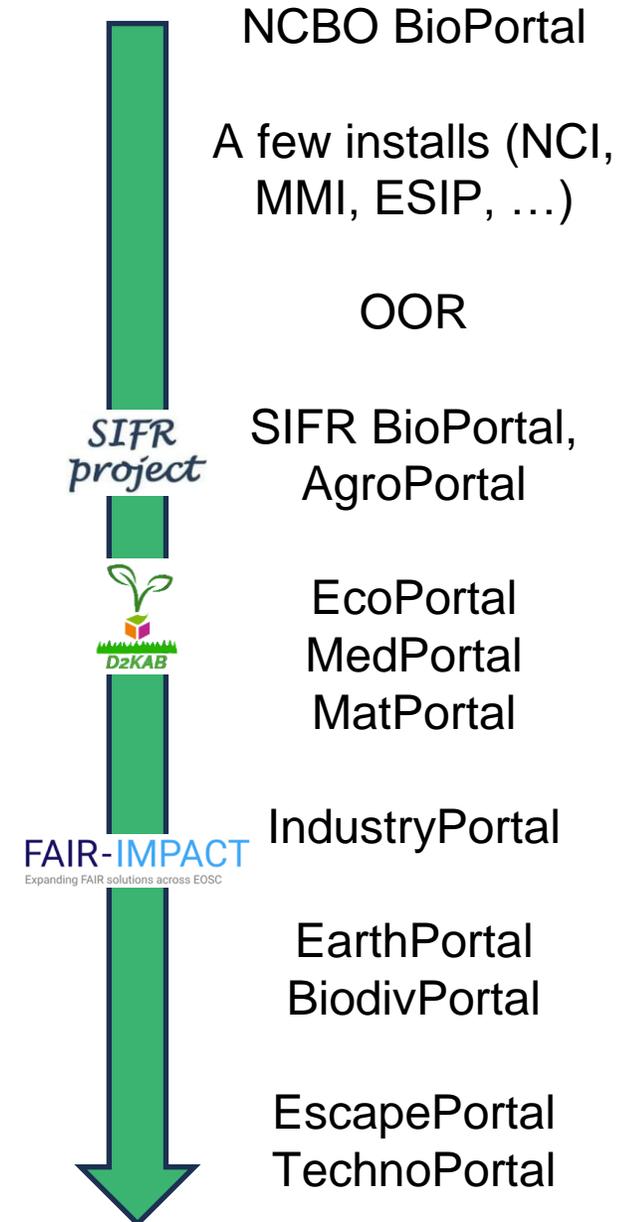
AgroPortal in figures

Metric	Value
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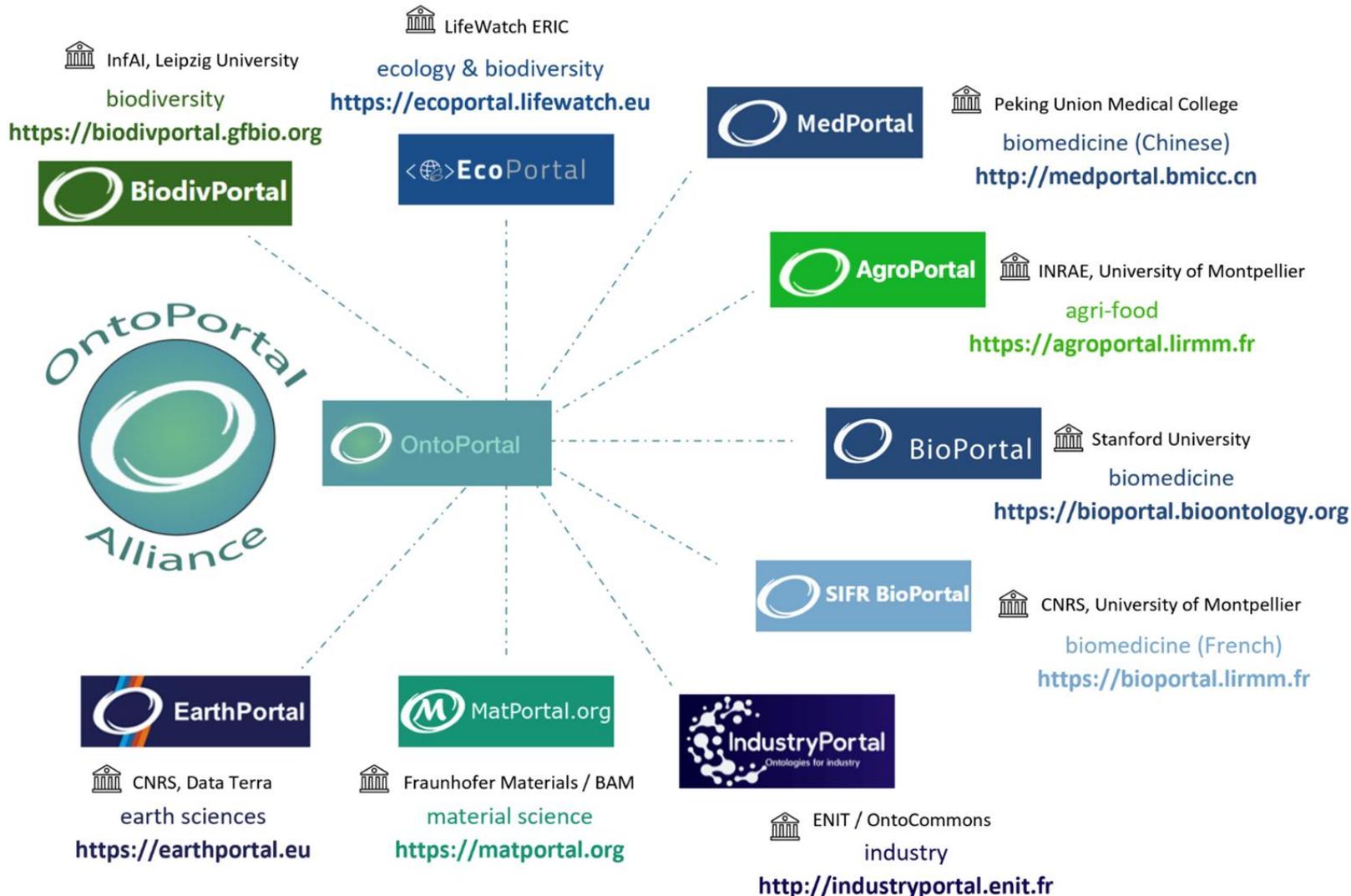
See details

OntoPortal history

- NCBO BioPortal open source (2005)
- NCBO technology used by the Open Ontology Repository (OOR) initiative (2008-2012)
- BioPortal Virtual Appliance (2012)
- OntoPortal Alliance created (2018)
 - OntoPortal Appliance v2.5
 - 2 posters during RDA plenaries
- OntoPortal Alliance kicked-off, online (May 2020)
 - 10 participants
 - OntoPortal Appliance v3.0
- 1st OntoPortal Workshop, Montpellier (Sept. 2022)
 - 20 participants
- OntoPortal resource paper at ISWC 2023
- 2nd OntoPortal Workshop, Lecce (Sept. 2023)
 - 30 participants
- 3rd OntoPortal Workshop, Stanford (Sept. 2024)



OntoPortal Alliance: Synchronizing and mutualizing research and development efforts

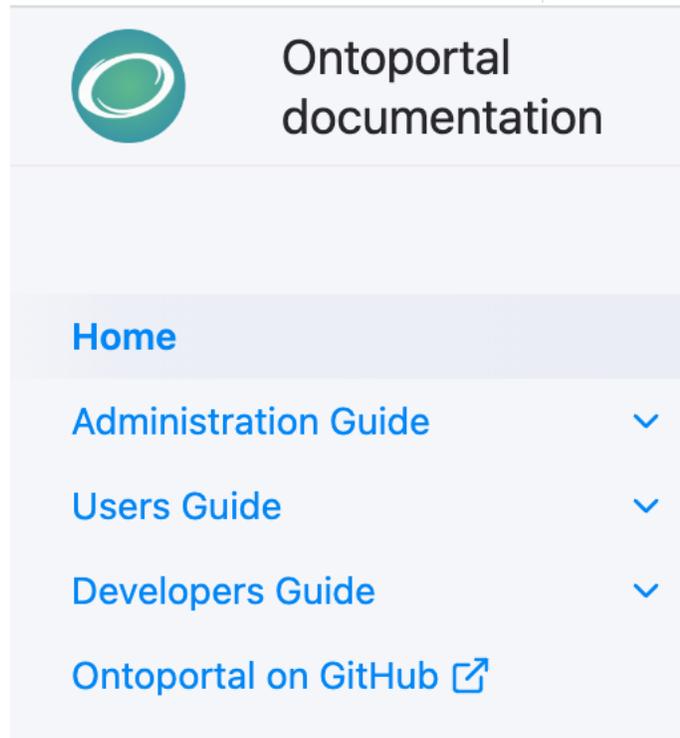


Representing OntoPortal adopters and end users

- to **maximize OntoPortal value** (state-of-the-art service portfolio)
- to improve OntoPortal **software** while managing several parallel and different installations
- to **increase semantic uptake** in science communities and facilitate adoption of the FAIR principles
- to increase the ecosystem's **long term** operational and financial health

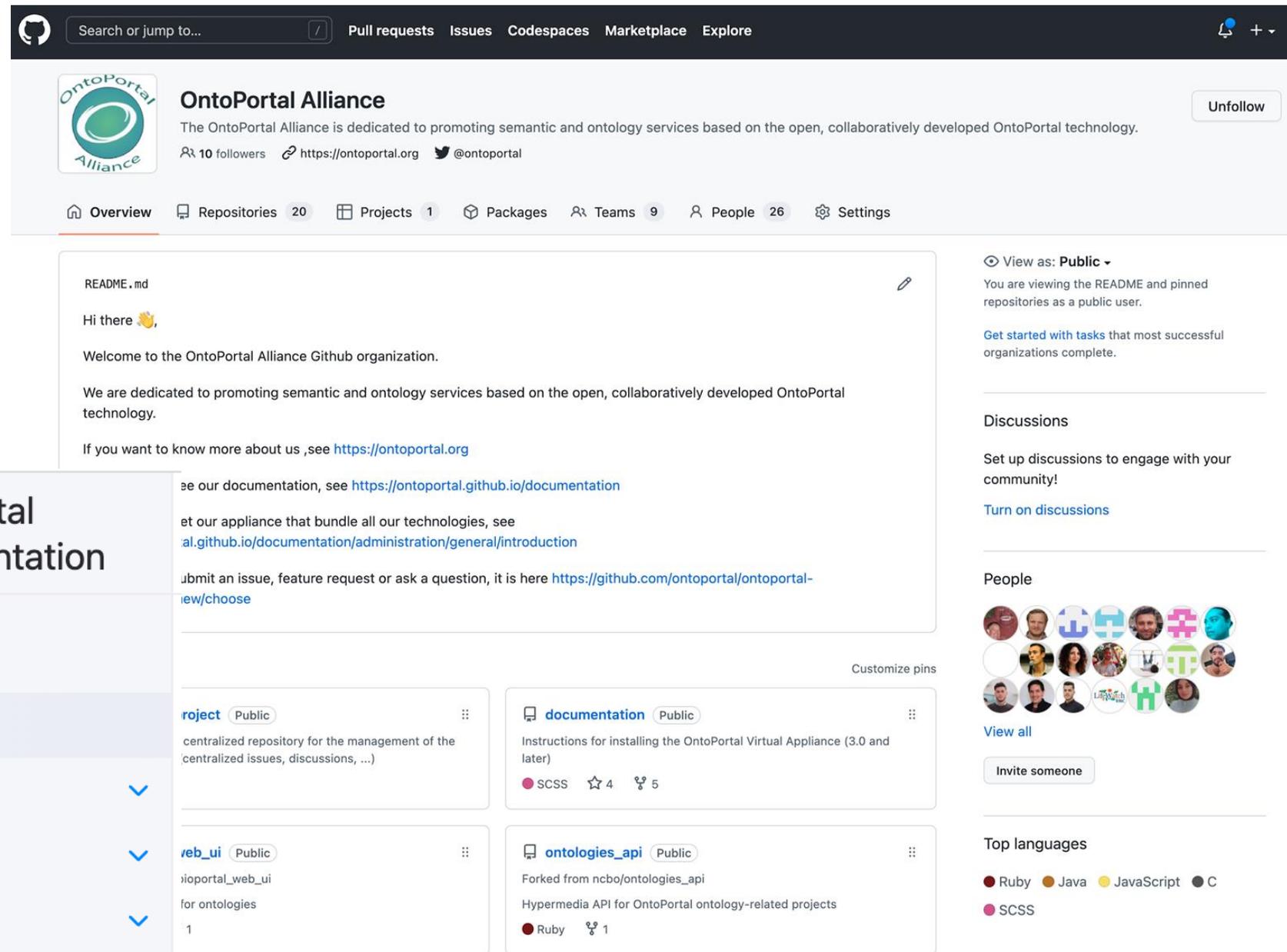
Making OntoPortal a real open source project

<https://github.com/ontoportal>



Ontoportal documentation

- Home
- Administration Guide
- Users Guide
- Developers Guide
- Ontoportal on GitHub



GitHub repository page for OntoPortal Alliance. The page shows the organization's profile, a README file, and a list of repositories.

OntoPortal Alliance
The OntoPortal Alliance is dedicated to promoting semantic and ontology services based on the open, collaboratively developed OntoPortal technology.
10 followers | <https://ontoportal.org> | @ontoportal

Navigation: Overview | Repositories (20) | Projects (1) | Packages | Teams (9) | People (26) | Settings

README.md

Hi there 🙌,
Welcome to the OntoPortal Alliance Github organization.
We are dedicated to promoting semantic and ontology services based on the open, collaboratively developed OntoPortal technology.
If you want to know more about us, see <https://ontoportal.org>

For more documentation, see <https://ontoportal.github.io/documentation>
Get our appliance that bundle all our technologies, see <https://ontoportal.github.io/documentation/administration/general/introduction>
Submit an issue, feature request or ask a question, it is here <https://github.com/ontoportal/ontoportal-issues/choose>

Repositories:

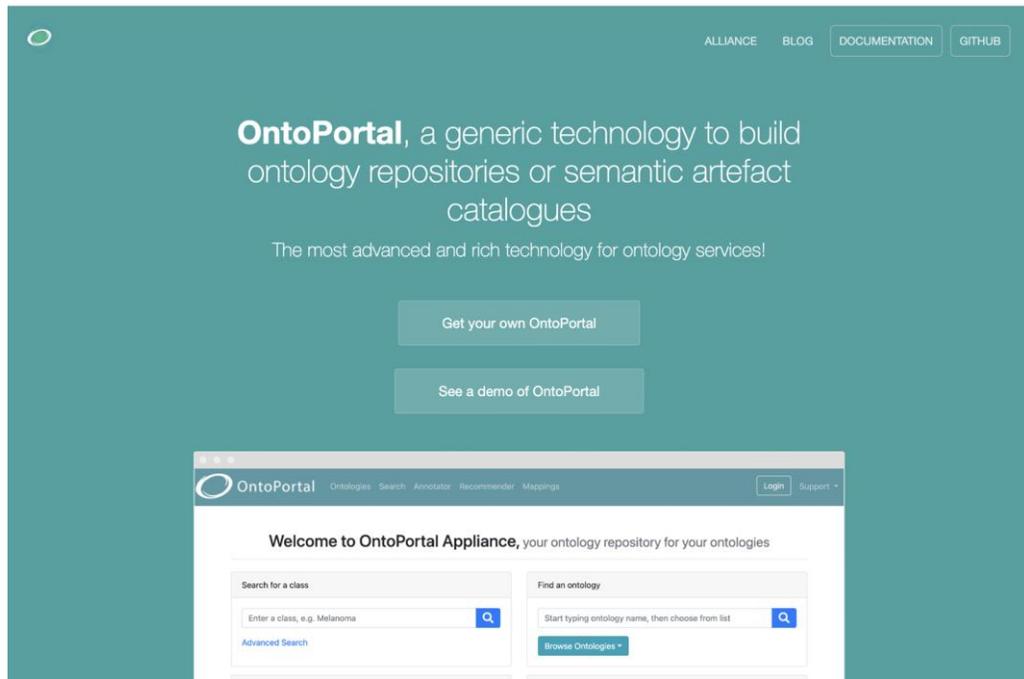
- project** (Public) - centralized repository for the management of the centralized issues, discussions, ...)
- documentation** (Public) - Instructions for installing the OntoPortal Virtual Appliance (3.0 and later) | SCSS | 4 stars | 5 forks
- web_ui** (Public) - ontoportal_web_ui for ontologies | 1 fork
- ontologies_api** (Public) - Forked from ncbo/ontologies_api | Hypermedia API for OntoPortal ontology-related projects | Ruby | 1 fork

View as: Public
You are viewing the README and pinned repositories as a public user.
Get started with tasks that most successful organizations complete.
Discussions: Set up discussions to engage with your community! Turn on discussions
People: View all | Invite someone
Top languages: Ruby, Java, JavaScript, C, SCSS

More information

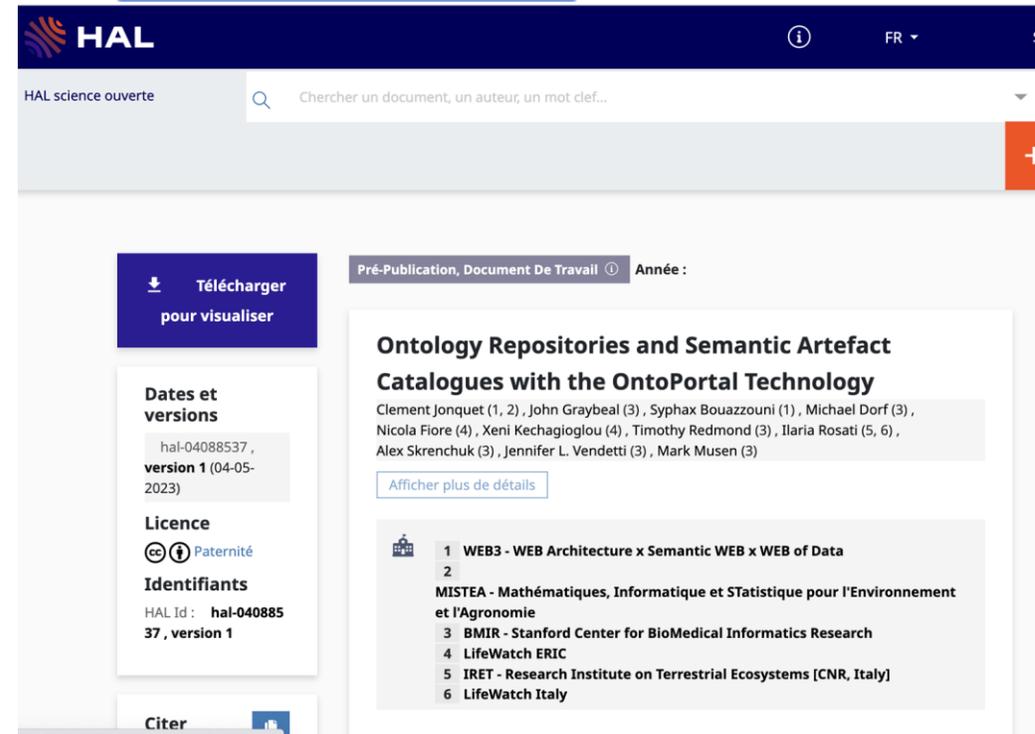
Web site and documentation:

<https://ontoportals.org>



ISWC 2023 Resource paper:

<https://hal.science/hal-04088537>



**WP4**

Greater and more harmonised use of **semantic artefacts** throughout the EOSC ecosystem, leading to semantic interoperability **within and between disciplines.**

WP4 work on semantic artefact catalogues

*WP4 will develop and foster the uptake of a semantic **framework** for the governance, creation, mapping, sharing, reuse, FAIRness assessment and interoperability of **semantic artefacts** for EOSC.*

Main focus of WP4

...implementation of FAIR-enabling practices across communities and research outputs



WP4's use cases include

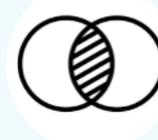
- Agri-food (INRAE with AgroPortal, EMPHASIS, ANAEE)
- Ecology/biodiversity (LifeWatch with EcoPortal)
- Earth sciences (CNRS with DataTerra EarthPortal)
- Photons and neutrons (UKRI-STFC)
- Social sciences and humanities (DANS)
- Astronomy (Obs. Paris)

...projecting the FAIR principles to other types of research objects

WP4's research objects



**Semantic
Artefact**



**Mapping
& Crosswalk**



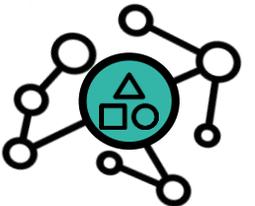
**Research
Software**

Our work on Semantic Artefacts and their Catalogues

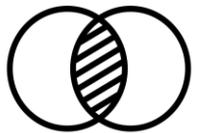
- Existing catalogues being consolidated in communities
- New catalogues being deployed in other communities/projects
- Semantic Artefact « FAIR-by-design » methodology
- FAIRenabling tools and methods being transferred
- Exhaustive review of current and retired catalogues and FAIR-enabling criteria
- Catalogues being exploited in data repositories (9 use cases)
- A metadata standard for semantic artefacts (MOD)
- A standard API for semantic artefact catalogues (MOD-API)
- Early work on federation of 4 catalogues
- 3 possible models for semantic artefact governance
- Toward specifications for FAIR mappings



Semantic Artefact
Catalogues



Semantic Artefact



Mappings

Existing catalogues being consolidated in communities

AgroPortal
EcoPortal

AgroPortal features a search bar for ontologies and terms, a navigation menu, and a 'Welcome to AgroPortal' message. It highlights several ontologies: CSOPRA (170 visits), AGROVOC (116 visits), and DEMETER-AIM (83 visits). A section titled 'Do you want to share an ontology?' provides instructions on how to upload and share semantic artefacts. The 'AgroPortal in figures' section displays the following statistics:

175	1M	3M	11K	60	17M	433
Ontologies	Classes	Individuals	Properties	Projects	Mappings	Users

The **EcoPortal** interface includes a search bar for classes and semantic resources, a navigation menu, and a table for 'Ecoportal Statistics' showing 5 ontologies and 137 visits.

INRAE

New catalogues being deployed in other communities/projects

Inside of FAIR-IMPACT

- EarthPortal (earth sciences)
- EscapePortal (astronomy)
- ...and outside (technological sciences, SSH, biodiversity)



Working with other approaches too: Linked Open Vocabularies, CESSDA Vocabularies, etc.

AgroPortal an ontology repository for agri-food

<http://agroportal.lirmm.fr>

- Publish, search, download
- Browse, visualize
- Peer review
- Versioning
- Annotation
- Recommendation
- Mapping
- Notes
- Projects

The screenshot shows the AgroPortal search results page. On the left, there are several filter sections: 'Submit ontology', 'Filters' (with sub-sections for 'Show ontology views', 'Show retired ontologies', 'Categories', 'Groups', 'Natural languages', 'Formality levels', and 'Ontology types'), and 'Ontology types'. The main content area displays a list of ontologies, each with a title, a brief description, a FAIR score, and statistics for instances, classes, notes, and projects. The ontologies listed include CSOPRA, AGROVOC (AGROVOC), DEMETER Agriculture Information Model (DEMETER-AIM), Agronomy Ontology (AGRO), Soil Food Web Ontology (SFWO), AnaEE Thesaurus (ANAETHES), and INRAE Thesaurus (INRAETHES).

The screenshot shows the AgroPortal welcome page. It features a green header with navigation links: 'Browse', 'Mappings', 'Recommender', 'Annotator', 'Landscape', 'Login', 'EN', and 'Support'. The main content area includes a search bar, a 'Welcome to AgroPortal' message, and a list of featured ontologies: CSOPRA (170 visits), AGROVOC (116 visits), and DEMETER-AIM (83 visits).

Do you want to share an ontology?

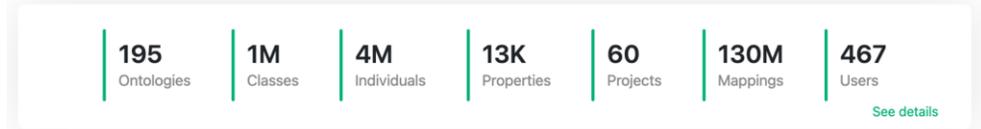
Uploading an ontology or another type of semantic artefact (vocabulary, terminology, thesaurus, ...) is a way of sharing your knowledge with others.

By uploading and sharing your ontology to AgroPortal, you can:

- ✓ Discover new insights and knowledge by exploring other ontologies or semantic resources in the repository.
- ✓ Map your ontology to other relevant ones in the domain and collaborate with other users.
- ✓ Precisely describe your ontology with relevant metadata and get a FAIR score for your ontology.
- ✓ Contribute to knowledge sharing and semantic interoperability in your domain.
- ✓ Get feedback and suggestions from other users who can use and comment on your ontology.

Submit ontology | Discover ontologies

AgroPortal in figures



Support & Collaborations



AgroPortal navigation menu: Products (Release Notes), Support (Contact Us), Legal (Terms and Conditions), About (About Us).

• 195 semantic artefacts, 200 candidates

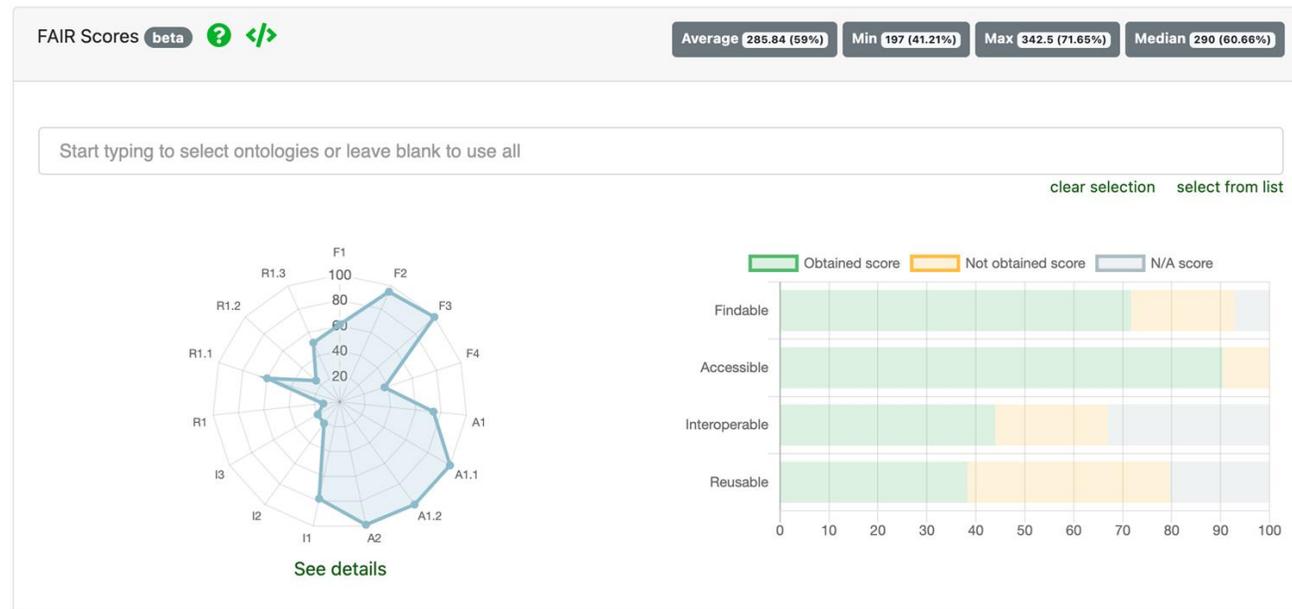
• 467 registered users





FAIRenabling tools and methods being transferred

- 4 new deployments of O'FAIRe (the Ontology FAIRness Evaluator)
- A methodology developed and implemented first in AgroPortal



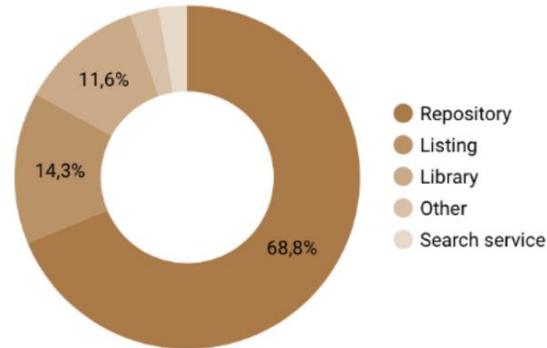
O'FAIRe
deployments:



E. Amdouni, S. Bouazzouni, C. Jonquet. **O'FAIRe: Ontology FAIRness Evaluator in the AgroPortal semantic resource repository**. *ESWC 2022 - 19th Extended Semantic Web Conference, Poster and demonstration*, May 2022, Hersonissos, Greece. [10.1007/978-3-031-11609-4_17](https://doi.org/10.1007/978-3-031-11609-4_17)

Exhaustive review of catalogues

- We review 173 current and retired catalogues
- Review 15 “generic” technologies: OntoPortal, OLS, SKOSMOS, Tematres, OpenTheso, ...
- 10 FAIR-enabling dimensions (i.e., how using a catalogue helps the artefact in achieving FAIR)

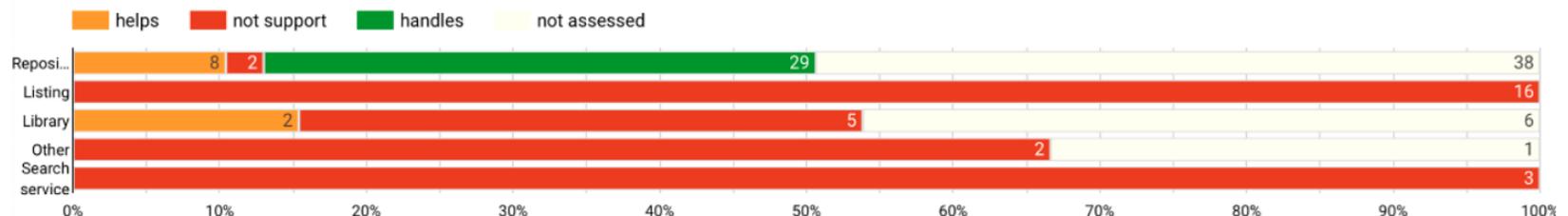


Project Title	Expanding FAIR solutions across EOSC
Project Acronym	FAIR-IMPACT
Grant Agreement No.	101057344
Start Date of Project	2022-06-01
Duration of Project	36 months
Project Website	https://fair-impact.eu

M4.4 - Review and analysis of Semantic Artefact Catalogues for serving FAIR semantic artefacts in EOSC

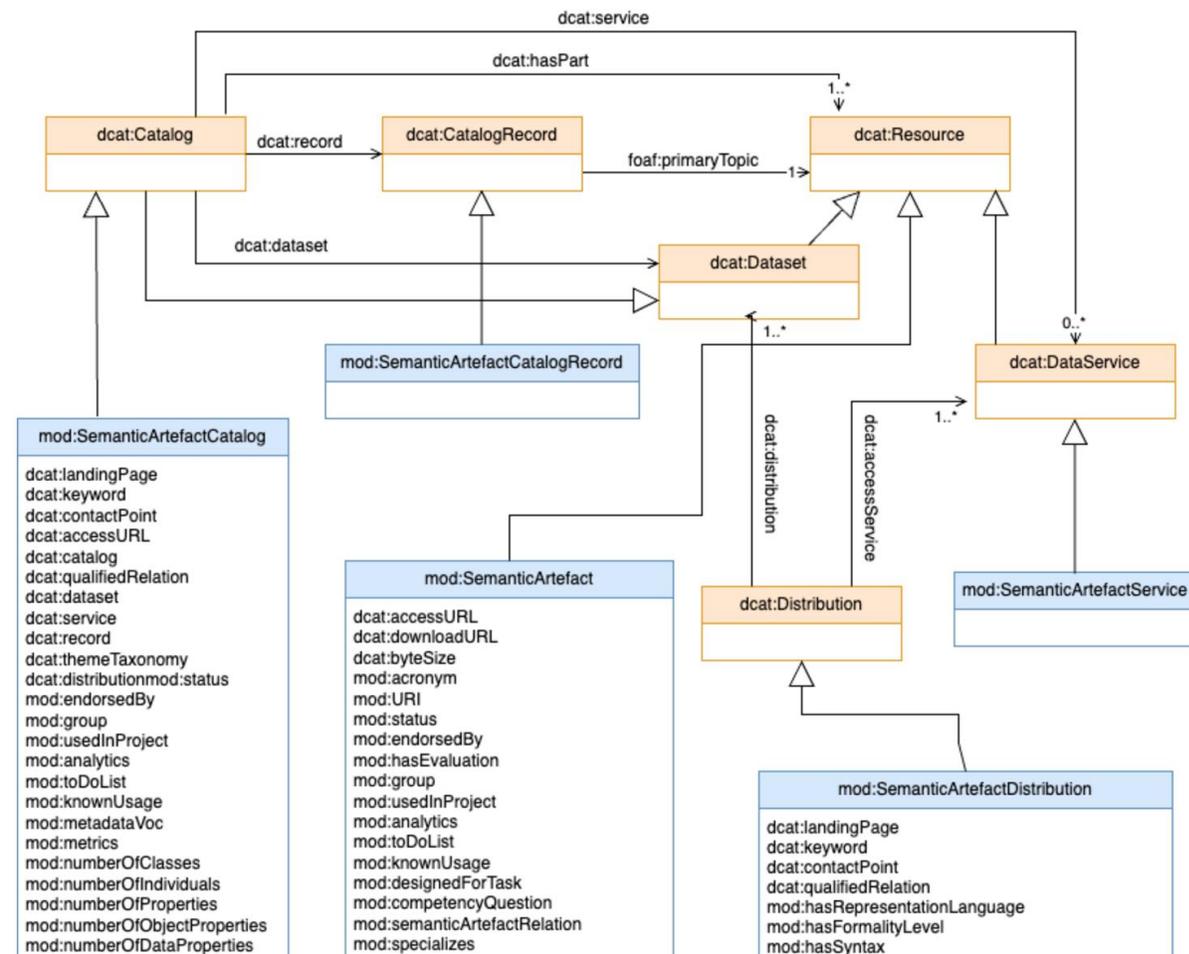
Work Package	WP4, Metadata and Ontologies
Lead Author (Org)	Clement Jonquet (INRAE), Nina Grau (INRAE)
Contributing Author(s) (Org)	Maria Poveda (UPM), Daniel Garijo (UPM), Vyacheslav Tykhonov (DANS-KNAW), Baptiste Ceccconi (OBS-PARIS), Guillaume Alviset (CNRS/Data Terra), Ilaria Rosati (CNR), Martina Pulieri (CNR)
Due Date	2024-07-31
Date	2024-07-31
Version	V1.0
DOI	10.5281/zenodo.12799796
DOI of associated data	10.5281/zenodo.12799862

#4-Resolvability FAIR-enabling criteria by types of SAC



A metadata standard for semantic artefacts (MOD)

Based on DCAT



Project Title Expanding FAIR solutions across EOSC
 Project Acronym FAIR-IMPACT
 Grant Agreement No. 101057344
 Start Date of Project 2022-06-01
 Duration of Project 36 months
 Project Website <https://fair-impact.eu/>

1 M4.3 - Specification of semantic artefact description

Work Package	WP 4, Metadata and Ontologies
Lead Author (Org)	Alejandra Gonzalez-Beltran¹ (UKRI-STFC), Antony Wilson² (UKRI-STFC)
Contributing Author(s) (Org)	Biswanath Dutta³ (ISI), Daniel Garijo⁴ (UPM), Clement Jonquet⁵ (INRAE), Yann Le Franc⁶ (eSDF), María Poveda-Villalón⁷ (UPM)
Due Date	2024-02-29
Date	2024-02-29
Version	V1.0
DOI	10.5281/zenodo.10725304



<https://github.com/FAIR-IMPACT/MOD>

A standard API for semantic artefact catalogues (MOD-API)

For every one to implement to enable unified access (upcoming open call)

GET	/artefacts	Get information about all semantic artefacts.	▼
GET	/artefacts/{artefactID}	Get information about a semantic artefact.	▼
GET	/artefacts/{artefactID}/distributions	Get information about a semantic artefact's distributions.	▼
GET	/artefacts/{artefactID}/distributions/{distributionID}	Get information about a semantic artefact's distribution.	▼
GET	/artefacts/{artefactID}/distributions/latest/resources	Get information about a semantic artefact's resources for the latest distribution.	▼
GET	/artefacts/{artefactID}/record	Get information about a semantic artefact catalog record.	▼
GET	/artefacts/{artefactID}/resources	Get a list of all the resources within an artefact.	▼
GET	/artefacts/{artefactID}/resources/{resourceID}	Get a specific resources from within an artefact.	▼
GET	/artefacts/{artefactID}/resources/classes	Get a list of all the owl:Classes within an artefact.	▼
GET	/artefacts/{artefactID}/resources/concepts	Get a list of all the skos:Concept within an artefact.	▼
GET	/artefacts/{artefactID}/resources/properties	Get a list of all the rdf:Property within an artefact.	▼
GET	/artefacts/{artefactID}/resources/individuals	Get a list of all the instances (owl individuals) within an artefact.	▼
GET	/artefacts/{artefactID}/resources/schemes	Get a list of all the skos:Scheme within an artefact.	▼
GET	/artefacts/{artefactID}/resources/collection	Get a list of all the skos:Collection within an artefact.	▼
GET	/artefacts/{artefactID}/resources/labels	Get a list of all the skos-xl:Label within an artefact.	▼

Project Title	Expanding FAIR solutions across EOSC
Project Acronym	FAIR-IMPACT
Grant Agreement No.	101057344
Start Date of Project	2022-06-01
Duration of Project	36 months
Project Website	www.fair-impact.eu

D4.3 - Specification of shared metadata description of semantic artefacts and their catalogues including common reference API

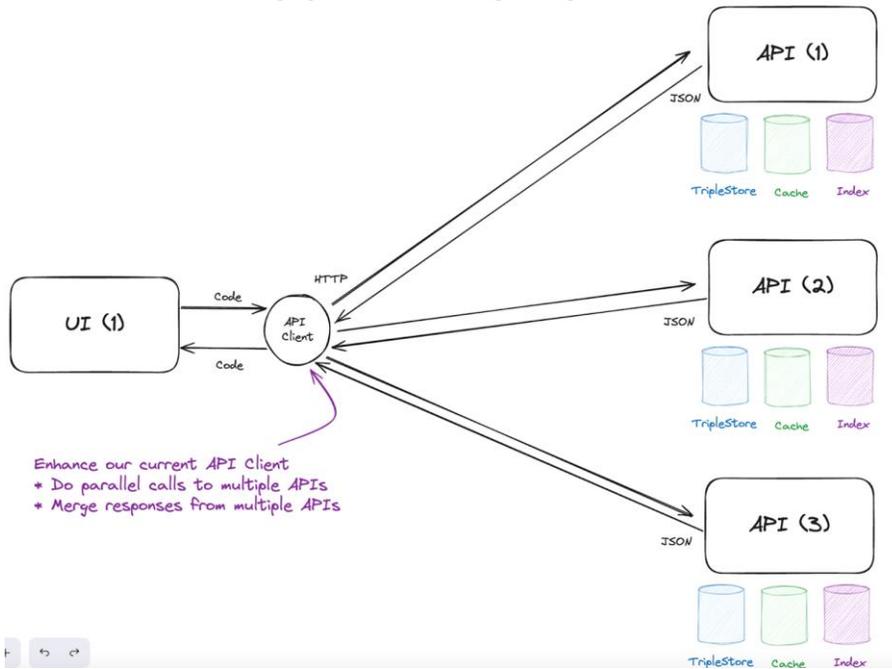
Work Package	WP 4, Metadata and Ontologies
Lead Author (Org)	Antony Wilson ¹ (UKRI-STFC), Clement Jonquet ² (INRAE)
Contributing Author(s) (Org)	Alejandra Gonzalez-Beltran ³ (UKRI-STFC), Daniel Garijo ⁴ (UPM)
Due Date	2027-07-31
Date	2024-07-01
Version	V1.0 - DRAFT NOT YET APPROVED BY THE EUROPEAN COMMISSION
DOI	https://doi.org/10.5281/zenodo.12579778



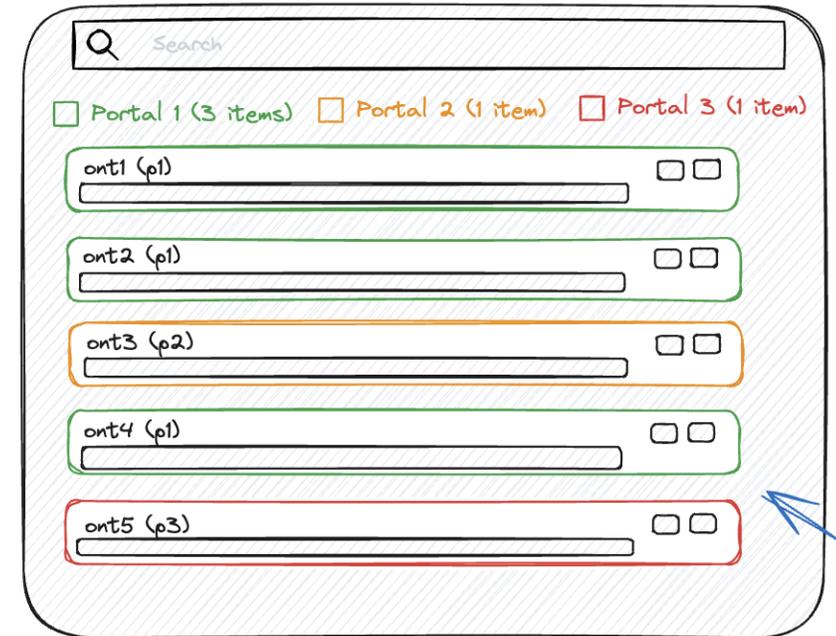
<https://github.com/FAIR-IMPACT/MOD-API>

Early work on federation of 4 catalogues (OntoPortal)

Federation Architecture



Federated Search page (Content)



Are displayed only: Canonical or Local to the portals

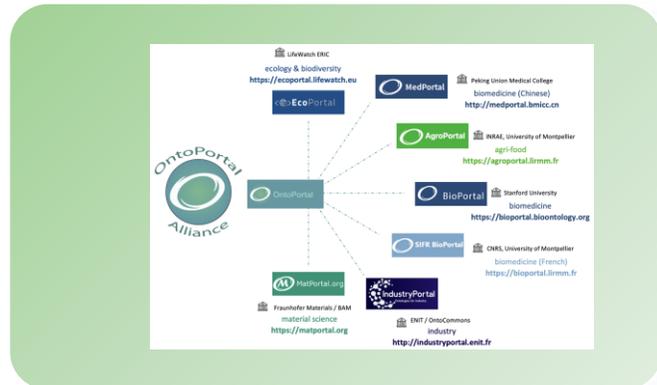
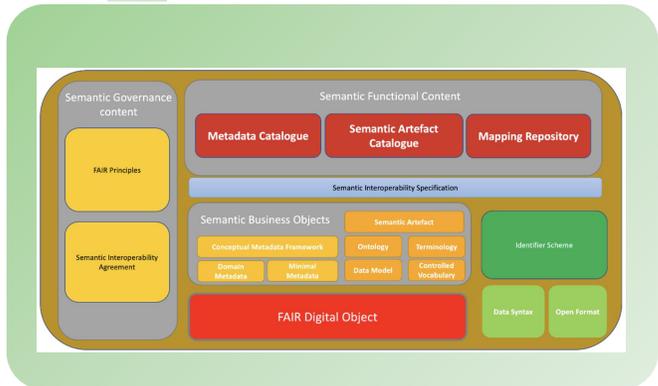
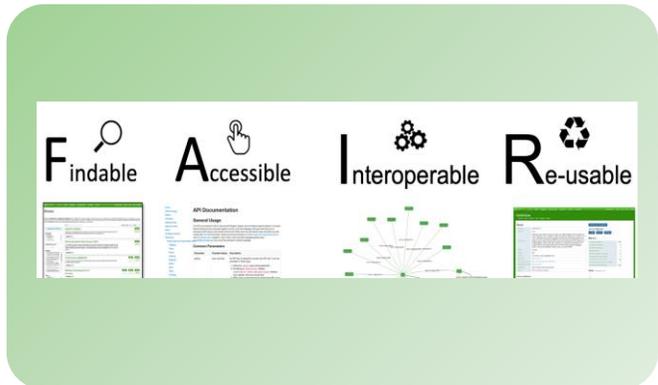
Coming end of 2024

Deliverables

- Done
 - M4.1 - Semantic artefact **governance** models: example of community practices
 - D4.1 - Semantic artefact **governance** models and disciplinary approaches for inclusion within EOSC
 - M5.3 - Semantic artefact **FAIRness assessment** methodology ready
 - M4.2 - Processes & tools to engineer **FAIR semantic artefacts**
 - D4.3 - Specification of shared **metadata description** of semantic artefacts and their catalogues including common reference API
 - M4.4 - Review of **semantic artefact catalogues** and guidelines for serving FAIR semantic artefacts in EOSC
 - D4.4 - Guidelines for recommended **metadata standard for research software** within EOSC
- *Upcoming*
 - *D4.2 - Report on **FAIR semantic artefact lifecycle** from engineering, to sharing and FAIR assessment*
 - *D4.5 - Guidelines and methodology to create, document and share **mappings and crosswalks***
 - *D4.6 - Use case driven validation of semantic artefact **exploitation within data repositories***
 - *M4.5 - Internal and external **use case evaluation & demonstrators***

Conclusion

- Semantic Artefact Catalogues are a **key component of the EOSC Interoperability Framework**
- Proposition to make **OntoPortal** deployable at the click of the mouse for a project or community in EOSC
- Every new community, every **new use cases brings new ideas**. Participate. Join. FAIR-IMPACT is a catalyser.
- There are even more dimensions to semantic artefacts (governance, mappings, etc.). Check out our deliverables.



Summary

Questions ?

Thanks for your attention!

Do you have any questions ?



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Funded by
the European Union

Integrating Data Interoperability into SLAs & MoUs

French National Roadshow FAIR-IMPACT

Salomé Landel - CNRS - DDOR

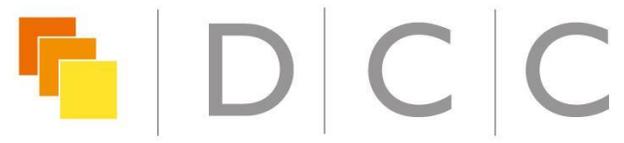
Contact : salome.landel@cnrs.fr





Today, we'll explore
how data interoperability
can be integrated into SLAs and MoUs
in the European Open Science Cloud
(EOSC) context





Our Team



UNIVERSIDAD
POLITÉCNICA
DE MADRID



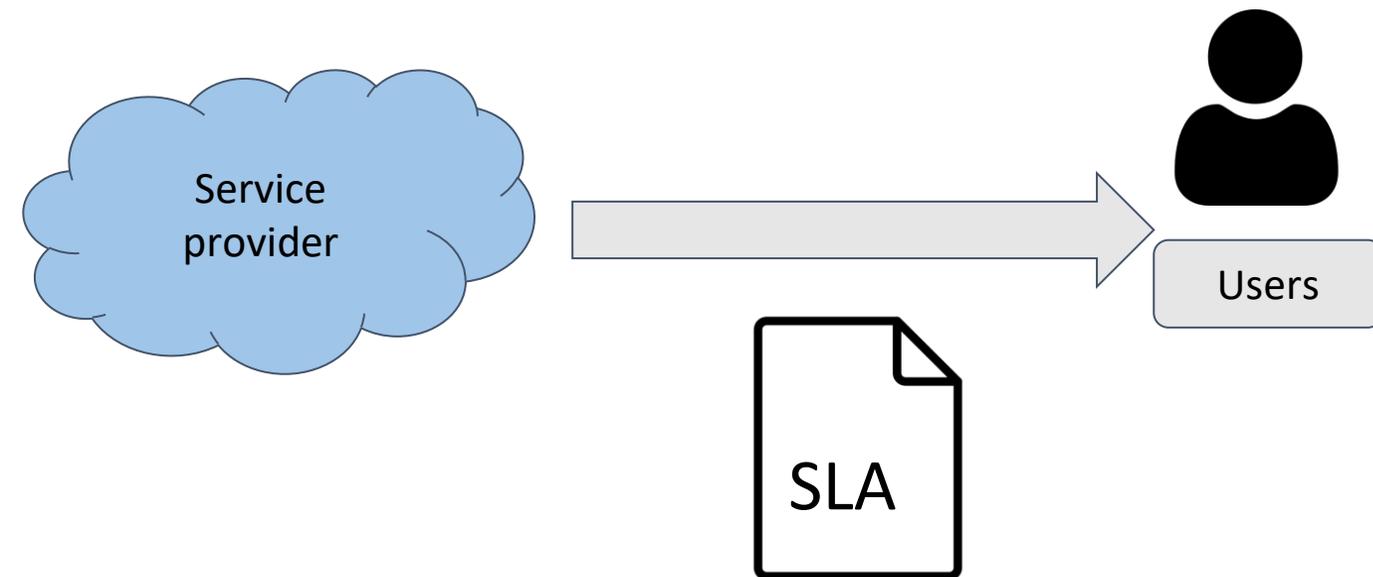
Agenda

1. What are SLAs and MoUs?
2. How can SLAs and MoUs support data interoperability?
3. Developing templates for SLAs and MoUs in the EOSC ecosystem
4. Preliminary conclusions
5. Questions / Discussion

1. Definitions

Service Level Agreements (SLAs) and Memorandum of Understanding (MoUs)

SLA as a tool to clarify service provision

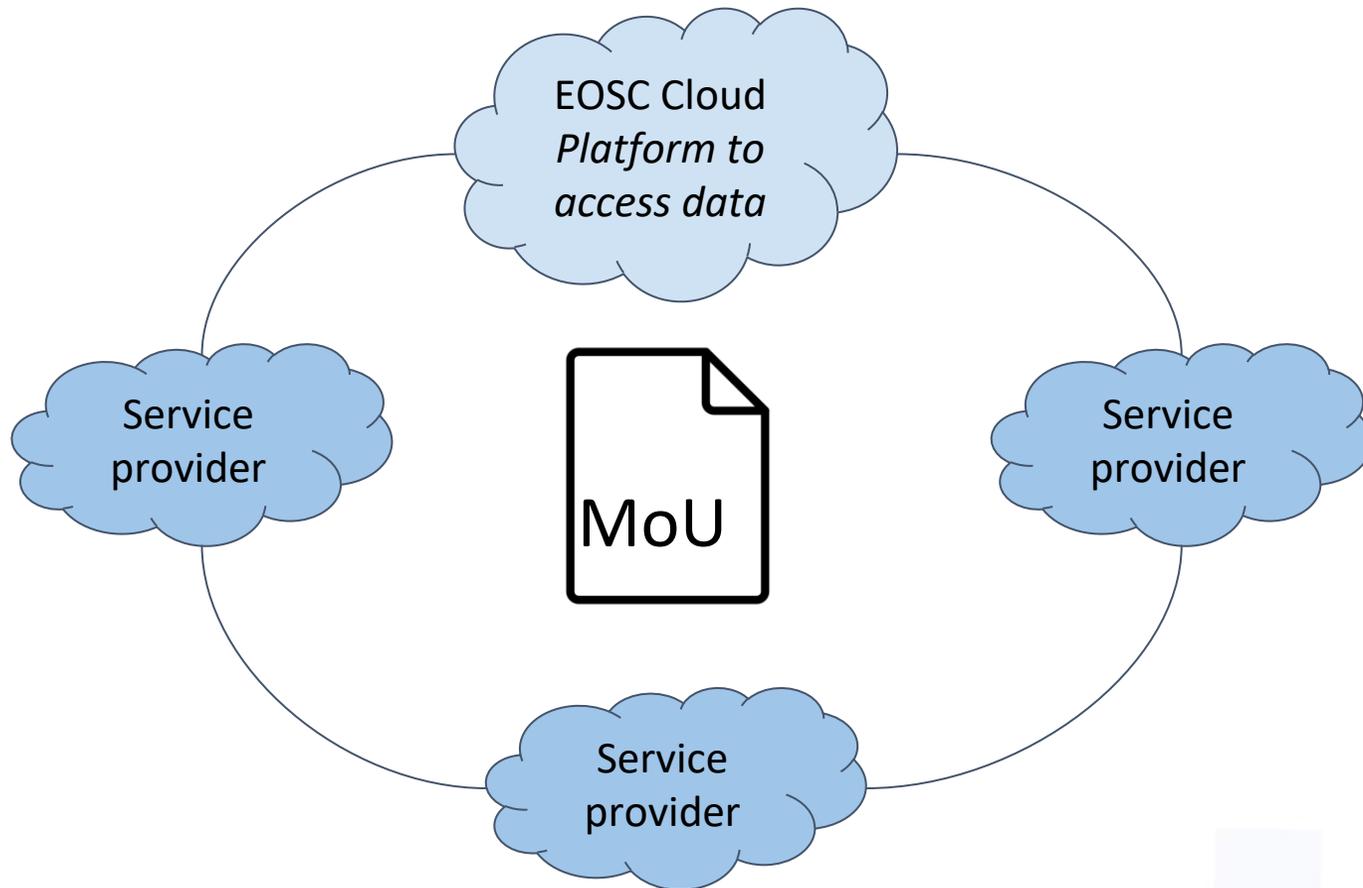


*SLAs are documented agreements between a customer and a service provider that specify the service to be provided and the service objectives that define how it will be provided, **so are very specific to services.***

They provide a transparent framework by specifying criteria for service quality and measurement, such as service availability, frequency of outages, time to restore service and response times.

*However, **SLAs are not always legally binding**; they may be statements of intent or plans rather than absolute guarantees. **They can also be based on a best effort approach.***

MoU: a precursor to a formal contract



*A MoU is typically a non-binding agreement **between two or more parties** that outlines the terms and details of "mutual understanding" or "cooperation" and can be applied to a wide range of topics, **covering pretty much anything**.*

1st finding

Aspect	SLA (Service Level Agreement)	MoU (Memorandum of Understanding)
Purpose	Defines specific services, expected levels, and metrics	Outlines terms and details of a mutual understanding or partnership
Legal Binding	Legally binding	Generally not legally binding
Usage	Common in IT services, telecommunications, outsourcing	Used in international agreements, partnerships, collaborations
Example Scenarios	IT company providing cloud storage	Universities collaborating on a research project

2. “How to use SLAs and MoUs for data interoperability?”

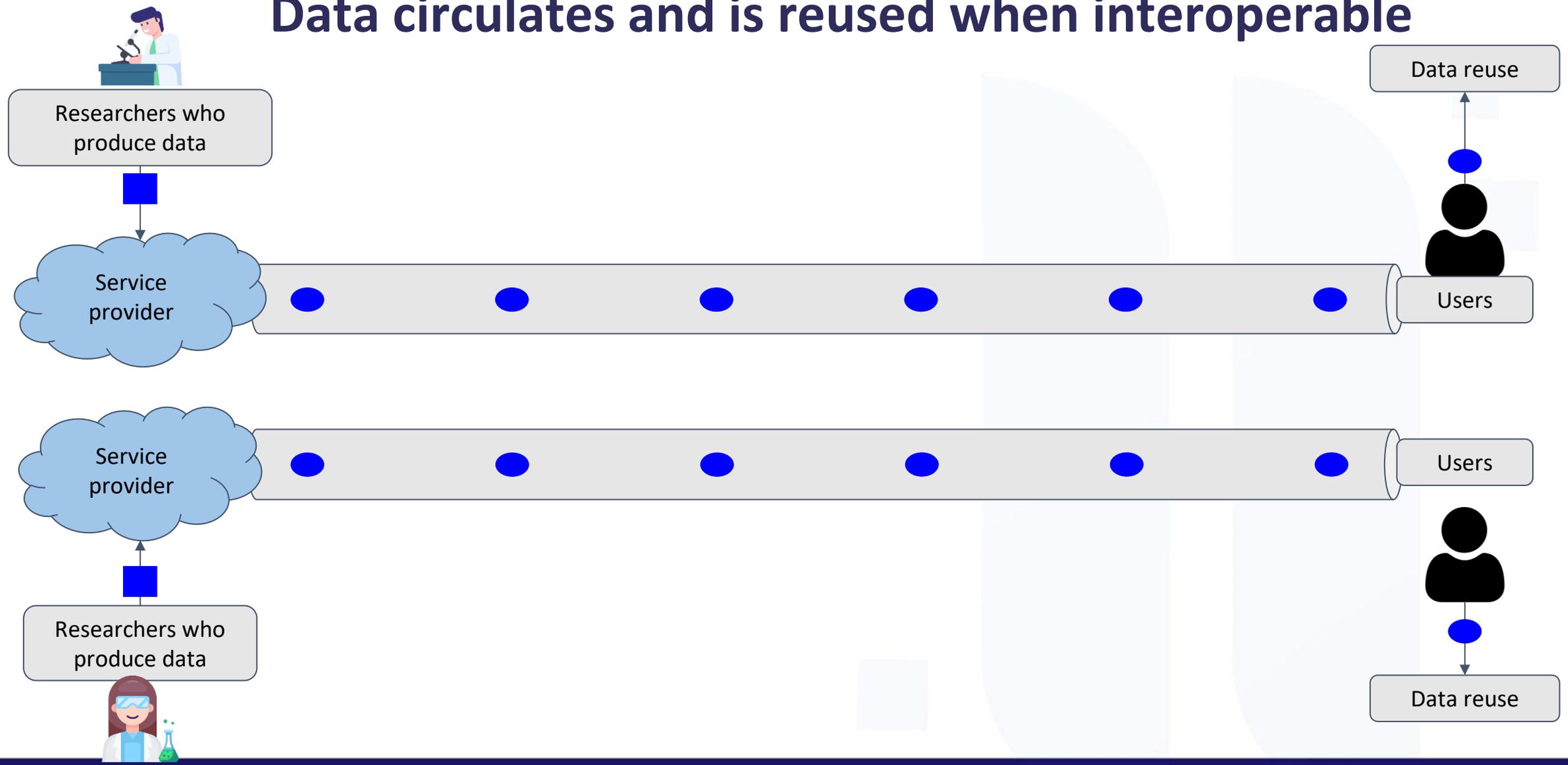
Data interoperability:

*“the ability of systems and services that create, exchange and consume data to have **clear, shared expectations for the contents, context, and meaning of that data**” **

Data interoperability allows data held in different formats and locations to be used together.

*Intertrust Technologies Inc.

Data circulates and is reused when interoperable



Data and metadata format for data interoperability

From row
Research data

...

1

Legal interoperability

- Metadata contains details on law applicable, access conditions, legal conditions etc.
-

2

Technical interoperability

- Use a shared PID and document it
- Etc.

3

Semantic interoperability

- Semantic artefact with an open licences
- Etc.

4

Organisational interoperability

- Clear communication on workflows used
- Etc.

... To
Interoperable
data

Integrating Data Interoperability into SLAs



SLA Standard structure

1. General information about the parties
2. Scope & description of the Service
3. **Service hours & exceptions**
4. **Service components & dependencies**
5. **Support**

5.1 Incident handling

5.2 Fulfilment of service requests

1. **Service level targets**
2. **Limitations & constraints**
3. Communication, reporting and escalations

8.1 General communication

8.2 Regular reporting

8.3 SLA violations

8.4 Escalation & complaints

1. **Information security & data protection**
2. Additional responsibilities of the service provider
3. User responsibilities
4. **Review**
5. Glossary of terms
6. Document control

MoU integrating Data Interoperability

Legal, Technical, Organisational and Semantic interoperability descriptions

=

Covers broader objectives such as data sharing goals, roles, and responsibilities

+

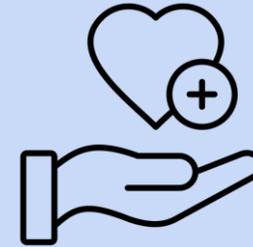
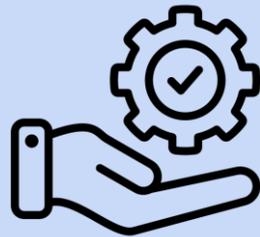
Used in partnerships, consortiums, or collaborations where **data interoperability is desired but not yet fully defined**

MoU standard structure

1. Title
2. Introduction
3. Statement of Intent
4. Scope of agreement
- 5. Roles & Responsibilities**
- 6. Term of Agreement**
7. Confidentiality
8. Intellectual Property Rights

2nd finding

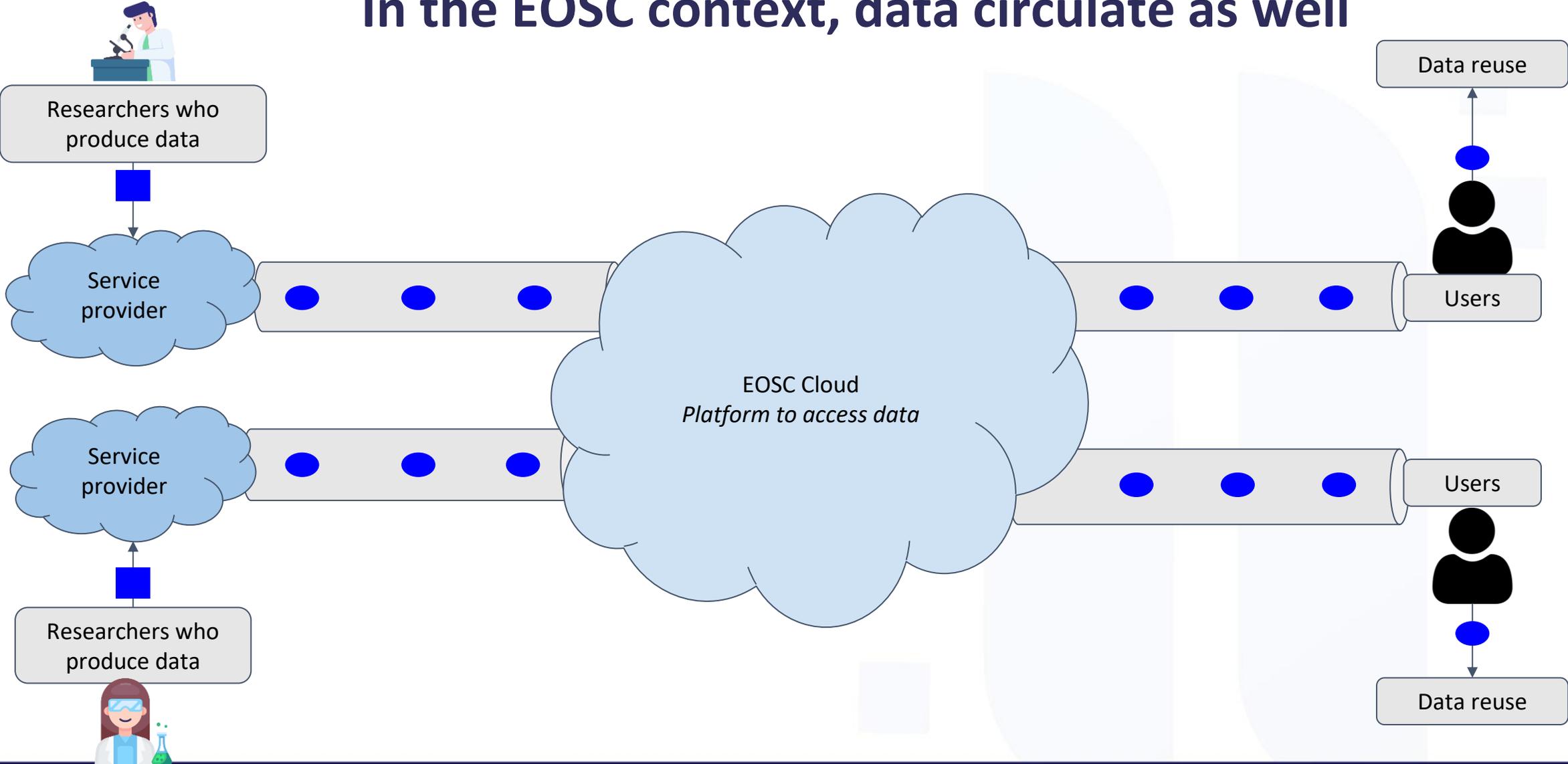
The SLA defines **more specific and technical aspects** (data formats, APIs, metadata schemas) to clarify how data interoperability is provided.



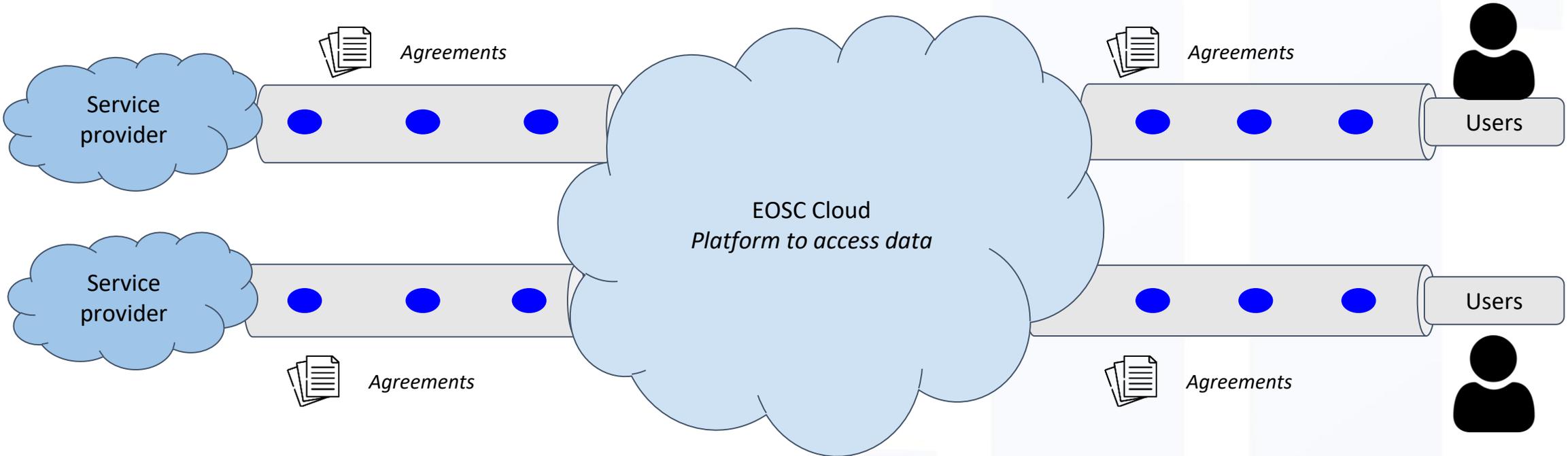
MoUs are used in partnerships and **outline general and strategic intentions** and frameworks for data sharing and interoperability.

3. “How to develop templates for MoUs and SLAs for data interoperability at EOSC level?”

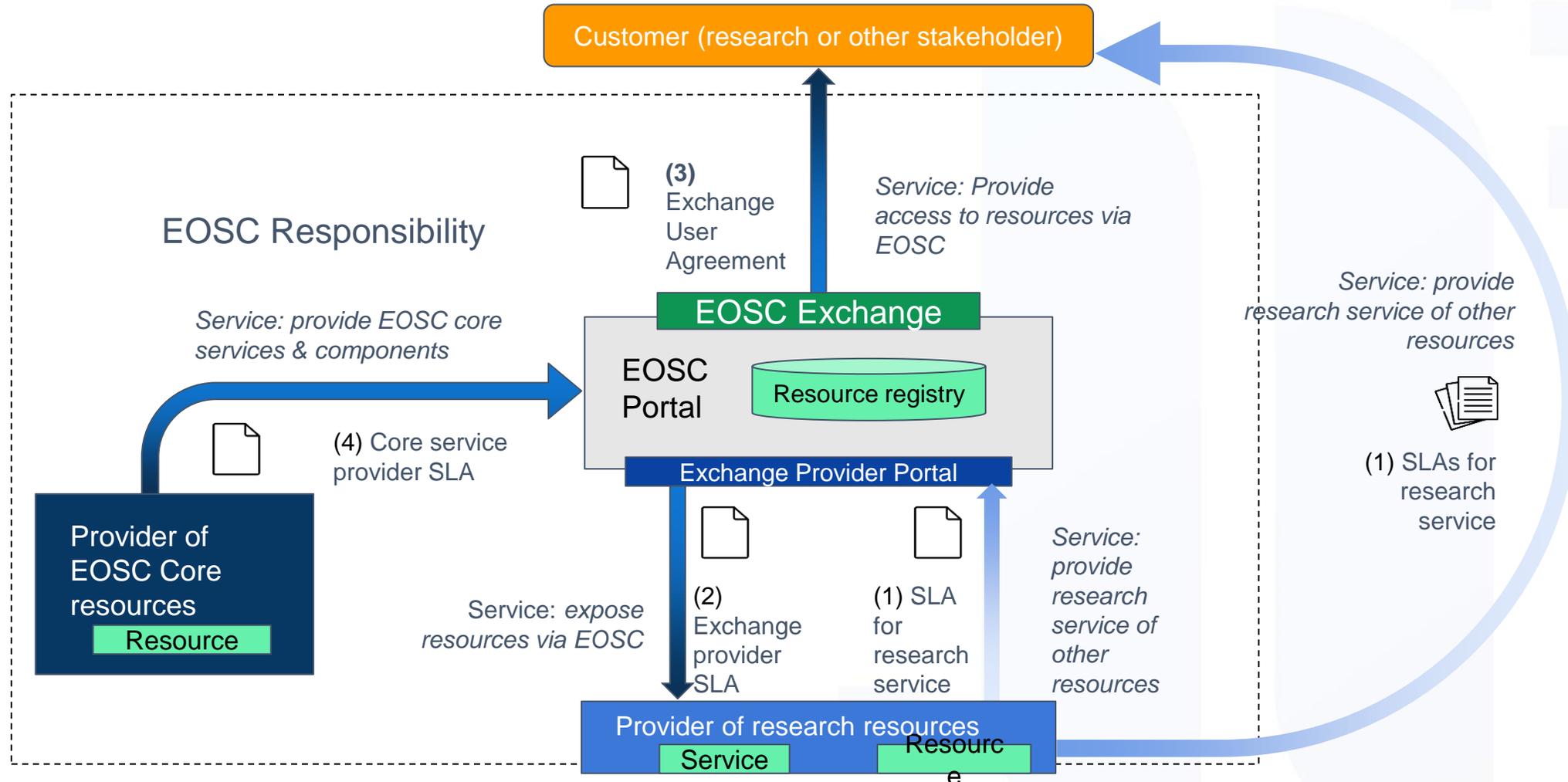
In the EOSC context, data circulate as well



SLAs and MoUs can structure workflows in this context of interconnected services



Several SLAs to be signed in the EOSC context (currently in transition)



MoUs have more general objectives and therefore more options

MoU between different service providers to align their definition of data interoperability

MoU between EOSC and other international organisations on data interoperability

Etc.

3rd finding

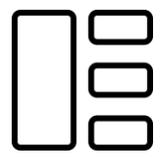
Need to clarify at EOSC level which stakeholder has direct impact on data interoperability

Proposal to align service providers involved in EOSC service delivery through MoUs and SLAs

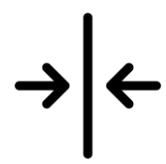
Need to consider how detailed the agreement should be to allow for a flexible community.

4. (Preliminary) Conclusions

Key points



Data interoperability can be included as sections in SLAs and MoUs



Aligning standards across the EOSC ecosystem will lead to more seamless data sharing.



This will need **to be negotiated** once “EOSC 2.0” is in place: Need to keep service providers on board



Data interoperability must be formalized for clarity in SLAs & MoUs.



Questions / Discussion

Thanks for your attention!



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Use of semantic artefacts, via **AgroPortal**, within **Recherche Data Gouv**

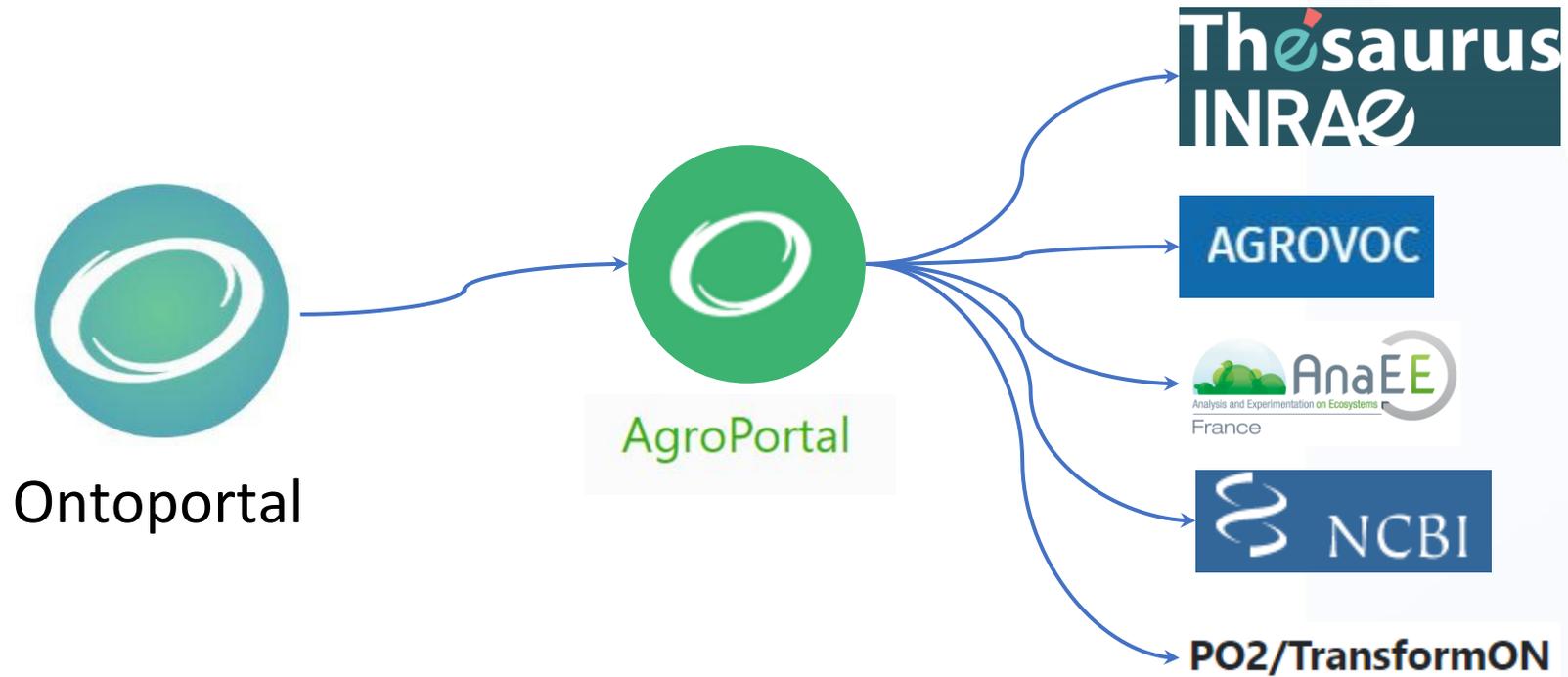
French National Roadshow FAIR-IMPACT

Dimitri Szabo - INRAE

Contact : dimitri.szabo@inrae.fr



AgroPortal semantic artefact (SA) catalogue



Ontoport

AgroPortal

Thésaurus
INRAE

AGROVOC

AnaEE
Analysis and Experimentation on Ecosystems
France

NCBI

PO2/TransformON

Host and serve ontologies & semantic artefacts (semantically described with rich metadata)
-> Access via API

Thematic SA catalog for Agri-Food ontologies and thesaurus

Semantic Artefacts (SA)

Recherche Data Gouv & Data INRAE

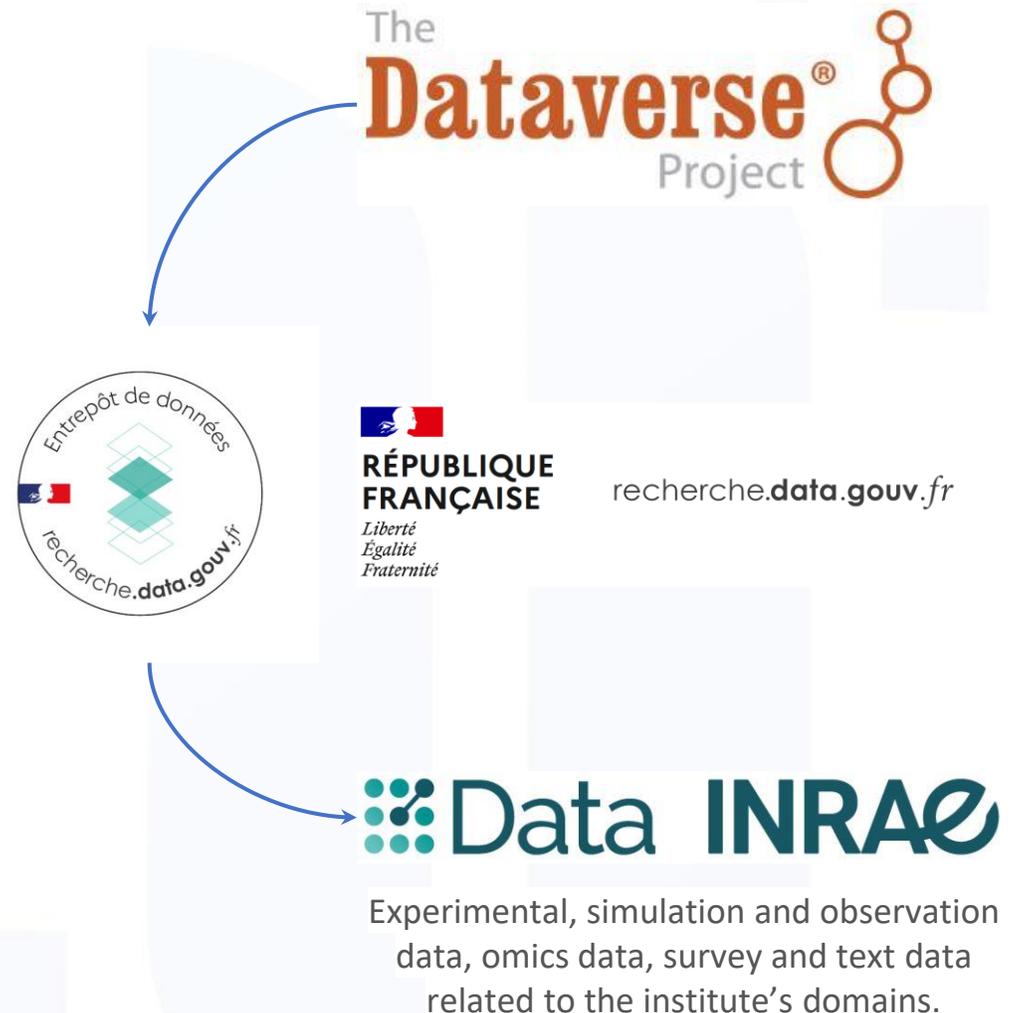
Recherche Data Gouv is a sovereign solution for depositing, publishing, reporting, discovering, accessing and reusing French data. Notably:

- A **national repository** with a generic collection and institutional spaces

Data INRAE : the institutional space for INRAE

-> the sub-repository used for this use case

The repository is based on the **Dataverse Project** (developed at Harvard), an open source web application to share, preserve, cite, explore, and analyze research data.





State of the disunion

An increasing number of keywords...

... but mostly due to the keyword/dataset ratio

... but with many misunderstandings from the depositors

- confusion between term and vocabulary
- incomplete information
- let's put everything in one field
- ...

... but the interface is failing them

- manual entry of keywords
- some duplication of terms for translation
- cause of some of the misunderstandings

FAIRsFAIR recommendation : A metadata document or selected parts of the document may incorporate additional terms from semantic resources (also referred as semantic artefacts) that unambiguously describe the contents so they can be processed automatically by machines. This metadata enrichment may facilitate enhanced data search and interoperability of data from different sources.

INRAE



Demonstration





Assessing the results

- Qualitative :
 - interviews with users during the project
 - satisfaction rating
- Quantitative :
 - keywords usage
 - users using keywords
 - keywords completion
 - datasets consultations (>> longer run)
 - feedback or requests for vocabularies (>> longer run)
- FAIRness assessment

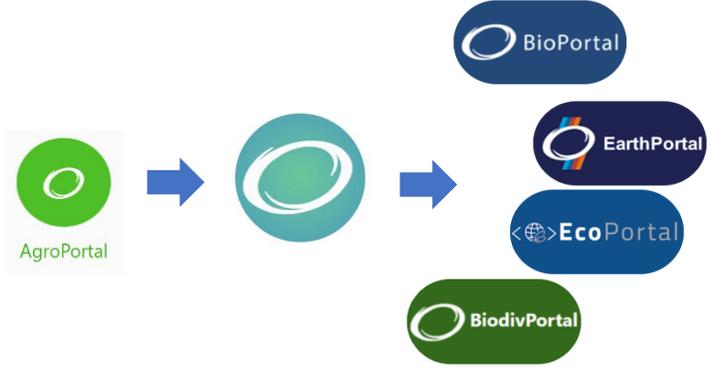


Challenges / perspectives

Users friendliness



Modularity



Multilingualism



Sustainability



[Iteration icons created by Freepik - Flaticon](#)

Thanks for your attention!

Do you have any questions ?



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Enabling interoperability between **AgroPortal** and **PHIS** information system for enhanced phenomics data annotation and exchange



French National Roadshow FAIR-IMPACT

Anne Tireau, Arnaud Charleroy, **Llorenç Cabrera-Bosquet** & Clément Jonquet - INRAE

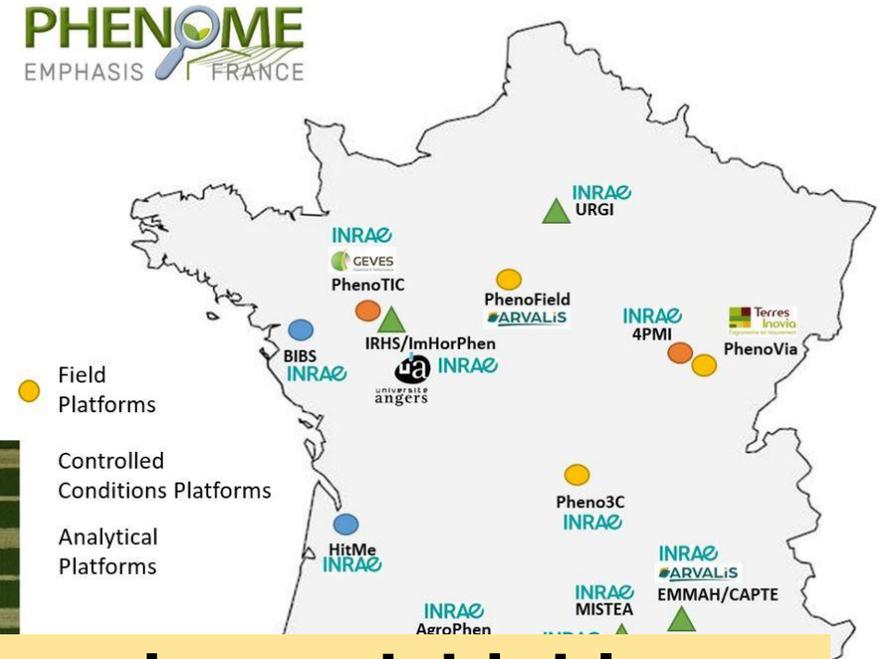
Contact : llorenc.cabrera-bosquet@inrae.fr

PHENOME-EMPHASIS, The French Plant Phenomic Infrastructure

Develop infrastructure to help design genotypes adapted to climate change and agroecology

- Characterize large collections of genotypes for quantitative genetic studies (GWAS - GS): high-throughput phenotyping
- Manipulate/control/characterise contrasting environmental scenarios, including the main abiotic/biotic components of climate change and agroecology

11 distributed installations and 2 methodological projects



PHENOME-EMPHASIS generates a massive and highly heterogenous amount of data



Coordinated by Bertrand Muller & Jacques Le Gouis
(François Tardieu)

Sept 2012 – Dec 2024



Data management

Store, organise and manage

- Highly heterogeneous data (e.g. images, spectra, kinetics, environmental data)
- Multi-spatial and temporal scale data (leaf to canopy level)
- Multi-source (field, platform)

Metadata enrichment

Not only storing data but... **Enrich datasets** with the necessary knowledge and metadata (enable analysis, reuse and meta-analyses)

Data users are more than often different than data providers!!



Methods

Dealing with multi-source and multi-scale information in plant phenomics: the ontology-driven Phenotyping Hybrid Information System

Pascal Neveu¹, Anne Tireau¹, Nadine Hilgert¹, Vincent Nègre², Jonathan Mineau-Cesari^{1,2}, Nicolas Brichet², Romain Chapuis³, Isabelle Sanchez¹, Cyril Pommier⁴, Brigitte Charnomordic¹, François Tardieu² and Llorenç Cabrera-Bosquet²

¹MISTEA, INRA, Montpellier SupAgro, Université de Montpellier, Montpellier 34060, France; ²LEPSE, INRA, Montpellier SupAgro, Université de Montpellier, Montpellier 34060, France; ³UE DIASCOPE, INRA, Montpellier SupAgro, Université de Montpellier, Montpellier 34060, France; ⁴INRA, UR1164 URGI – Research Unit in Genomics-Info, INRA de Versailles-Grignon, Route de Saint-Cyr, Versailles 78026, France

Neveu et al. *New Phytologist* 2019



Pascal Neveu



www.phis.inrae.fr

=> Provide FAIR data

Interoperability

Interoperate and integrate data into/from external resources (e.g. modelling platforms or external databases)



Object identification

In PHIS all objects are identified using URIs
(Uniform Resource Identifiers)

=> standardized and unambiguous identification

Prefix diaphen: `<http://phenome-fppn.fr/diaphen>`

(b)

URI of plot

`<diaphen:2017/o1700029>`

URI of plant:

`<diaphen:2017/17000147>`

URI of leaf:

`<diaphen:2017/117000590>`

URI of camera:

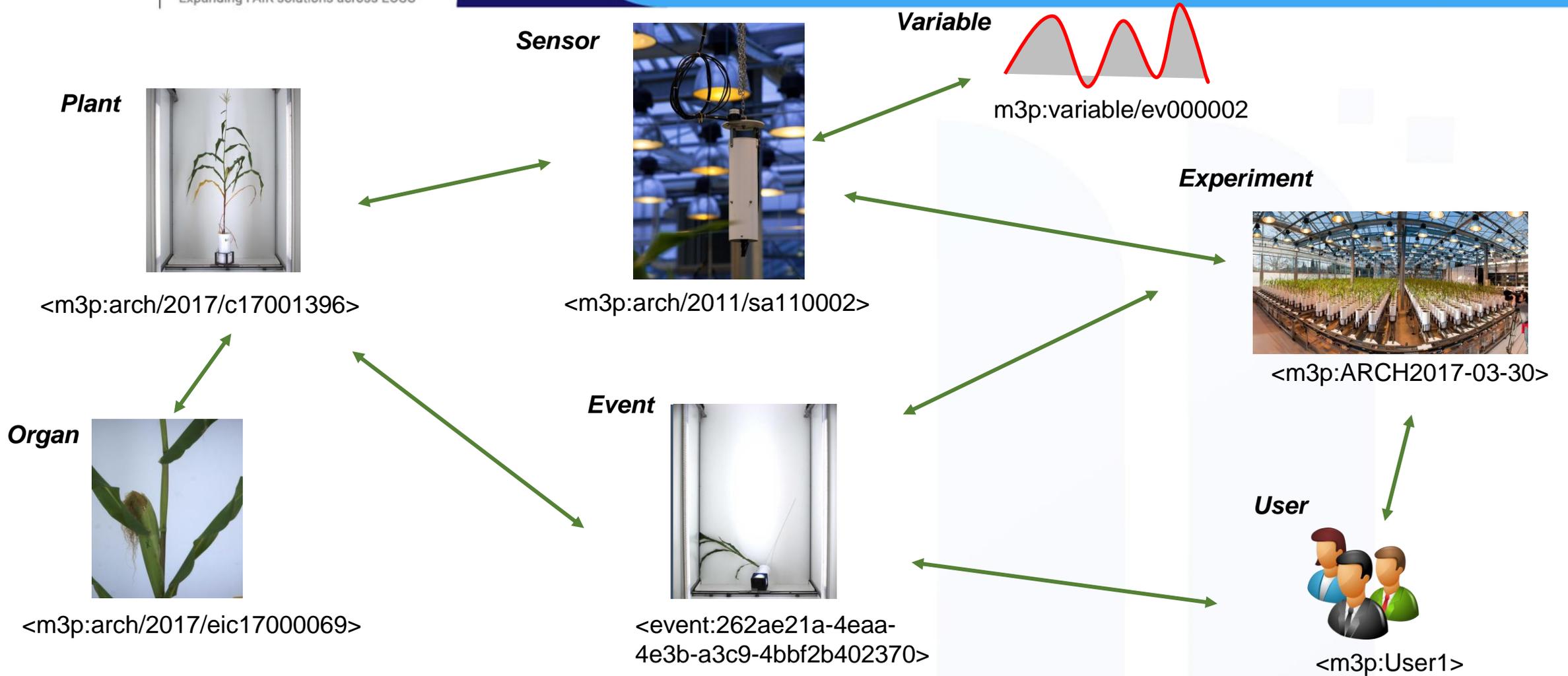
`<diaphen:2018/ac180002>`



URI of image:

`<diaphen:2017/ic14001480237>`

Neveu et al. *New Phyt* 2019



The same applies to sensors, people, events, infrastructure, **variables...**

Object identification

In PHIS all objects are identified using URIs
(Uniform Resource Identifiers)
=> standardized and unambiguous identification

Prefix diaphen: `<http://phenome-fppn.fr/diaphen>` (b)

URI of plot
`<diaphen:2017/o1700029>`

URI of plant:
`<diaphen:2017/17000147>`

URI of leaf:
`<diaphen:2017/117000590>`

URI of camera:
`<diaphen:2018/ac180002>`

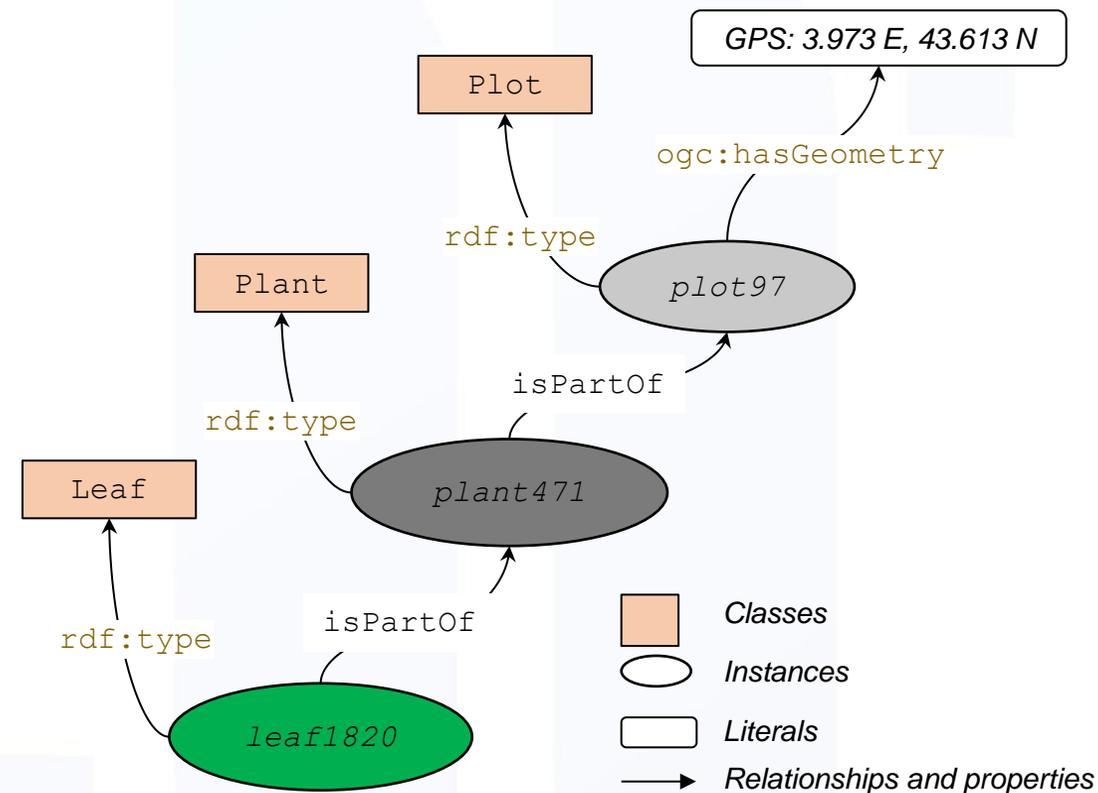


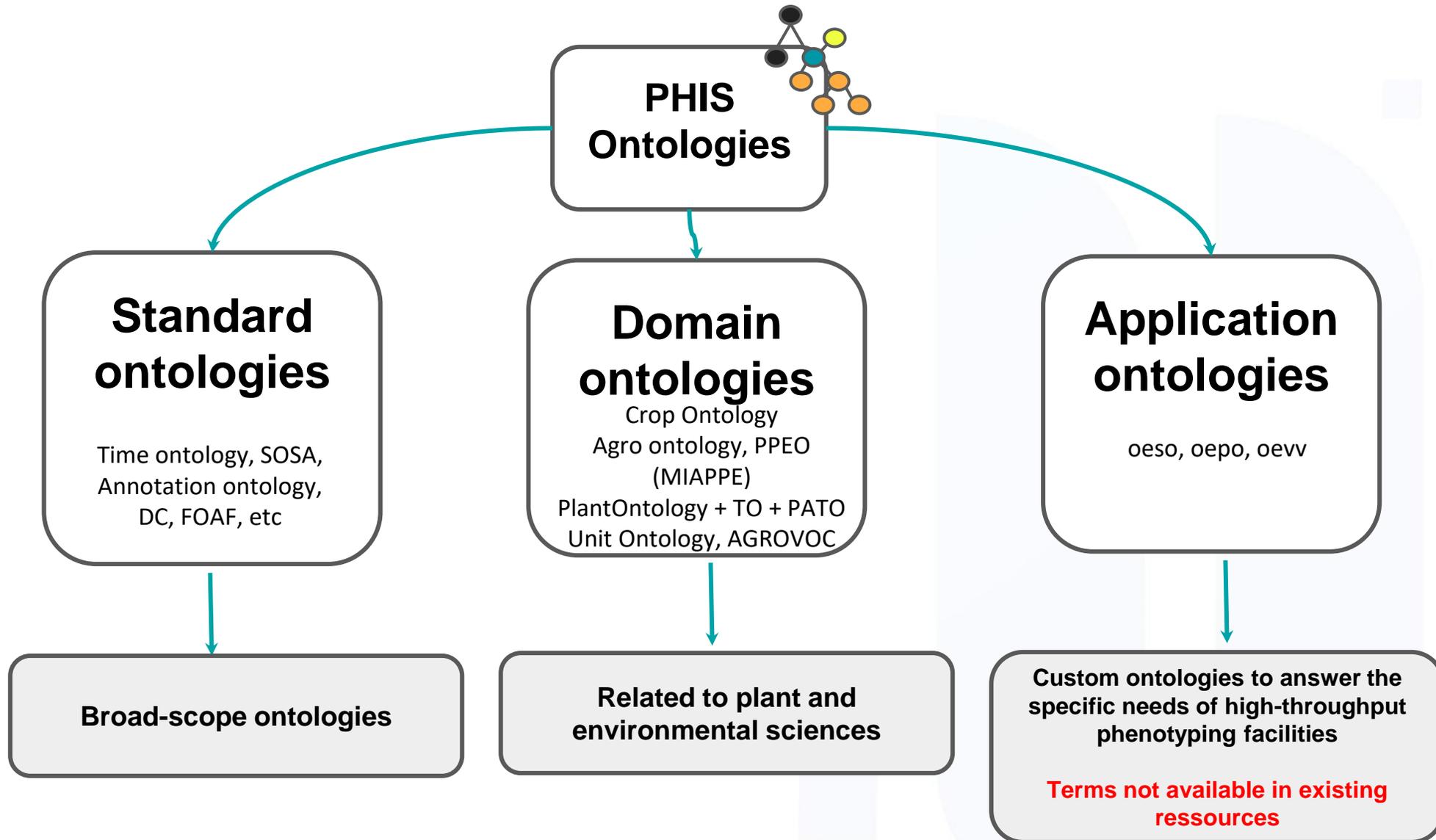
URI of image:
`<diaphen:2017/ic14001480237>`

Neveu et al. *New Phyt* 2019

Semantics (controlled vocabulary)

Ontologies allow to define terms and formalise relationships between them



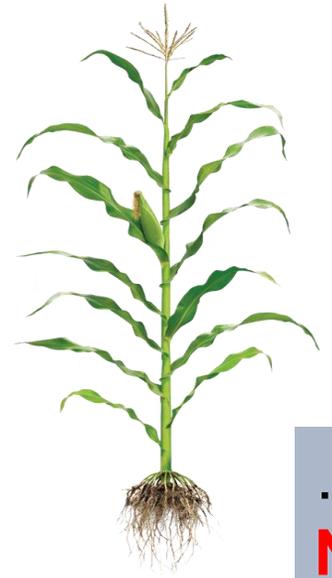


Plant height exemple

WHAT?

HOW?

What UNITS/SCALE?



- M1: Total height
- M2: First tassel branch
- M3: Last expanded leaf
- M4: Youngest growing leaf

...There is an uncountable number of combinations...
NO standardisation **BUT** traceability needed



U3: pixel

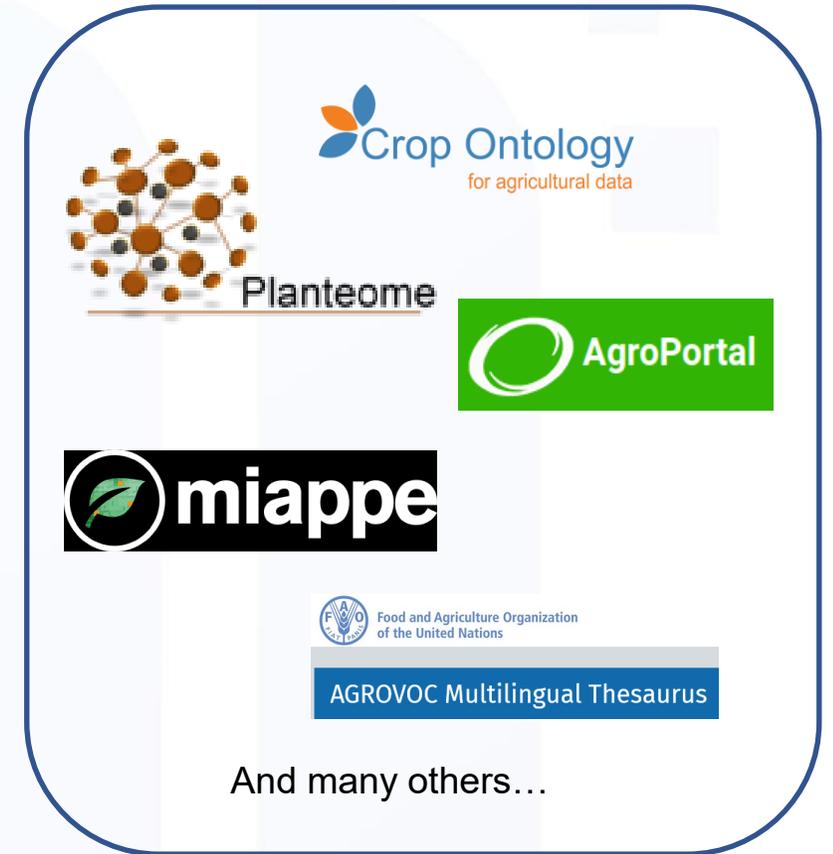
M5: Highest pixel corresponding to plant



Ideally, **BUT**

Reference ONTOLOGIES

- Most users with a background in biology **lack computer science skills** and are unfamiliar with the use of ontologies or semantic artefacts, leading to difficulties in retrieving information
- Most available **resources are not centralized**, which further complicates the process of gathering information from multiple sources and mapping concepts.
- Gathering reference terms from multiple sources and ad-hoc vocabulary systems is a **manual process**.
- This manual process considerably **prevents and slows down the reuse of standard ontology terms** when describing objects within PHIS.



Connector between PHIS and AgroPortal to facilitate the re-use of ontology terms when building variables and other scientific objects within PHIS.



AgroPortal. It is a vocabulary and **ontology repository built as a reference catalogue for hosting, sharing and serving semantic artefacts for agri-food** communities, developed and maintained by INRAE-MISTEA and University of Montpellier (Jonquet *et al.* 2017)

PHIS, an ontology-driven information system, inspired from the FAIR principles, for integrating, organizing, and managing multi-source and multi-scale phenomics data obtained from field and greenhouse conditions (Neveu *et al.* 2018)

Anne Tireau
Arnaud Charleroy
Llorenç Cabrera-Bosquet
Clément Jonquet



Coord. C. Jonquet

Connector between PHIS and AgroPortal to facilitate the re-use of ontology terms when building variables and other scientific objects within PHIS.



3. Mapping with other terms (SKOS)

1. Browse existing terms

Add entity

1 Search

Search for ontology term

leaf

- leaf - PO**
http://purl.obolibrary.org/obo/PO_0025034
 A phyllome (PO:0006001) that is not associated with a reproductive structure.
- flag leaf - AGROVOC**
http://aims.fao.org/aos/agrovoc/c_20acd5a2
http://aims.fao.org/aos/agrovoc/xDef_52793e30
- leaf lettuce - AGROVOC**
http://aims.fao.org/aos/agrovoc/c_53379b65
http://aims.fao.org/aos/agrovoc/xDef_e9ea471e
- leaf protein - AGROVOC**
http://aims.fao.org/aos/agrovoc/c_24867
- leaf meal - AGROVOC**

Cancel

2. Enrich metadata

Add entity

1 ————— 2 Enrich

URI *

autogenerated URI

Name *

leaf

Description

A phyllome (PO:0006001) that is not associated with a reproductive structure.
 A phyllome vascular system that includes the totality of the portions of vascular tissue in their specific arrangement in a vascular leaf.

Cancel

Add entity

1 Search — 2 Enrich — 3 Mapping

Search for mapping...

leaf

Ontologies: OEPO and 2 more

Selected term

leaf
 A phyllome (PO:0006001) that is not associated with a reproductive structure.

Relations	Reference URI	Actions
Close match	http://purl.obolibrary.org/obo/PO_0025034	

leaf - PO
http://purl.obolibrary.org/obo/PO_0025034
 A phyllome (PO:0006001) that is not associated with a reproductive structure.

Leaf - OEPO
<http://www.phenome-fppn.fr/vocabulary/2018/oeportLeaf>
 A phyllome vascular system (PO:0025206) that includes the totality of the portions of vascular tissue in their specific arrangement in a vascular leaf (PO:0009025).
 [database_cross_reference: POC:Ramona_Walls]

Map term as

- Narrower
- Broader
- Close match
- Exact match

phyllode leaf - PO
http://purl.obolibrary.org/obo/PO_0025335
 An adult ensiform leaf with a lamina that dev median plane, rather a transverse plane, the length of the leaf and is a result of increased activity of the

...Or map manually

URI

http://aims.fao.org/aos/agrovoc/c_8332 Map term as

Cancel Previous Save



Anne Tireau
 Arnaud Charleroy
 Llorenç Cabrera-Bosquet
 Clément Jonquet

Coord. C. Jonquet

Enable semantically precise and FAIR descriptions - Machine readable

⚙️
CanopyEar_number_counting_PERm2

Variable

←
Description
Annotations
Device associated Data Visualization
Documents

📄 General informations
✎ 🌐 🗑️

URI http://phenome.inrae.fr/id/variable/canopyEar_Number_c...

Name CanopyEar_number_counting_PERm2

Alternative name Ear_nb_m2

Description
EN: mean ear number per m2 measured on a sample | FR: nb épis par m2 (échantillon)

📄 Structure

Entity [canopyEar](#)

Entity of interest 📄

Characteristic [number per area](#)

Method [counting](#)

Unit/Scale [per square metre](#)

🌐 Reference ontologies

↕ Relations	Reference URI
Narrower	https://cropontology.org/term/CO_321:0001366
Exact match	https://agrovoc.fao.org/browse/agrovoc/en/page/c_8504

📄 Advanced information

Species [barley](#) , [bread wheat](#) , [durum wheat](#)

Data type Decimal number

Time interval

Sample interval

Trait uri https://cropontology.org/term/CO_321:0000166

Trait name Ear number

A photograph showing a row of green, grass-like plants growing in white plastic pots. The pots are arranged on a black metal rack. The background is a blurred laboratory or greenhouse environment with various lights and equipment. The text "Thanks ! questions ?" is overlaid in white on the left side of the image.

Thanks ! questions ?

Use of semantic artefacts, via EarthPortal, within EasyData

French National Roadshow FAIR-IMPACT

Christelle Pierkot & Guillaume Alviset - Data Terra

Contact : christelle.pierkot@data-terra.org & guillaume.alviset@data-terra.org



EarthPortal : Thematic semantic artefact catalog relating to Earth Sciences.

- FAIR-IMPACT : task 4.2
- Based on Ontoportal technologie

Provides tools : Annotator, Mapping, ...
Can be used by external applications through REST API

Welcome to EarthPortal, the ontology and vocabulary repository dedicated to Earth sciences

Search for a class

[Advanced Search](#)

Find an ontology

[Browse Ontologies ▾](#)

EarthPortal Statistics	
Ontologies	40
Classes	10,589
Individuals	21,806
Projects	4
Users	19

Annotator

Obtenez des annotations pour le texte avec des classes d'ontologie

Within the study of the urban heat island UHI in Echirrolles and Grenoble France two temperature measurement networks have been deployed The aim is to measure the temperature gradients associated with the UHI in summer The ADEMEfunded CASSANDRE research program analyzes and processes these observations to study the vulnerability of inhabitants to heat waves and more generally to summer heat stress

Insérer un texte d'exemple

Obtenir des annotations

Options

Mot entier seulement Correspondance uniquement avec le plus long
 Inclure les mappings Exclure les chiffres Exclure les synonymes
 Select ontologies

 Sélection avancée des ontologies
 Afficher les options avancées

Annotations

Résultats totaux 31 (direct: 31 / parents: 0)

Classe	Ontologie	Contexte
ontologies/SWEET/classes/http...	SWEET Ontology	... urban h eat island UHI in Echirrolles ...
ontologies/GCMD/classes/https...	GCMD Keywords	... urban h eat island UHI in to h eat waves and more summer h eat stress ...

Allez à

- > Constraint
- > Instrument
 - > Electric log probes
 - > Gravimeter
 - > Model
 - Multiparameter geophysical probe
 - > Soil deformation sensor
 - > Soil moisture sensor
- > Method
- > Phenomenon
 - > Biological phenomenon
 - Erosion**
 - > Fluid flow

Détails Visualisation Notes (0) Alignements (11)

[Create New Mapping](#)

Mapping vers	Ontologie	Relations	Source	Type	Actions
erosion >	SWEET		LOOM	Internal	
21285	http://vocabs.lter-europe.net/EnvThes		SKOS:EXACT_MATCH	External	
Erosion >	EASYDATA_KW		LOOM	Internal	



EaSy Data : National data repository for long-tail data relating to the Earth and the Environment

- Geonetwork to store metadata (catalog) + ad-hoc application layer (deposit, search)
- based on ISO 19115 Metadata standard

Community controlled vocabularies used to fill some metadata elements

- 3 internal vocabularies defined for EaSy Data
- Some external vocabularies : licenses, ROR, Geonames, ...

Name	Notation	Description	Types	Status
Infrastructures de Recherche et composantes	InfraRecherche	liste des IRs et de leur composantes en fonction de la feuil...	Container , Register , concept scheme	experimental
Vocabulaire des mots clefs	motsClefs	Vocabulaire des mots clefs pour l'entrepôt Data Terra	Container , concept scheme , Ontology , Register	experimental
Vocabulaire thématique	Voc_thematique	Vocabulaire des thématiques pour	Register , concept scheme ,	experimental

Statement

- Incomplete vocabularies that do not reflect the complex diversity of data deposited in EaSy Data
-> need to use others vocabularies : Theia/Ozcar, Actris, ...
- Improve the interoperability of services offered by EaSy Data
 - Deposit, Search & Harvesting

The screenshot displays two web interfaces for vocabularies. The top interface is the 'Theia/OZCAR thesaurus' in English. It features a navigation menu with 'Liste', 'Hiérarchie', and 'Groupes'. A list of terms is shown, including 'Aboveground', 'Aboveground dry vegetation biomass', 'Aboveground herbaceous plant mass', 'Absolute humidity', 'Absorbance', 'Absorbed radiation', 'Abundance', 'Accumulation', 'Accumulation since last measurement', 'Accumulation since last raingauge bucket tip', 'Accumulation since the beginning of the year', 'Acetochlor', 'Acclonifen', 'Acoustic investigation variable', 'Acoustic velocity', 'Acoustic wave', 'Actinothermal index', 'Actual evapotranspiration', 'Actual evapotranspiration of peatland', and 'Adsorption coefficient'. The 'Description du vocabulaire' section provides the title 'Theia/OZCAR thesaurus', a description as a 'Thesaurus for in situ data from Environmental and Critical Zone Sciences', and lists creators: Charly Coussot, Véronique Chaffard, Isabelle Braud, and Sylvie Galle, each with an ORCID link.

The bottom interface is the 'ACTRIS Vocabulary' page. It includes a search bar and a 'Vocabulary information' section. The title is 'ACTRIS Vocabulary' and the description is 'Controlled vocabulary of terms used in ACTRIS'. The creator is listed as 'https://orcid.org/0000-0002-3380-3470'. The contributor list includes multiple ORCID links: 'https://orcid.org/0000-0001-5158-8703', 'https://orcid.org/0000-0001-8301-1319', 'https://orcid.org/0000-0001-9834-5100', 'https://orcid.org/0000-0002-8712-4262', 'https://orcid.org/0000-0002-8981-0805', 'https://orcid.org/0000-0003-2972-2851', and 'https://orcid.org/0000-0003-4157-0838'. The license is 'https://creativecommons.org/publicdomain/zero/1.0/' and the type is 'http://www.w3.org/2004/02/skos/core#ConceptScheme'. The URI is 'https://vocabulary.actris.nilu.no/actris_vocab/'.

=> Connecting EaSy Data with the EarthPortal

Deposit Use case : Harvest vocabularies directly from the Earth Portal's existing REST API

EaSy Data
Earth System Data Repository

Rechercher [] Tout []

Tous les dépôts / test depot vocab thematique / INTERSEISMIC AND LONG-TERM DEFORMATION OF SOUTHEASTERN SICILY DRIVEN BY THE IONIAN SLAB ROLL-BA ... /

Modifier le jeu de données

Langue utilisée / Language * [Français]

Informations générales / General informations

Titre / Title * [INTERSEISMIC AND LONG-TERM DEFORMATION OF SOUTHEASTERN SICILY DRIVEN]

Résumé / Abstract *

1. abstract selection

New satellite geodetic data challenge our knowledge of the deformation mechanisms driving the active deformations affecting Southeastern Sicily. The PS-InSAR measurements evidence a generalized subsidence and an eastward tilting of the Hyblean Plateau combined with a local relative uplift along its eastern coast. To find a mechanical explanation for the present-day strain field, we investigate short and large-scale surface-to-crustal deformation processes. Geological and geophysical data suggest that the southward migration of the Calabrian subduction could be the causative geodynamic process

Dépôt / Repository * [test depot vocab thematique]

Thématiques / Thematics * [atmosphère]

Mots-clés / Keywords * [Précipitations]

EarthPortal Parcourir Alignements Recommandeur Annotateur Paysage Rechercher une ontologie [] Connexion

Soumettre une ontologie []

Commencez à taper pour filtrer les ontologies, par ex., AGROVOC. Tous les format Trier

Affichage de 40 sur 40 (0.27s)

Theia-OZCAR Thesaurus (TOZ)
Thesaurus for in situ data from Environmental and Critical Zone Sciences. Used by Theia/OZCAR information system : https://in-situ.theia-land.fr/ Score FAIR [] 210.0 Détails FAIR ...
Soumis about 1 month ago par Guillaume alviset 8 mai 2024 SKOS

Vocabulaire des mots clefs (EASYDATA_KW)
Vocabulaire des mots clefs pour l'entrepôt Data Terra , Vocabulaire des mots clefs pour l'entrepôt Data Terra Score FAIR [] 215.0 Détails FAIR ...
Soumis 3 months ago par Hélène bressan 2024 SKOS

SeaDataNet Device Thesaurus (SDNDEV)
A thesarus comprising categorisations of devices (sensors, instrument packages and sample collectors) developed by SeaDataNet mapped to ... + Afficher plus ... Score FAIR [] 236.0 Détails FAIR ...
Soumis 8 months ago par Gwenaelle moncoiffe 2023 SKOS

SWEET Ontology (SWEET)
The semantic web for Earth and environmental terminology (SWEET) is an investigation in improving discovery and use of Earth science data,... + Afficher plus ... Score FAIR [] 229.0 Détails FAIR ...
Soumis 3 months ago par Esi semantic team 2024 OWL

Groupes: AERIS 4, OGC 2, EPOS 0, ESIP 1, THEIA 1, W3C 2, BODC 1, ODATIS 6, BRGM 2, DATA_TERRA 6, ACTRIS 2, FORMATER 7

Langues naturelles []

Niveaux de formalité []

Types d'ontologies []

EaSy Data Earth System Data Repository

Rechercher Tout

Tous les dépôts / test depot vocab thematique / INTERSEISMIC AND LONG-TERM DEFORMATION OF SOUTHEASTERN SICILY DRIVEN BY THE IONIAN SLAB ROLL-BA ... /

Modifier le jeu de données

Langue utilisée / Language * Français

Informations générales / General informations

Titre / Title * INTERSEISMIC AND LONG-TERM DEFORMATION OF SOUTHEASTERN SICILY DRIVEN

Résumé / Abstract *
 New satellite geodetic data challenge our knowledge of the deformation mechanisms driving the active deformations affecting Southeastern Sicily. The PS-InSAR measurements evidence a generalized subsidence and an eastward tilting of the Hyblean Plateau combined with a local relative uplift along its eastern coast. To find a mechanical explanation for the present-day strain field, we investigate short and large-scale surface-to-crustal deformation processes. Geological and geophysical data suggest that the southward migration of the Calabrian subduction could be the causative geodynamical process

Dépôt / Repository * test depot vocab thematique

Thématiques / Thematics *
 registre des thématiques
 atmosphère

Mots-clés / Keywords *
 registre des mots-clés
 Précipitations

1. abstract selection

2. Keywords suggestion

EarthPortal

Deposit Use case :
 Use the EarthPortal annotation service

Modifier le jeu de données

Langue utilisée / Language *

Informations générales / General informations

Titre / Title *

INTERSEISMIC AND LONG-T

Résumé / Abstract *

New satellite geodetic data mechanisms driving the act InSAR measurements eviden of the Hyblean Plateau com coast. To find a mechanical investigate short and large-s Geological and geophysical Calabrian subduction could

Dépôt / Repository *

test depot vocab thematique

Thématiques / Thematics *

Registre des thématiques

atmosphère

Thématique choisi dans ce

Thématique importé du dépôt "test depot vocab thematique"

Mots-clés / Keywords *

Registre des mots-clés

2. Keywords suggestion

Précipitations

Mot-clé choisi dans ce formulaire

Mot-clé importé du dépôt "test depot vocab thematique"

3. Additional Keywords are proposed

Les propositions sont issues des vocabulaires disponibles dans le EarthPortal

Affichage 1-5 de 5 résultats

IDENTIFIANT	LIBELLÉ	THESAURUS D'ORIGINE
<input type="checkbox"/> https://terra-vocabulary.org/ncl/DataTerraRepositoryFairIncubator/motsClefs/c_a729a8f8	Données	EASYDATA_KW
<input type="checkbox"/> https://vocabulary.actris.nilu.no/actris_vocab/local	local	ACTRIS_VOCAB
<input type="checkbox"/> https://vocab.aeris-data.fr/project/42643d18-d58a-43d0-8d56-9f10b0c2a957	SCALE	AER_PJT
<input type="checkbox"/> https://vocabulary.actris.nilu.no/actris_vocab/surface	surface	ACTRIS_VOCAB
<input type="checkbox"/> https://terra-vocabulary.org/ncl/DataTerraRepositoryFairIncubator/motsClefs/c_843c85e0	Subduction	EASYDATA_KW

Annuler

Enregistrer

Étendue temporelle / Time extent *

Début / Beginning *

Fin / Ending *

Deposit Use Case :
Use semantic artefacts available in EarthPortal to suggest new keywords

Modifier le jeu de données

Langue utilisée / *Language* *

Informations générales / *General informations*

Titre / *Title* *

INTERSEISMIC AND LONG-T

Résumé / *Abstract* *

New satellite geodetic data mechanisms driving the acti
InSAR measurements eviden
of the Hyblean Plateau com
coast. To find a mechanical
investigate short and large-s
Geological and geophysical
Calabrian subduction could

Dépôt / *Repository* *

test depot vocab thematique

Thématiques / *Thematics* *

Registre des thématiques

atmosphère

Thématique choisi dans ce

Thématique importé du dépôt "test depot vocab thematique"

Mots-clés / *Keywords* *

Registre des mots-clés

Suggestion de mots-clés additionnels

EarthPortal

Précipitations

Mot-clé choisi dans ce formulaire

Mot-clé importé du dépôt "test depot vocab thematique"

Mots-clés additionnels

Les propositions sont issues des vocabulaires disponibles dans le EarthPortal

Affichage 1-5 de 5 résultats

IDENTIFIANT	LIBELLÉ	THESAURUS D'ORIGINE
<input type="checkbox"/> https://terra-vocabulary.org/ncl/DataTerraRepositoryFairIncubator/motsClefs/c_a729a8f8	Données	EASYDATA_KW
<input type="checkbox"/> https://vocabulary.actris.nilu.no/actris_vocab/local	local	ACTRIS_VOCAB
<input type="checkbox"/> https://vocab.aeris-data.fr/project/42643d18-d58a47	SCALE	AER PIT
<input checked="" type="checkbox"/> https://vocabulary.actris.nilu.no/actris_vocab/surface	surface	ACTRIS_VOCAB
<input checked="" type="checkbox"/> https://terra-vocabulary.org/ncl/DataTerraRepositoryFairIncubator/motsClefs/c_843c85e0	Subduction	EASYDATA_KW

4. Additional Keywords are selected by the user

Annuler

3

Enregistrer

Étendue temporelle / *Time extent* *

Début / *Beginning* *

Fin / *Ending* *

Deposit Use Case :
Selection of
keywords of interest

EaSy Data Earth System Data Repository

Rechercher

Tout

Rechercher

Tous les dépôts / test depot vocab thematique / INTERSEISMIC AND LONG-TERM DEFORMATION OF SOUTHEASTERN SICILY DRIVEN BY THE IONIAN SLAB ROLL-BA ... / Modification

Modifier le jeu de données

Langue utilisée / Language * Français

Informations générales / General informations

Titre / Title *
Résumé / Abstract *

INTERSEISMIC AND LONG-TERM DEFORMATION OF SOUTHEASTERN SICILY DRIVEN

New satellite geodetic data challenge our knowledge of the deformation mechanisms driving the active deformations affecting Southeastern Sicily. The PS-InSAR measurements evidence a generalized subsidence and an eastward tilting of the Hyblean Plateau combined with a local relative uplift along its eastern coast. To find a mechanical explanation for the present-day strain field, we investigate short and large-scale surface-to-crustal deformation processes. Geological and geophysical data suggest that the southward migration of the Calabrian subduction could be the causative geodynamic process

Dépôt / Repository *
test depot vocab thematique

Thématiques / Thematics *
Registre des thématiques

atmosphère

Thématique choisi dans ce formulaire
Thématique importé du dépôt "test depot vocab thematique"

Mots-clés / Keywords *
Registre des mots-clés

Précipitations surface Subduction

Mot-clé choisi dans ce formulaire
Mot-clé importé du dépôt "test depot vocab thematique"

Suggestion de mots-clés additionnels
EarthPortal

Informations spatio-temporell

Emprises / Extents *
Emprise / Extent *

+ Ajouter une emprise

Type de représentation spatiale / Spatial resolution type

Étendue temporelle / Time extent *

Début / Beginning *
Fin / Ending *

5. Additional Keywords are added in the metadata element

Deposit Use Case :
Insertion of
additional keywords

Next steps :

- Search : Use the mapping found in the EarthPortal to propose a smart research
- Harvesting : Annotate free text metadata elements from harvested repositories with URIs from vocabularies

Vocabulaire des mots clefs (EASYDATA_KW) SKOS No license

Last submission date September 9, 2024

Summary **Concepts** Properties Schemes Collections Notes Mappings Widgets Sparql All languages

Jump to Filter

- Meteorological station
- Methane
- Methane flux
- Methyl chloroform
- Metobromuron
- Metolachlor
- Metoxuron
- Models**
 - geological models
 - Molybdenum
 - Monolinuron
 - Multiparameter geophisic probe
 - Neodymium
 - Neodymium-143 and neodymium-144 isotope ratio of karst water
 - Neon

Details Visualization Notes (0) **Mappings (0)**

Create New Mapping

Mapping to	Ontology	Relations	Source	Type	Actions
0a184cdc-c074-4946-90a6-02f03c686341	https://gcmd.earthdata.nasa.gov/kms/concept		SKOS:EXACT_MATCH	External	
Models >	TERRA_VOCABS_ESS		LOOM	Internal	
c_7a7c3098	https://w3id.org/ozcar-theia		SKOS:RELATED_MATH	External	
https://terra-vocabulary.org/	https://terra-vocabulary.org/ncl/AER_PFM		SAME_AS_LOOM	Internal	
Models >					
c_b516087f10	https://terra-vocabulary.org/ncl/DataTerraRepositoryFairncubator/motsClefs		SKOS:NARROW_MATCH	External	

DATA TERRA



Thanks for your attention!

Do you have any questions ?



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support@earthportal.eu

christelle.pierkot@data-terra.org

Use of semantic artefacts, via DataCite and HAL, about PerSCIDO

French National Roadshow FAIR-IMPACT

Fabrice JOUANOT & Nacira ABBAS - CNRS, LIG - Grenoble Alpes University

Contact: Fabrice.Jouanot@univ-grenoble-alpes.fr



PerSCiDO: Principles and functionalities of an open and interoperable platform for dataset sharing

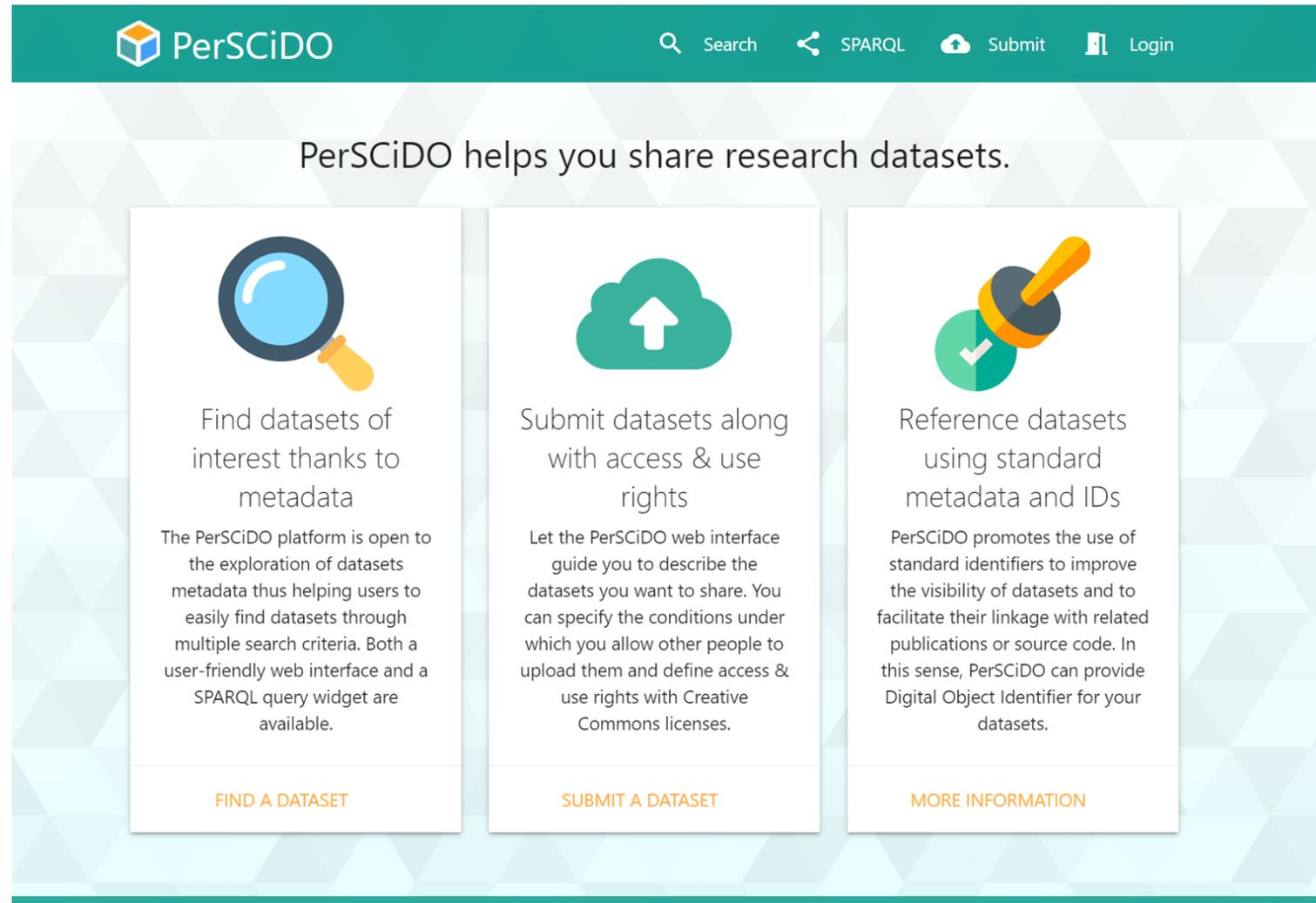
<https://persyval-platform.univ-grenoble-alpes.fr/>

- Encouraging best practices
 - ✓ Encourage researchers to reference their datasets in a French platform using rich metadata
 - ✓ Encourage researchers to anticipate the desired citation for their dataset
 - ✓ Encourage researchers to specify the usage rights of their data sets through a Creative Commons license
- Using an Ontology as semantic artefacts for metadata
- Providing research capabilities with full metadata support (SPARQL)

PerSCIDO Ontology

- Follow the standards of Linked Open Data
 - ✓ in terms of data model (RDF)
 - ✓ as well as specialized metadata vocabularies such as Dublin Core, Friend Of a Friend, Creative Commons, Radar, etc.
- With predefined values to avoid free text input as much as possible for metadata values
- And Evolve to match with Fair Data Object (FDO) Specification (PID + metadata)
 - ✓ **Referencing datasets using persistent identifiers (PID):** A DOI (Digital Object Identifier), advocated by DataCite => Agreement signed with INIST (DataCite)
 - ✓ Updating and enriching Ontology (DataCite metadata, HAL Ontology)

Perscido Demo



The screenshot shows the PerSCiDO website interface. At the top is a green navigation bar with the PerSCiDO logo on the left and search, SPARQL, submit, and login icons on the right. Below the navigation bar is a main heading: "PerSCiDO helps you share research datasets." Underneath this heading are three white cards, each with an icon, a title, a descriptive paragraph, and a call-to-action button at the bottom.

 PerSCiDO

 Search  SPARQL  Submit  Login

PerSCiDO helps you share research datasets.



Find datasets of interest thanks to metadata

The PerSCiDO platform is open to the exploration of datasets metadata thus helping users to easily find datasets through multiple search criteria. Both a user-friendly web interface and a SPARQL query widget are available.

[FIND A DATASET](#)



Submit datasets along with access & use rights

Let the PerSCiDO web interface guide you to describe the datasets you want to share. You can specify the conditions under which you allow other people to upload them and define access & use rights with Creative Commons licenses.

[SUBMIT A DATASET](#)

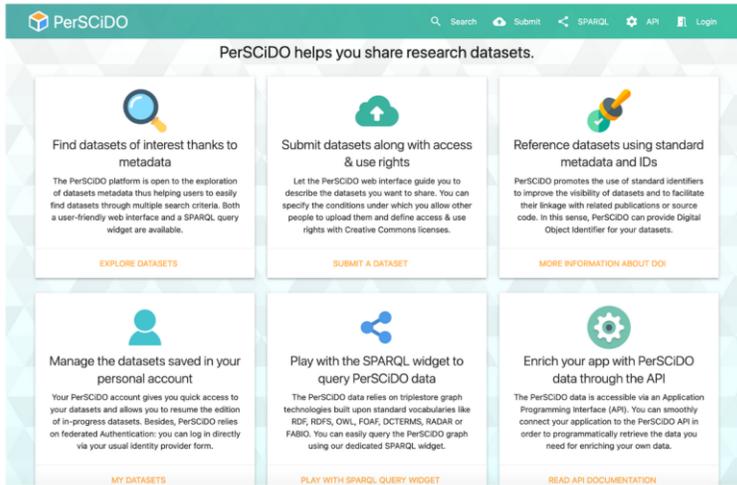


Reference datasets using standard metadata and IDs

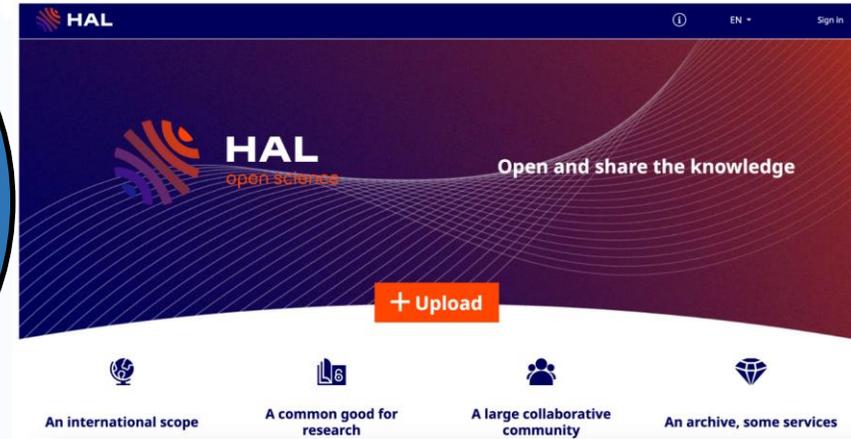
PerSCiDO promotes the use of standard identifiers to improve the visibility of datasets and to facilitate their linkage with related publications or source code. In this sense, PerSCiDO can provide Digital Object Identifier for your datasets.

[MORE INFORMATION](#)

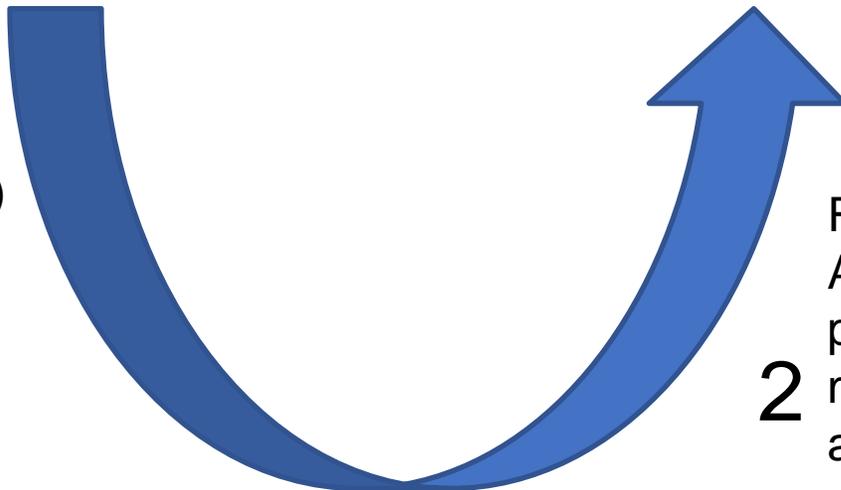
Interoperability Scenario: HAL



3 NOTIFY
The COAR Protocol for utilizing W3C Linked Data Notifications



1 FDO (atomic Entity for a Fair Ecosystem)



2 RO-CRATE
A lightweight approach for packaging research data with metadata on schema.org annotations in JSON-LD



Apply CAT to Perscido



CAT
EOSC Compliance
Assessment Toolkit

 **FAIRCORE4EOSC**

Enabling a FAIR EOSC ecosystem

The **Compliance Assessment Toolkit** will support the EOSC PID policy by providing:



Vocabulary
Services



API
Services



User
Interfaces

Thanks for your attention!

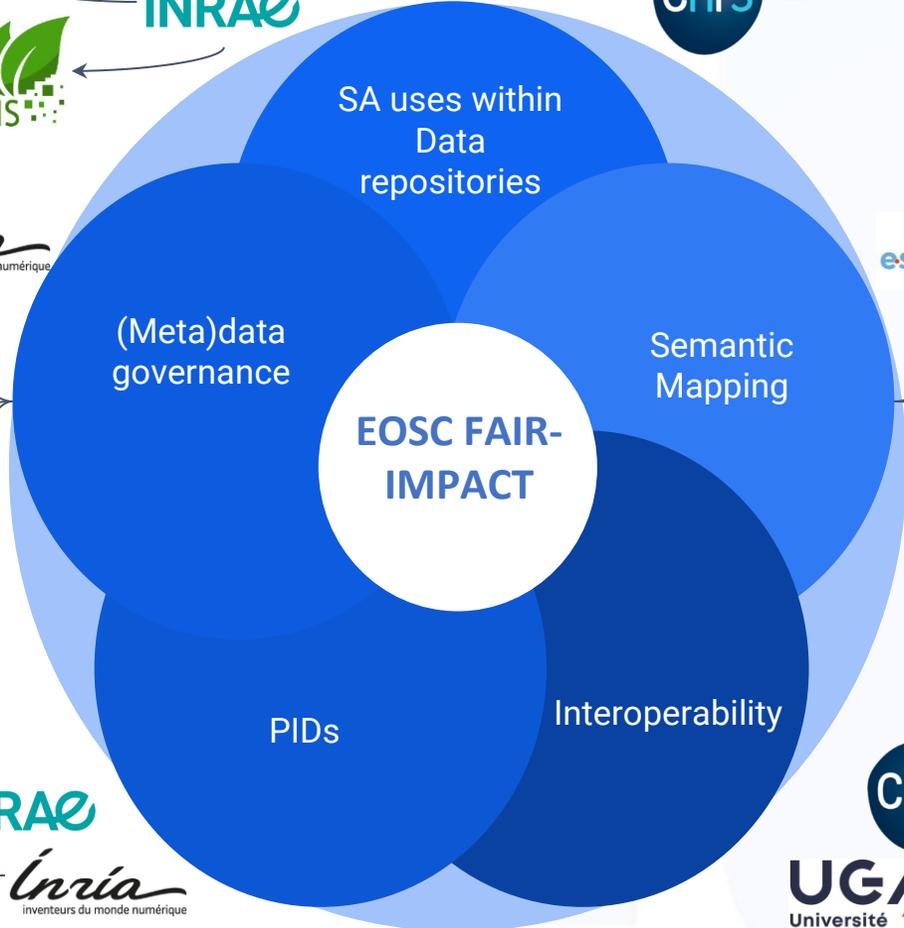
Do you have any questions ?



@fairimpact_eu /company/fair-impact-eu-project



[Assessing FAIRness for Earth and Environmental Data. Use case by Dataterra and PANGAEA](#)



[Semantic artefact governance models and disciplinary approaches for inclusion within EOSC](#)

[Guidelines for recommended metadata standard for research software within EOSC](#)

[Metrics for automated FAIR software assessment in a disciplinary context](#)



Guidelines and methodology to create, document and share mappings and crosswalks - *To come*

[Workshop serie](#)

[Providing a recommendations document on PIDs usages](#)



[Referencing software source code artifacts: identifiers for digital object](#)



[Core metadata schema for legal interoperability](#)

[Specification of shared metadata description of semantic artefacts and their catalogues including common reference API](#)

To be continued ...

 **French National
Tripartite Event**
Paris, 12-13/09/2024



Inria



Institut Henri Poincaré, 11 Rue Pierre et Marie Curie, 75005 Paris

Merci aux organisateurs de l'évènement Tripartite EOSC France pour la communication sur leurs réseaux.



Sara Pittonet Gaiarin
Rita Meneses
Julie arteza



Ingrid Dillo - *Project Coordinator*



Volker Beckmann - *Program manager for EOSC*

Speakers

Clement Jonquet

Nina Grau

Salomé Landel

Dimitri Szabo



Llorenç Cabrera-Bosquet

Christelle Pierkot

Guillaume Alvisset

Fabrice Jouanot

Nacira Abbas

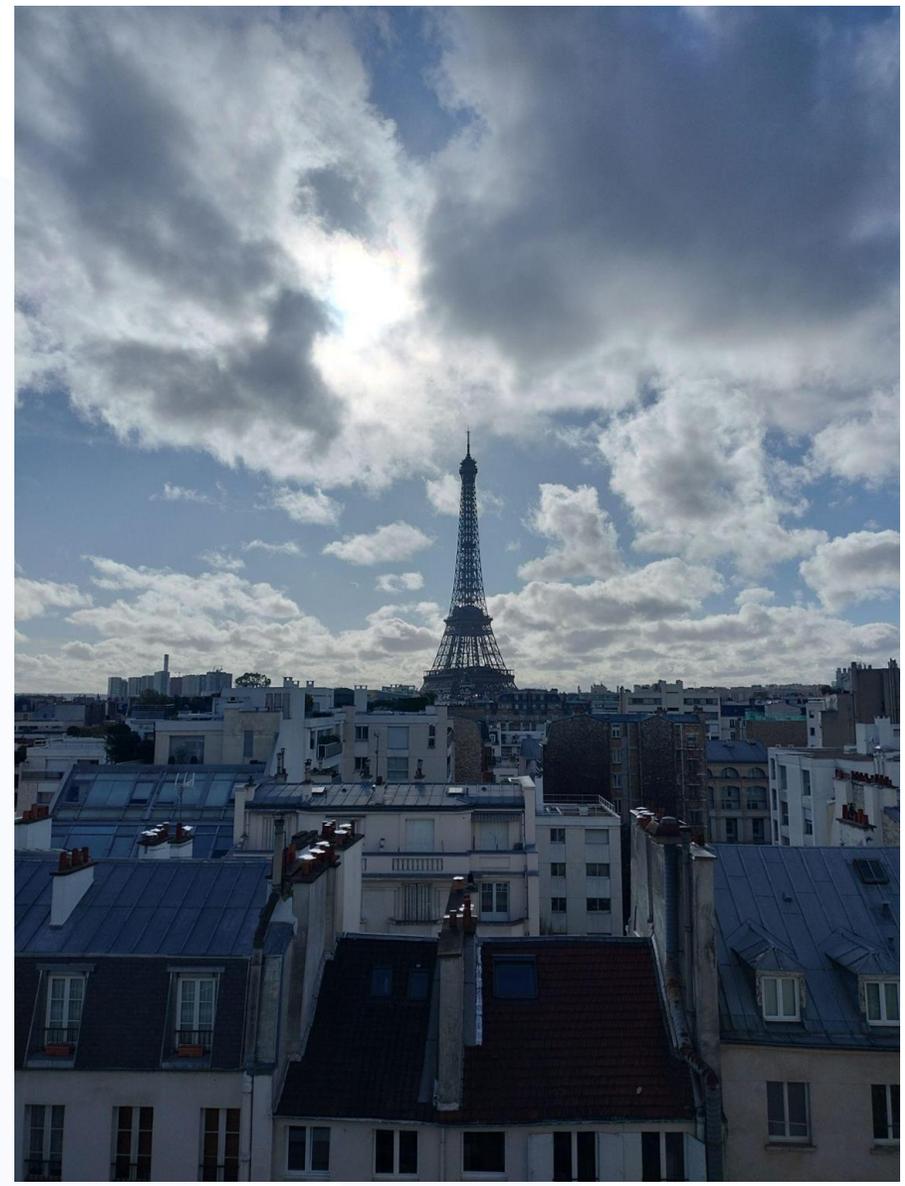


INRAE headquarters center for the reception

Cocktail and talk time !



Take the elevators or stairs up to the 8th floor
-> at the end of the corridor



Thank you for your attention
Slides on zenodo coming soon

eosc | FAIR-IMPACT



@fairimpact_eu /company/fair-impact-eu-project



Funded by
the European Union