

Ontology Repositories with the **OntoPortal** Technology & a deeper look into **AgroPortal**



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Info about this presentation

- ISWC 2023, Athens, Greece
→ November 9th 2023



- Vocabulary Symposium 2023
→ November 15th 2023



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Ontology Repositories and Semantic Artefact Catalogues with the OntoPortal Technology

Conference paper | Open Access | First Online: 27 October 2023

pp 38–58 | [Cite this conference paper](#)

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Part of the book series: [Lecture Notes in Computer Science](#) ((LNCS, volume 14266))

Included in the following conference series:
[International Semantic Web Conference](#)

1381 Accesses 3 Citations

Overview



A word on the funding **projects and context**



A few elements on **ontology repositories**



OntoPortal Alliance dedicated to promoting semantic services



A deeper look into **AgroPortal**



ANR Project D2KAB: Data to Knowledge in Agronomy and Biodiversity (2019-2024)



*Create a framework to **turn agronomy and biodiversity data into knowledge –semantically described, interoperable, actionable, open–** and investigate scientific methods and tools to exploit this knowledge for applications in science & agriculture*

- How: Ontologies & Linked Open Data
 - 1 work-package on building and harnessing **knowledge graphs**
 - 2 work-packages of **driving ag & biodiv projects** (food packaging, agro-agri linked data, wheat phenotype, ecosystems & plant biogeography)





FAIR-IMPACT
Expanding FAIR solutions across EOSC



WP4

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

WP4 Metadata and Ontologies

*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.*

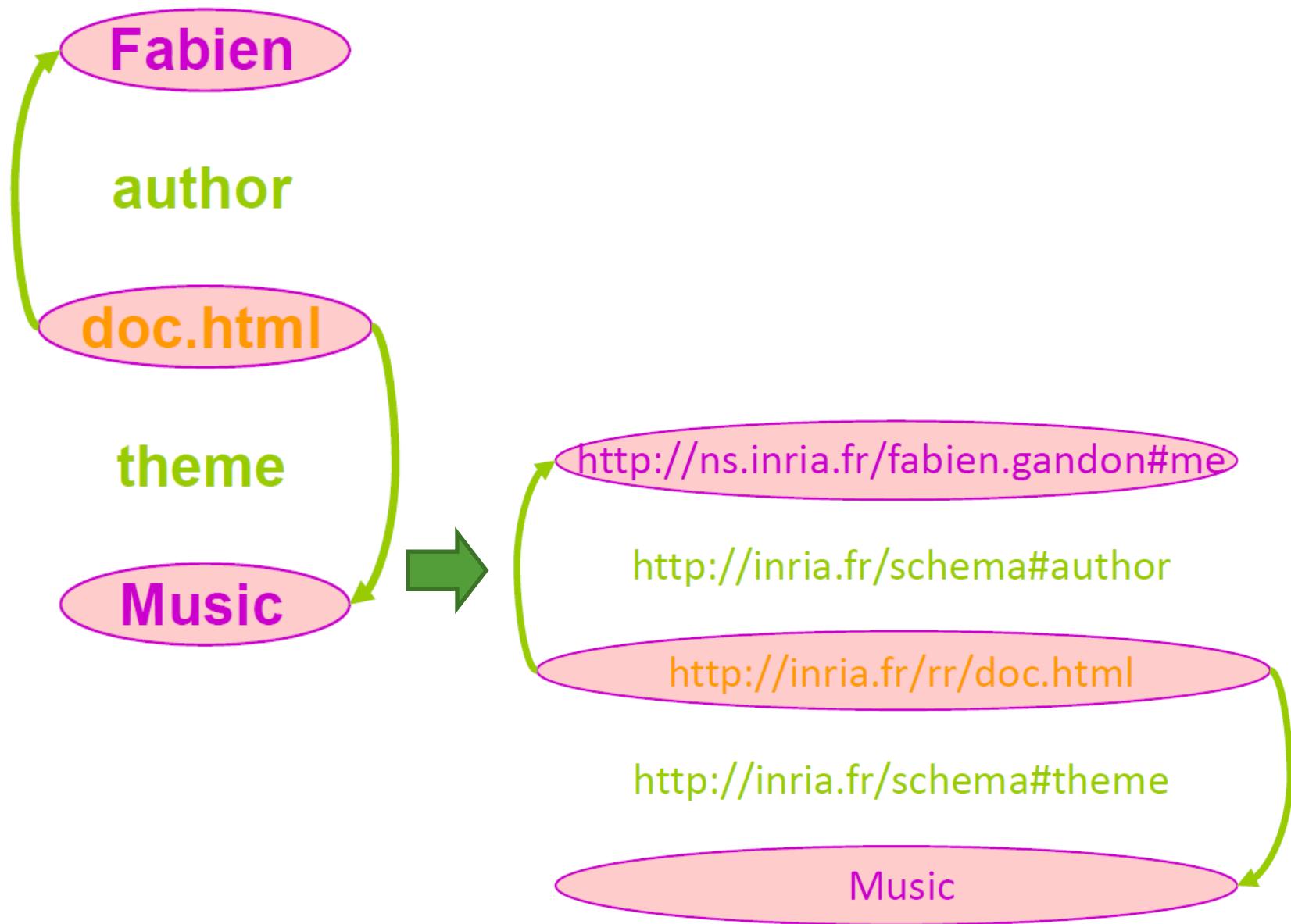


Funded by
the European Union

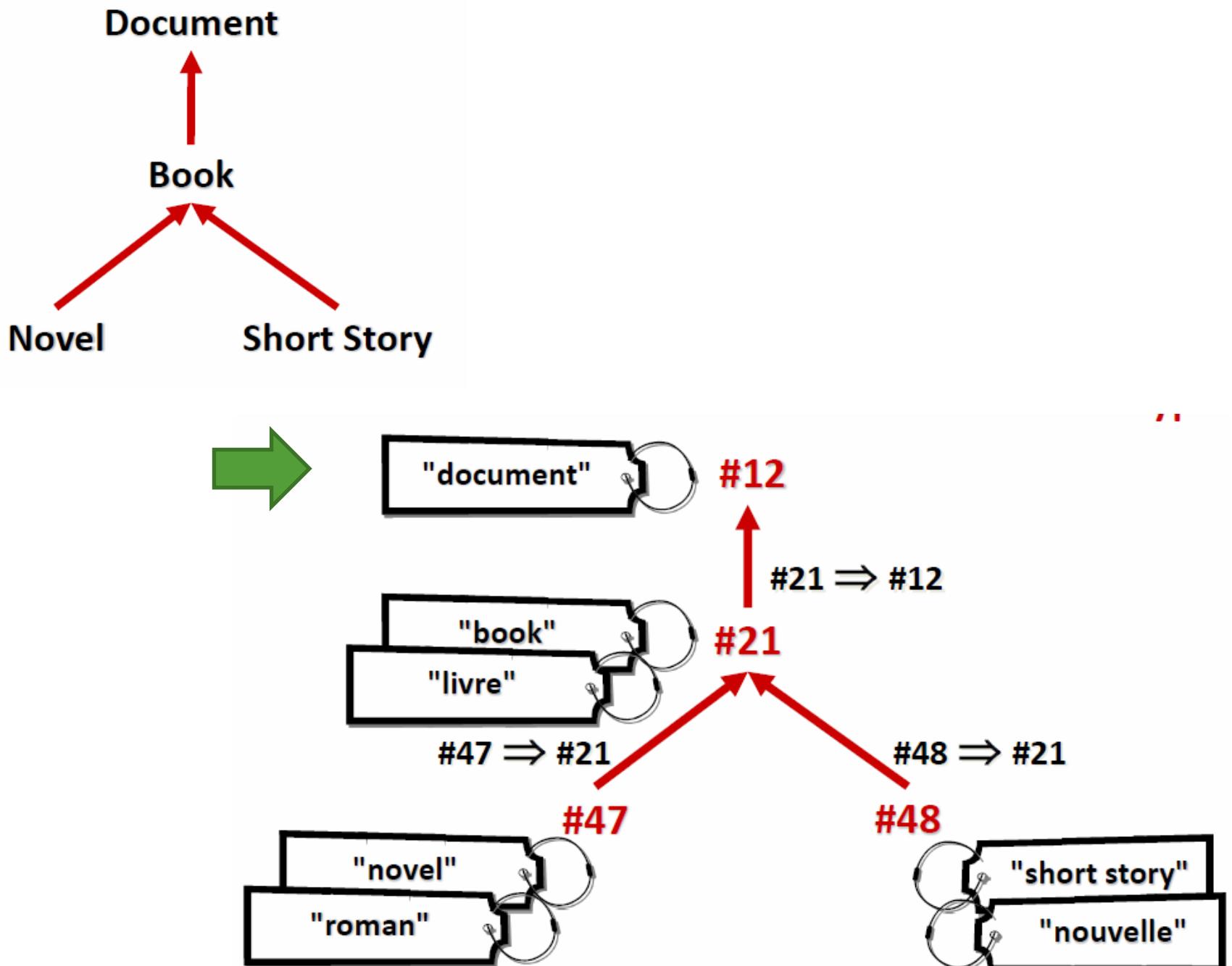


A few elements on ontology repositories

The Semantic Web relies on RDF

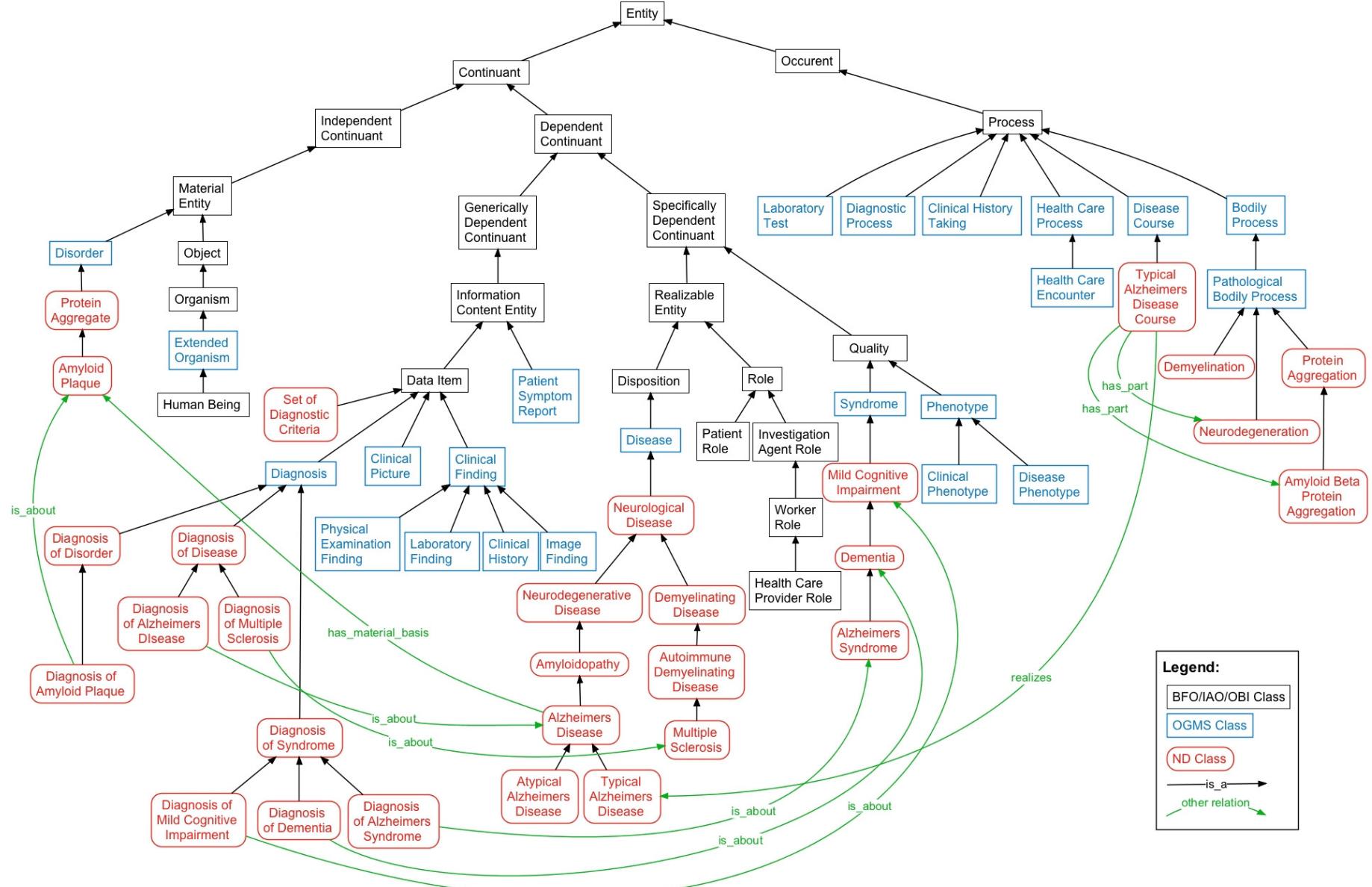


Ontologies (small)



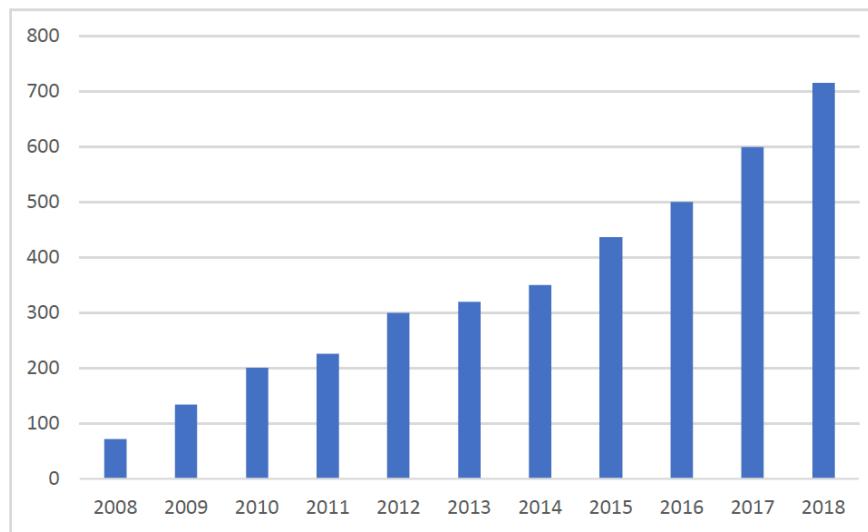
Credit: F. Gandon (Inria)

Ontologies (big)

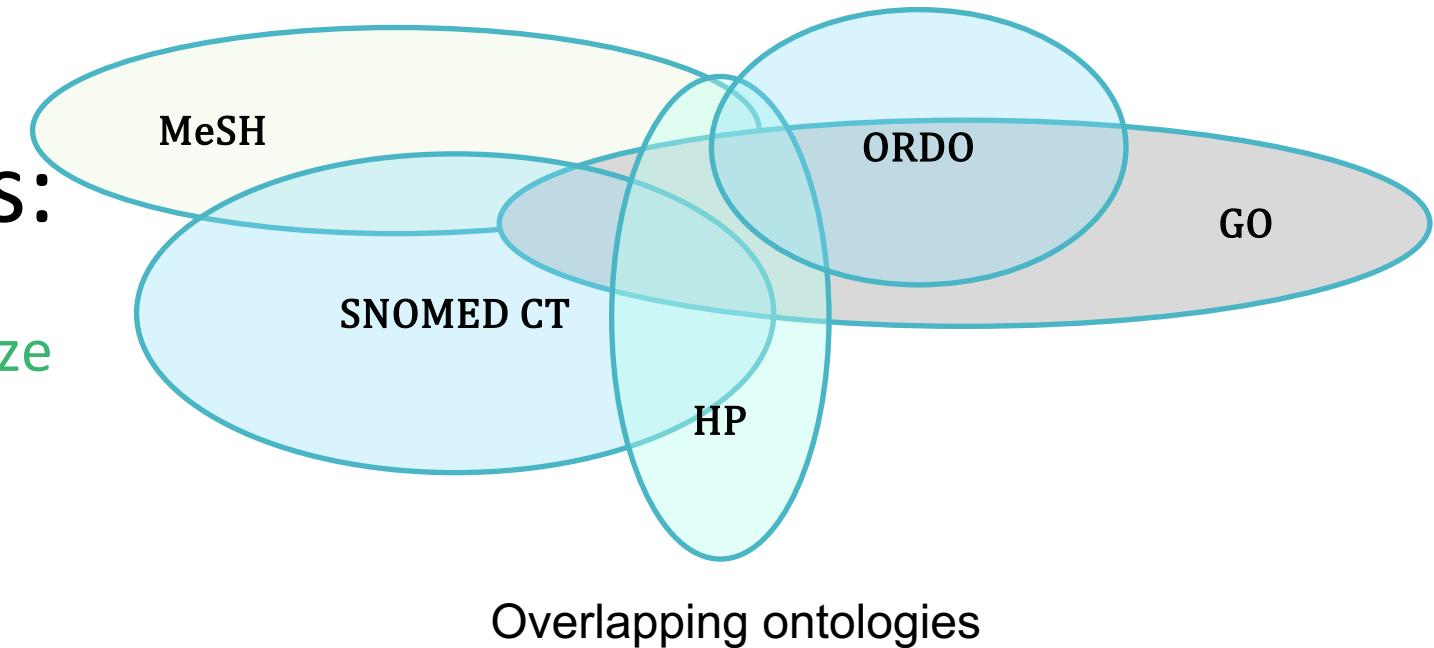


Issues with ontologies:

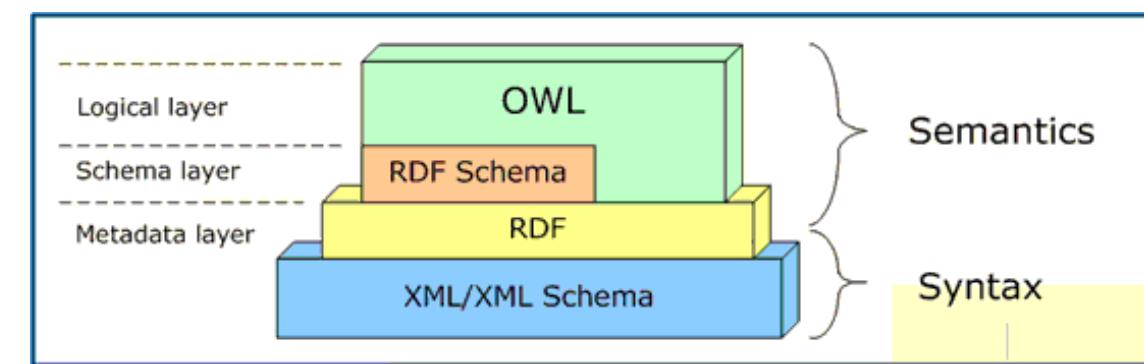
- spread out,
- in different formats, of different size
- with different structures
- increasing number
- overlapping



Number of ontologies in the NCBO BioPortal



Overlapping ontologies



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

Home
General Usage
Search
Annotator
Recommender
Resource Index
Batch
Ontology Analytics
Resources

Media Types and Hypermedia Links | <http://bioontology.org> | you would like examples in another language?

General Usage

This is a documentation of our services: Catalogues, Classes, etc and related services: 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 whilst 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 codes, available in Java, Python, Ruby and other languages (please email us).

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: <ol style="list-style-type: none">1. Using the <code>apikey</code> query string parameter2. Providing an <code>Authorization</code> header: <code>Authorization: apikey tokenyourapikey</code> (replace <code>tokenyourapikey</code> with your actual key)3. When you first log in to Bio2RDF, Bio2RDF will store 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 cookie.

Summary Classes Properties Instances Notes Mappings Widgets Sparql

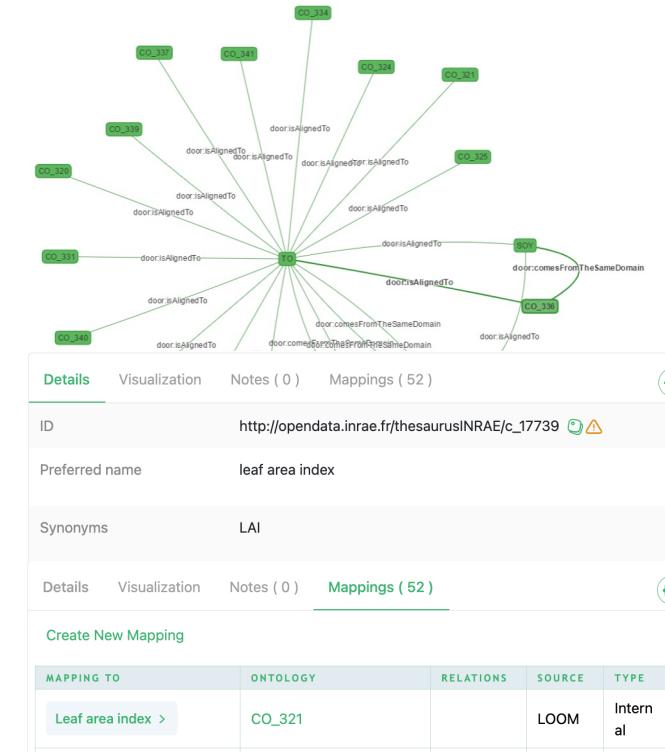
Query × +

```
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 ?E ?sub ?obj WHERE {
4   ?sub rdfs:label ?obj .
5 } LIMIT 10
```

Table Response 10 results in 11.534 seconds

sub	obj
1 < http://purl.obolibrary.org/obo/RO_0002336 >	positively regulated by
2 < http://purl.obolibrary.org/obo/AGRO_00002011 >	bubbler irrigation process
3 < http://purl.obolibrary.org/obo/CHEBI_15022 >	"electron donor"^^< http://www.w3.org/2001/XMLSchema#string >
4 < http://purl.obolibrary.org/obo/ENVO_00010183 >	arid biome
5 < http://purl.obolibrary.org/obo/CHEBI_29036 >	"copper(2+)"^^< http://www.w3.org/2001/XMLSchema#string >
6 < http://purl.obolibrary.org/obo/AGRO_00000409 >	automatic irrigation

Simple view Ellipse Filter query results Page size: 50 ↻



AgroPortal Browse Mappings Recommender Annotator Landscape Search in AgroPortal Login EN Support

ontologies > INRAETHES

INRAE Thesaurus (INRAETHES) (695) View license ⓘ

Last submission date March 17, 2021

Summary Concepts Properties Schemes Collections Notes Mappings Widgets Sparql

General information

Abstract

INRAE Thesaurus contains more than 16,000 concepts relevant to Agriculture, Food and the Environment. Concepts are described with terms in French (100%) and English (81%) terms, some having textual definitions and mappings to other semantic...

See more

Description

INRAE Thesaurus is the open and shared thesaurus covering INRAE's research fields. It serves as a controlled vocabulary within the institute for indexing and annotating documents, web pages, descriptions of activities, datasets, etc. for research or...

Export all metadata

FAIR score ⓘ

Total score : 292.0 (61.0%)

Score	Obtained score	Not obtained score
Findable	100	100
Accessible	100	100
Interoperable	100	100
Reusable	100	100

See details ⓘ

Ontology relations network ⓘ

Filter network ⓘ

Views of INRAETHES +

No views available for INRAETHES.

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.

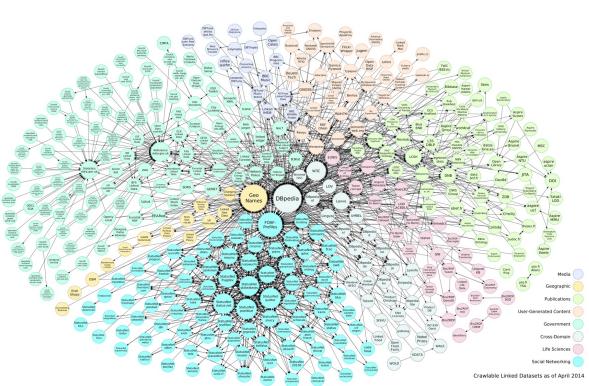
The screenshot shows the BioPortal homepage. At the top, there's a navigation bar with 'Login', 'Tools', and 'Support' buttons. Below the header, a main message reads: 'Welcome to BioPortal, the world's most comprehensive repository of biomedical ontologies'. There are two search boxes: one for 'Search for a class' containing 'Enter a class, e.g. Melanoma' and another for 'Find an ontology' with the placeholder 'Start entering ontology name, e.g. Cancer, then choose from list'. To the right is a 'BioPortal Statistics' section with a table:

Ontologies	596
Classes	8,173,420
Resources Indexed	48
Indexed Records	39,537,360
Direct Annotations	95,468,433,792
Direct Plus Expanded Annotations	144,789,582,932

Below the stats is a chart titled 'Ontology Visits (July 2017)' showing the number of visits for various ontologies: CPT, RXNORM, MEDDRA, SNOMEDCT, and NDDF. The chart has a Y-axis from 0 to 85,000 and an X-axis from 0 to 85,000. A 'More' link is at the bottom of the chart area. At the bottom of the page, there are sections for 'PRODUCTS', 'SUPPORT', 'ABOUT', and 'CONNECT' with social media links.



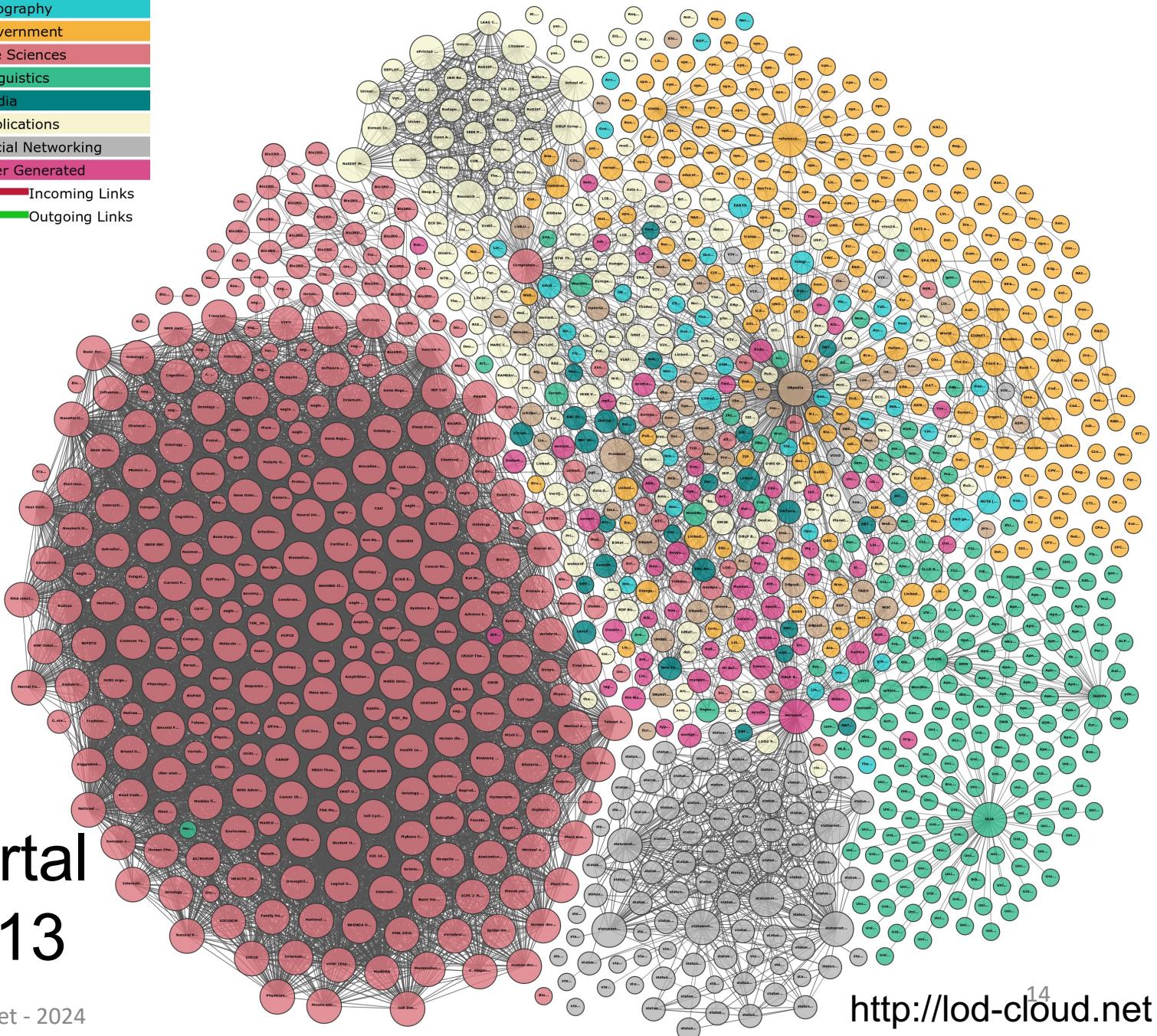
THE NATIONAL CENTER FOR
BIOMEDICAL ONTOLOGY



Legend

- Cross Domain
- Geography
- Government
- Life Sciences
- Linguistics
- Media
- Publications
- Social Networking
- User Generated

Incoming Links Outgoing Links

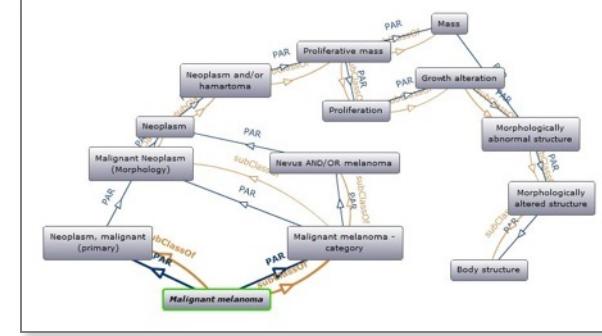


NCBO BioPortal data as of 2013

<http://bioportal.bioontology.org>

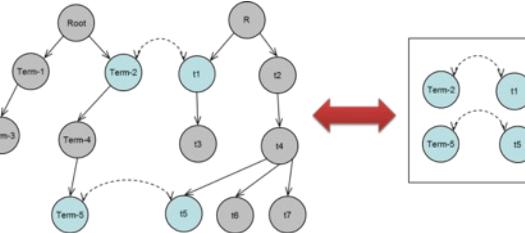
Ontology Services

- Search
- Traverse
- Comment
- Download



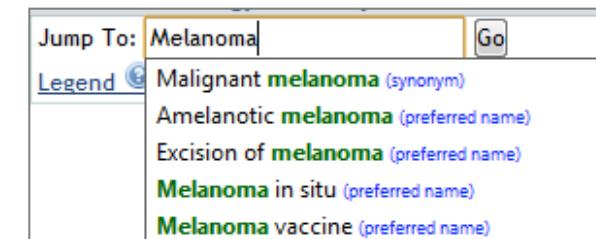
Mapping Services

- Create
- Upload
- Download



Widgets

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



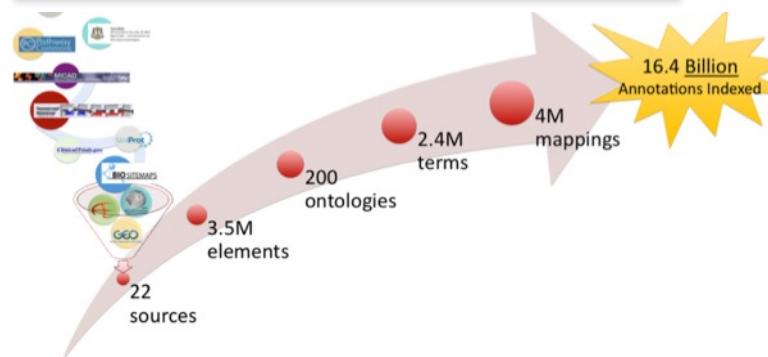
Annotation

Term recognition

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

Data Access

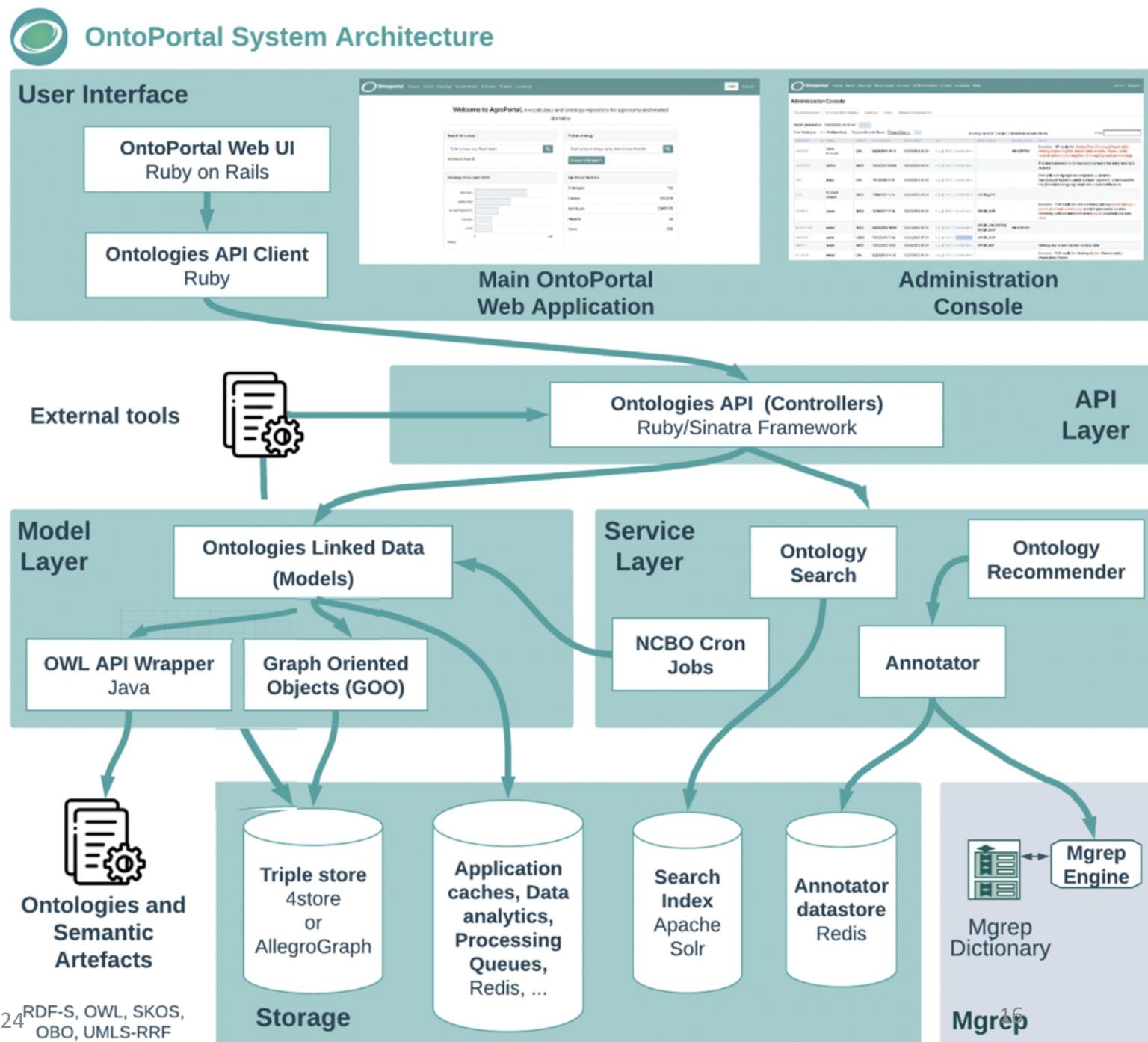
Search “data” annotated with a given term



<http://data.bioontology.org>

Architecture

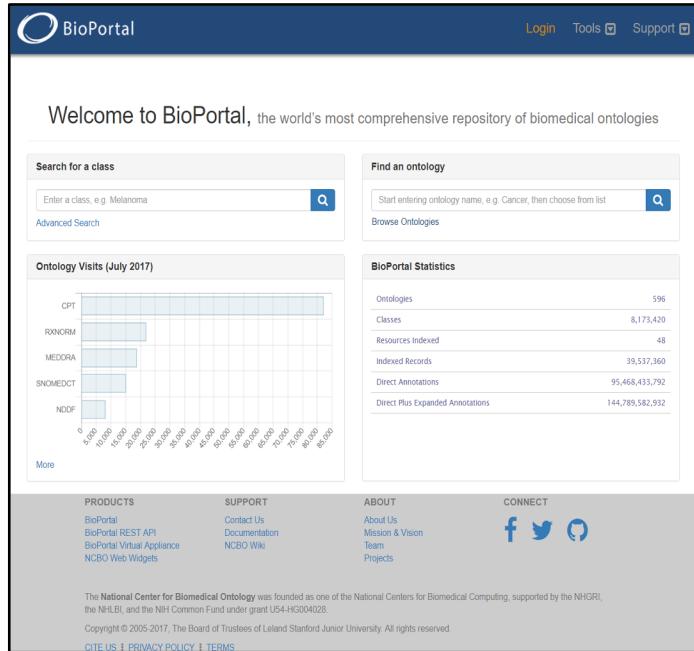
Every component is available on GitHub and all is regularly packaged within the *OntoPortal Virtual Appliance*





**OntoPortal Alliance:
dedicated to
promoting semantic
services**

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): CPT, RXNORM, MEDORA, SNOMEDCT, NOOP

BioPortal Statistics: Ontologies (596), Classes (8,173,420), Resources Indexed (48), Indexed Records (39,537,360), Direct Annotations (95,468,433,792), Direct Plus Expanded Annotations (144,789,582,932)

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

SUPPORT: Contact Us, Documentation, NCBO Wiki

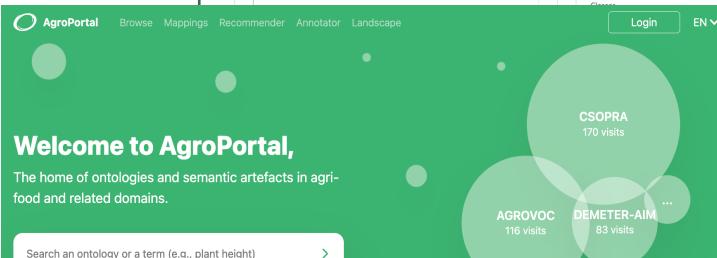
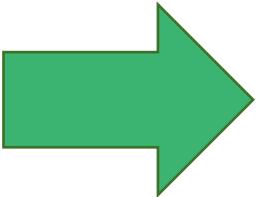
ABOUT: About Us, Mission & Vision, Team, Projects

CONNECT: Facebook, Twitter

The National Center for Biomedical Ontology was founded as one of the National Centers for Biomedical Computing, supported by the NHGRI, the NIBI, and the NIH Common Fund under grant U54-HG034628.

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CITE US | PRIVACY POLICY | TERMS



Welcome to AgroPortal, The home of ontologies and semantic artefacts in agri-food and related domains.

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

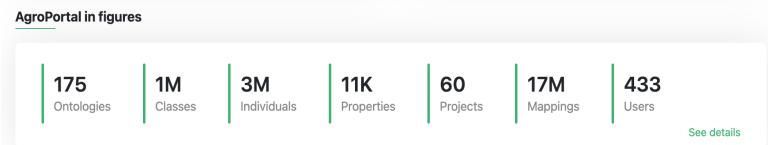
Do you want to share an ontology?

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.

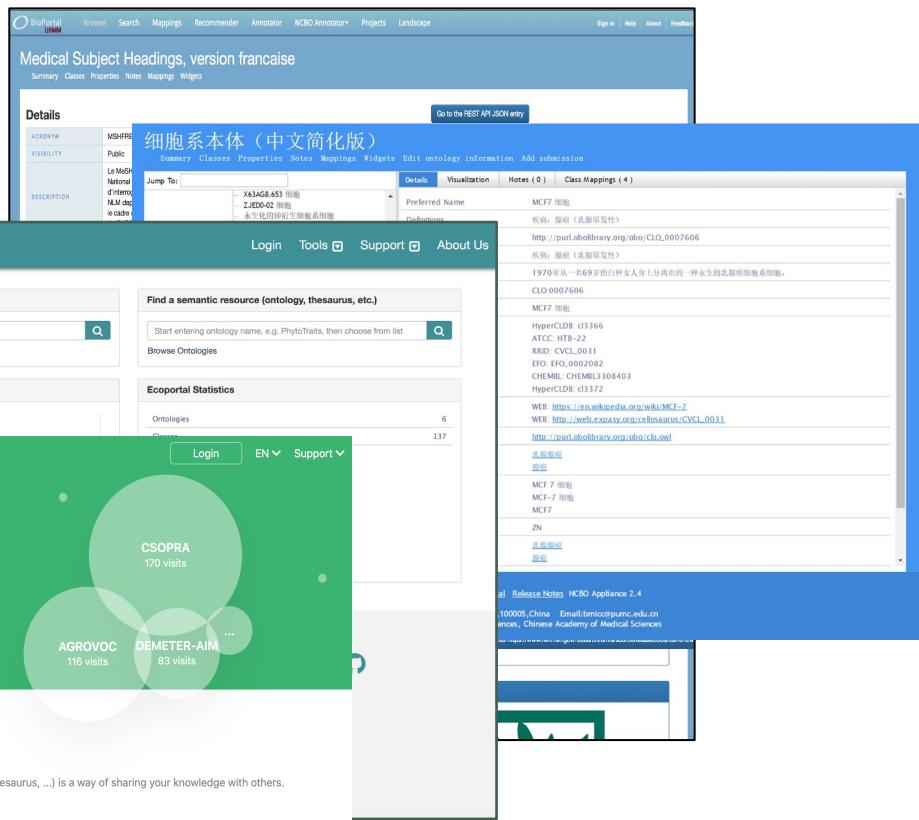
Submit ontology | Discover ontologies >



AgroPortal in figures

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

See details



Medical Subject Headings, version française

Details: ACYDYM, VSHIRE, PUBLIC, LeMSH, MSH, MSH éditable, MSH dans le cadre, DESCRIPTION: 细胞系本体（中文简化版）

Jump To: XA3AG8-453, 2.JED0-02, Preferred Name: 1970年从一名69岁的白种女人身上分离出的一种永生的乳腺癌细胞系细胞, Definitions: MCF7 细胞, 1970年从一名69岁的白种女人身上分离出的一种永生的乳腺癌细胞系细胞, http://purl.oclc.org/obo/CLO_0007606, 疾病: 乳房 (乳癌易发性), CLO_0007606, MCF7 细胞, HyperCLDE: cl3366, ATCC: HTB-22, ETO: ETO_0002011, EFO: EFO_000202, CHEMBL: CHEMBL1308403, HyperCLDE: d3372, WEB: https://en.wikipedia.org/wiki/MCF-7, WEB: http://web.eurovoc.europa.eu/thesaurus/CVCL_0011, http://purl.oclc.org/obo/cbo.owl, ZN, 乳房细胞, 乳房细胞, MCF-7 细胞, MCF-7 细胞, MCF7, ZN, 乳房细胞, 乳房细胞

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. PhytoTreats, then choose from list

Ontology Visits (June 2019):

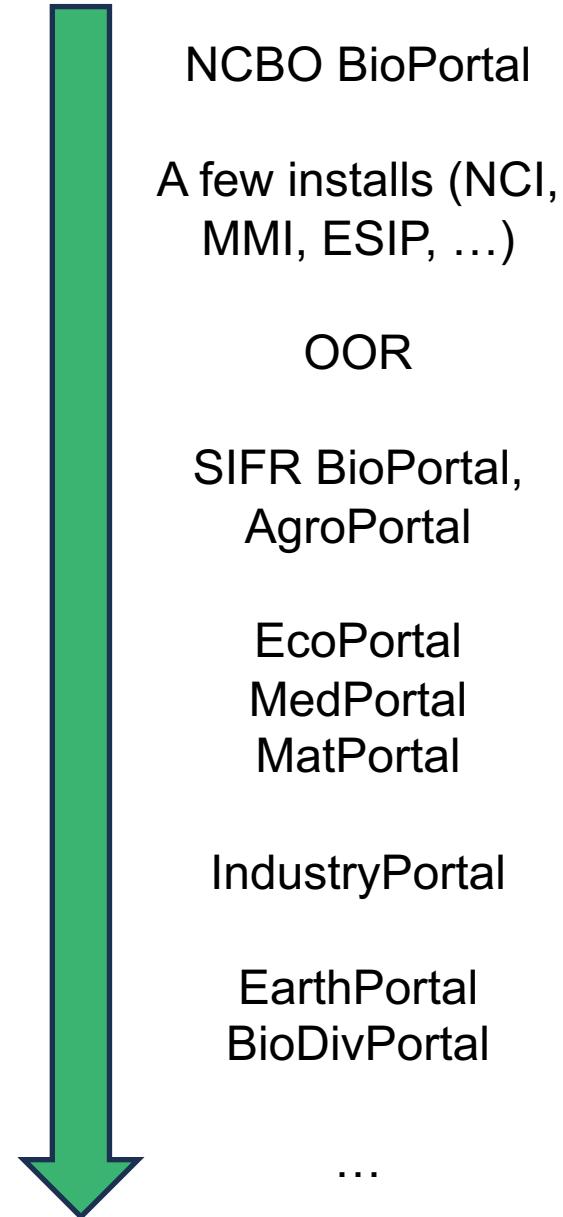
CSOPRA (170 visits), AGROVOC (116 visits), DEMETER-AIM (83 visits)

Ecoportal Statistics: Ontologies (6), Classes (137)

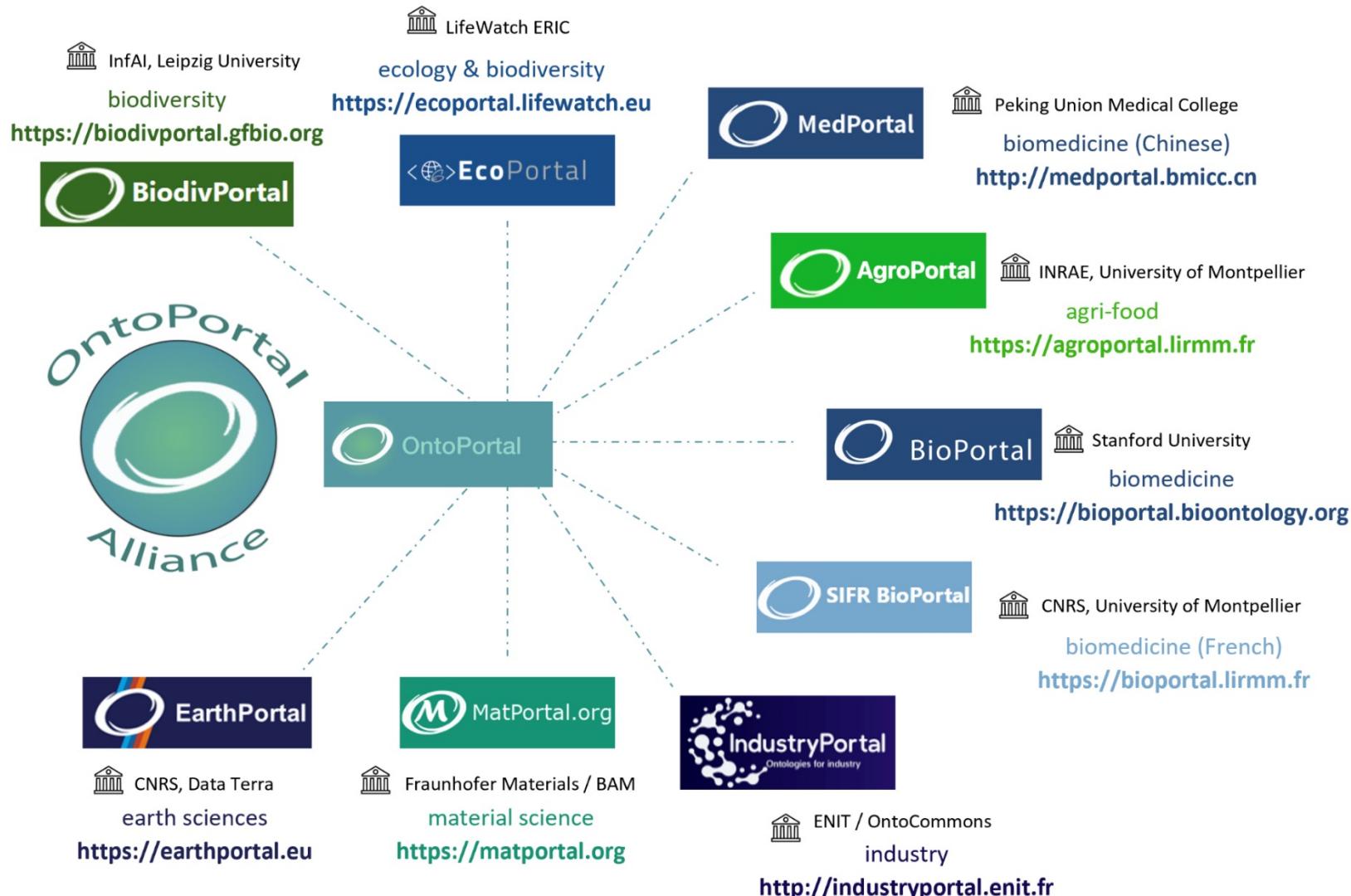
Release Notes: NCBO Appliance 2.4, 100005, China, Email: bmc@cupmc.edu.cn, Chinese Academy of Medical Sciences

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



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

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 interface with the following details:

- Filters:** Includes sections for Show ontology views, Show retired ontologies, Categories (OBO-FOUNDRY, AGOBIO DATA, WHEAT, D2KAB, INRAE, SEMANDIV), Natural languages (English, French, Spanish, Portuguese, Italian, German, Arabic, Chinese, Hindi, Dutch, Finnish, Greek, Japanese), Formality levels (classification scheme, dictionary, gazetteer, glossary, name authority list, ontology, semantic network, subject heading scheme, synonym ring, taxonomy, terminology, thesaurus), and Ontology types (application Ontology, core Ontology, domain Ontology, task Ontology, upper Level Ontology, vocabulary).
- Search Bar:** "Start typing to filter ontologies, e.g., AGROVOC..."
- Sort Options:** All formats, Sort by popularity.
- Results:** A list of 162 ontologies, each with a summary card. Examples include:
 - Soil organic carbon storage and agricultural practices modeling (CSOPRA)**: 588 instances, 3,975 classes, FAIR score 239.0, Submitted 3 months ago by Manuel martin, 2024, OWL.
 - AGROVOC (AGROVOC)**: 1,235,531 concepts, 34 classes, 1 notes, 7 projects, Submitted 21 days ago by Agrovoc, 2024, SKOS.
 - DEMETER Agriculture Information Model (DEMETER-AIM)**: 137 instances, 182 classes, 1 notes, 1 projects, Submitted about 1 year ago by Raul palma, 2023, OWL.
 - Agronomy Ontology (AGRO)**: 552 instances, 4,163 classes, 11 notes, 5 projects, Submitted over 1 year ago by Céline aubert, 2022, OWL.
 - Soil Food Web Ontology (SFWO)**: 386 instances, 834 classes, Submitted 7 months ago by Mickaël hedde, 2023, OWL.
 - AnaEE Thesaurus (ANAEETHES)**: 3,247 concepts, 2 classes, 1 notes, 4 projects, Submitted over 3 years ago by Christian pichot, 2020, SKOS.
 - INRAE Thesaurus (INRAETHES)**: 286.0 FAIR score, 292.0 FAIR score, Submitted about 3 years ago by Comité théâtre inrae, 2021, SKOS.

The screenshot shows the AgroPortal homepage with the following features:

- Welcome Message:** "Welcome to AgroPortal, The home of ontologies and semantic artefacts in agri-food and related domains."
- Search Bar:** "Search an ontology or a term (e.g., plant height)"
- Do you want to share an ontology?** A section explaining the benefits of sharing ontologies.
- AgroPortal in figures:** Statistics including 175 Ontologies, 1M Classes, 3M Individuals, 11K Properties, 60 Projects, 17M Mappings, and 433 Users.
- Support & Collaborations:** Logos for NUMEV, ANR, European Union, D2KAB, INRAE, and University of Oxford.
- AgroPortal Footer:** Links for Products (Release Notes), Support (Contact Us), Legal (Terms and Conditions), and About (About Us).

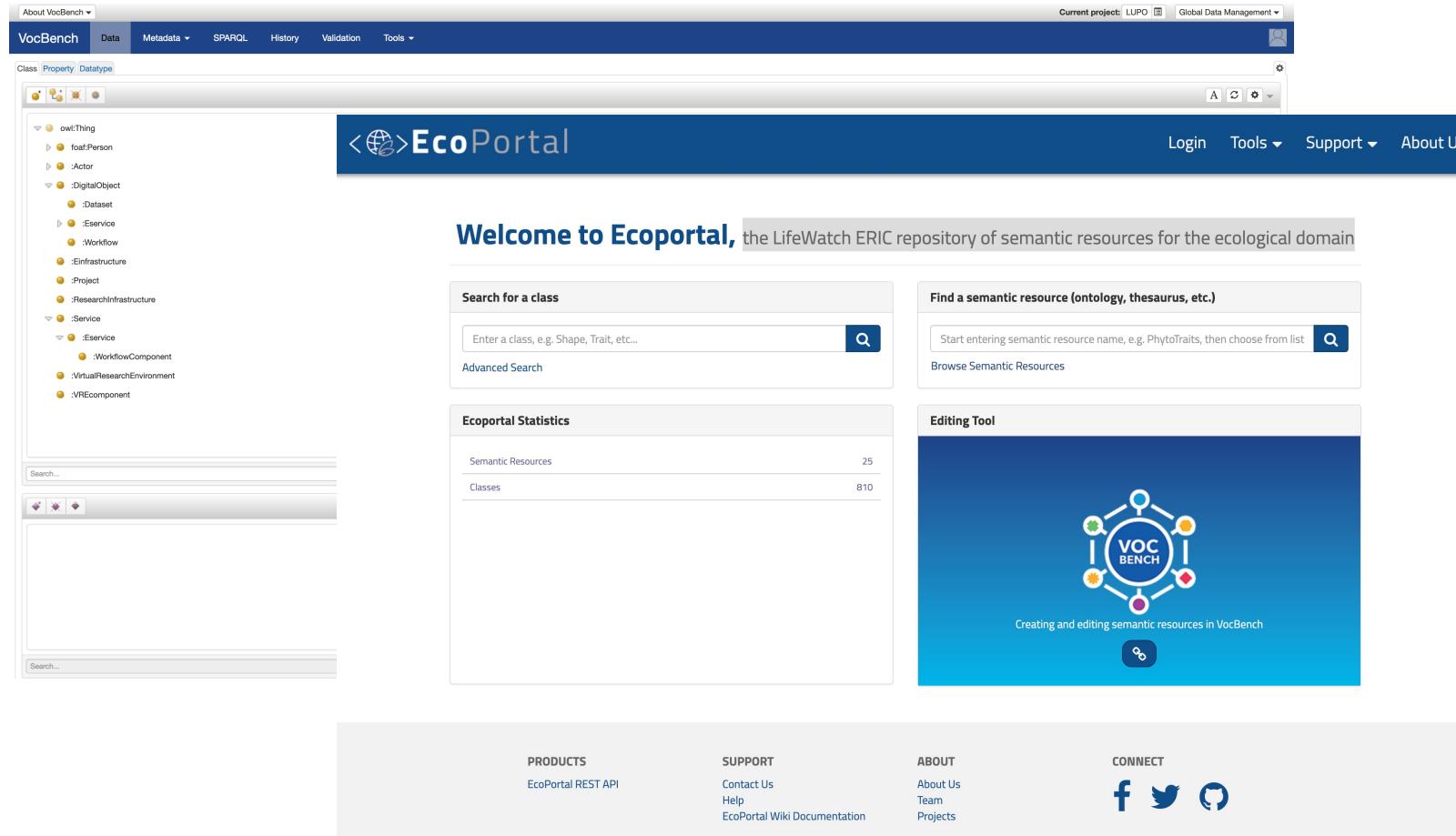
- 175 semantic artefacts, 200 candidates
- ~433 registered users



C. Jonquet, A. Toulet, (...) P. Larmande. **AgroPortal: an ontology repository for agronomy**, *Computers and Electronics in Agriculture*. Jan 2018. 144, pp.126-143. Elsevier.

OntoPortal & AgroPortal - Embrapa's
Colloquium - C. Jonquet - 2024

EcoPortal



The screenshot shows the EcoPortal homepage integrated with the VocBench semantic repository tool. The top navigation bar includes links for About VocBench, VocBench (selected), Data, Metadata, SPARQL, History, Validation, Tools, Current project: LUPO, and Global Data Management. The main content area features a search bar for classes, a semantic resource search, and a statistics section. A central box for the 'Editing Tool' displays the VocBench logo and the text 'Creating and editing semantic resources in VocBench'. The bottom navigation bar includes links for PRODUCTS (EcoPortal REST API), SUPPORT (Contact Us, Help, EcoPortal Wiki Documentation), ABOUT (About Us, Team, Projects), and CONNECT (Facebook, Twitter, GitHub).

<http://ecoportal.lifewatch.eu>



FINDABLE

ACCESSIBLE

INTEROPERABLE

REUSABLE



A common repository for FAIR ontologies in industry 4.0 (D03)

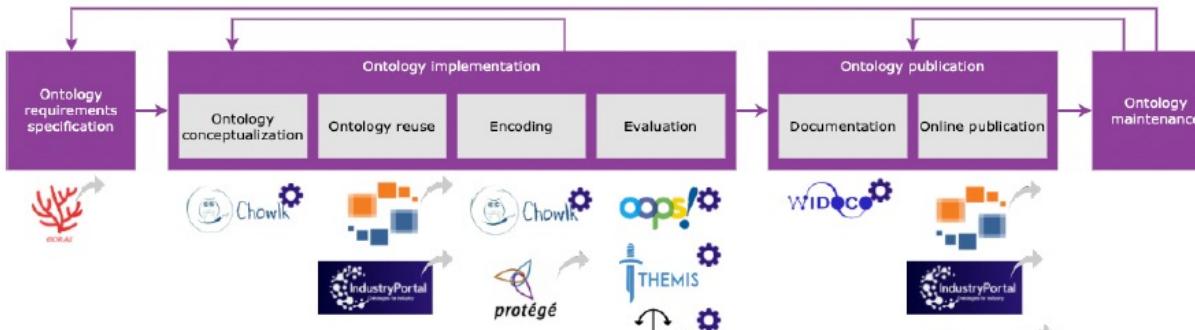
SUPPORTED AND
COLLABORATED BY:



IndustryPortal helps ontology developers and users ...

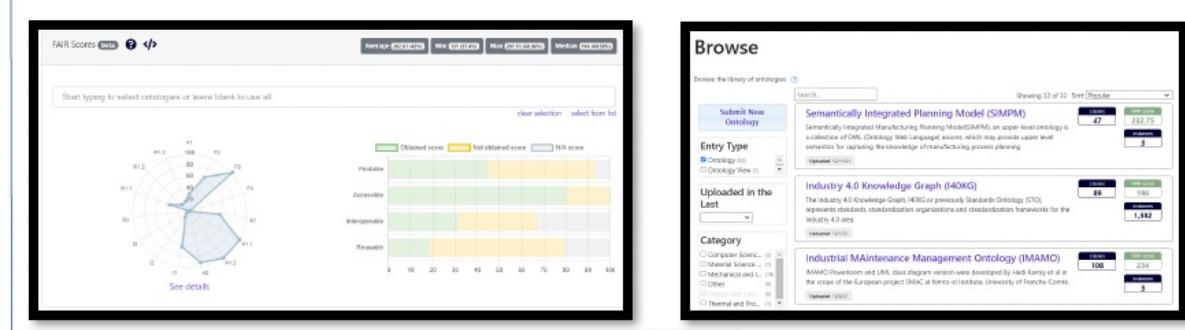
- To submit an ontology and maintain version
- To edit various ontology metadata
- To evaluate the FAIRness of an ontology
- To categorise an ontology as per topics
- To search and browse terms across all hosted ontologies
- To annotate a piece of text with all hosted ontologies
- To store and serve ontology mappings in SSSOM format

Use of IndustryPortal in Ontology Engineering

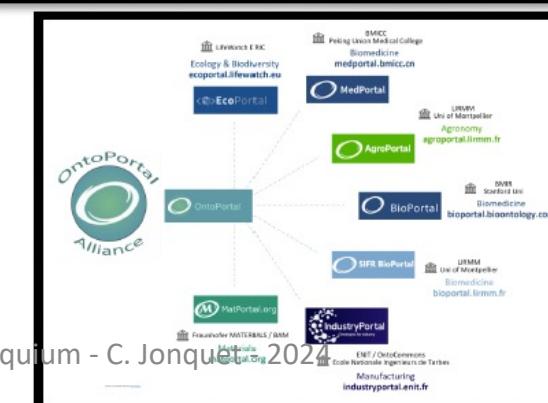


<https://tooling.ontocommons.linkeddata.es/>

OntoPortal & AgroPortal - Embrapa's Colloquium - C. Jonquier - 2021



<http://industryportal.enit.fr>





EarthPortal



EarthPortal, a semantic artifact catalog for the Earth system and Environment

Guillaume ALVISET
Christelle PIERKOT



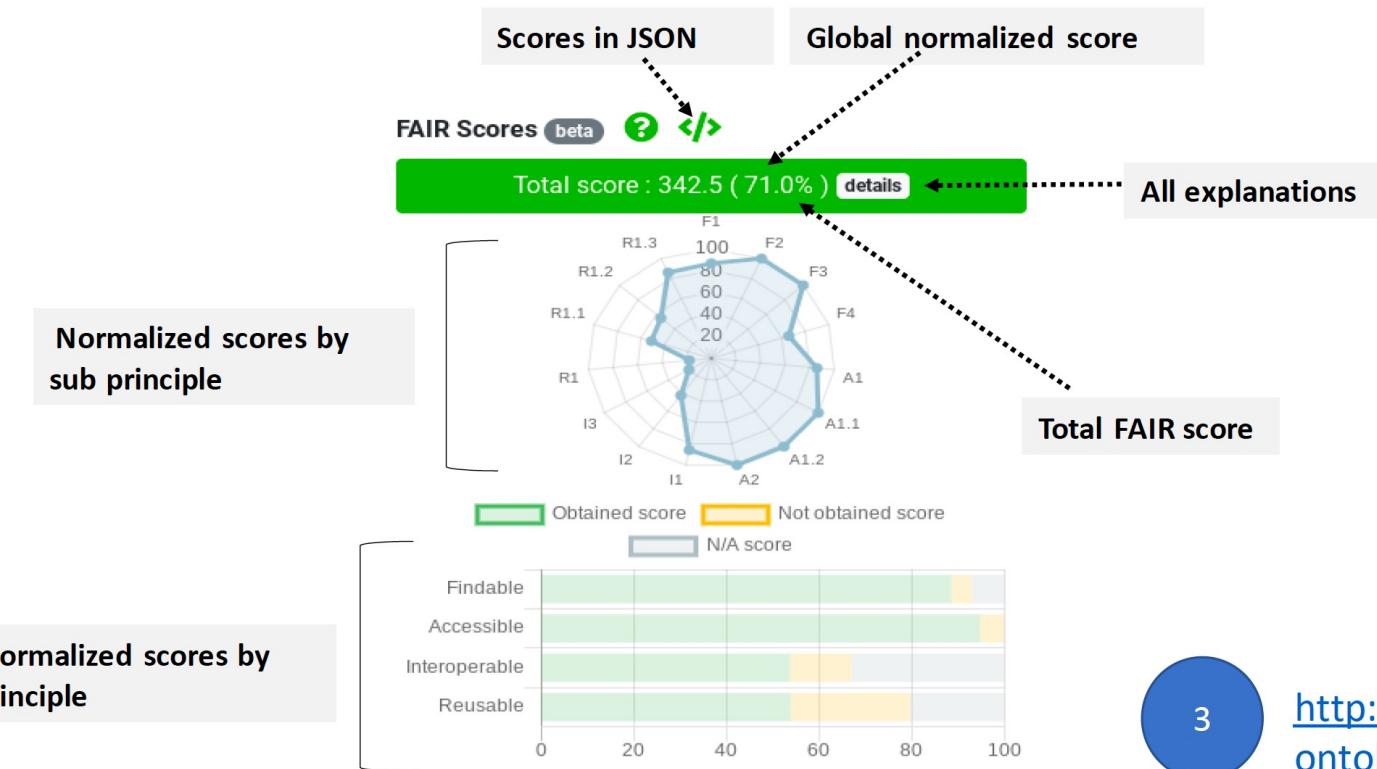
Always in-line with the OntoPortal technology but with many added features...

- Customization of group, categories, look-and-feel
- Change default language
- Slices fix, sync of group and slices
- New metadata model
- New metadata user interfaces (browse, summary, landscape)
- Annotator enhancements (French ConText, formats, scoring, etc.)
- NCBO Annotator+
- Internal/external mappings + multiple mapping properties
- User admin page
- Support instances
- FAIRness assessment O'FAIRe
- Repair notifications and subscriptions
- Better multilingual support
- Large file processing
- Enhanced SKOS support
- SSSOM mappings import
- Metadata edition in batch

O'FAIRe: Ontology FAIRness Evaluator

deployments:

Get a FAIRness score for a given ontology



3

<http://agroontologies//>



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)

Making OntoPortal a real open source project

<https://github.com/ontoportal>

The screenshot shows the homepage of the Ontoportal documentation. On the left, there's a sidebar with navigation links: Home, Administration Guide, Users Guide, Developers Guide, and Ontoportal on GitHub. The main content area has a large heading "Ontoportal documentation" with a teal circular logo to its left. Below the heading, there are several sections of text and links, including a call to action to see documentation at <https://ontoportal.github.io/documentation>.

This screenshot shows the GitHub organization page for "OntoPortal Alliance". At the top, there's a header with a search bar, pull requests, issues, codespaces, marketplace, and explore buttons. Below the header, the organization's logo is displayed, followed by the name "OntoPortal Alliance" and a brief description: "The OntoPortal Alliance is dedicated to promoting semantic and ontology services based on the open, collaboratively developed OntoPortal technology." It also shows 10 followers, a link to the website (<https://ontoportal.org>), and a Twitter handle (@ontoportal). The main content area includes the organization's README file, which contains a friendly greeting and links to documentation and the GitHub repository. To the right, there are sections for discussions, people, and top languages. A sidebar on the right indicates that the README and pinned repositories are being viewed as public.

Membership increasing

- 9 existing public repositories. 1 other in the pipe
- 1 active commercial participant (Cogni.zone)
- Multiple interested parties beyond that
 - Known in use: 31 appliances 'called home' in September 2022 v2.5 = 3 v3.0.x = 14 v3.1.x = 14
 - 60 unique appliance IDs called home overall in 2022
 - 19 active machine instances in AWS (included in 31 calling home)

OntoPorta

AgroPortal	<input type="checkbox"/> Member of the AgroPortal and SIFR BioPortal team mostly at LIRMM and MISTEA		8 members
BiodivPortal	<input type="checkbox"/> NFDI4biodiv team working on a dedicated OntoPortal		1 member
BioPortal	<input type="checkbox"/> Members of the BioPortal team mostly at Stanford BMIR.		6 members
CogniZone	<input type="checkbox"/> Member of the Cogni.zone SME team.		1 member
EarthPortal	<input type="checkbox"/> Members of the EarthPortal team mostly at CNRS and DataTerra		3 members
EcoPortal	<input type="checkbox"/> Members of the EcoPortal team mostly at LifeWatch ERIC		5 members
IndustryPortal	<input type="checkbox"/> Members of IndustryPortal team mostly at ENIT		3 members
MatPortal	<input type="checkbox"/> Members of the MatPortal team mostly at Fraunhofer		2 members
MedPortal	<input type="checkbox"/> Members of the MedPortal team mostly at BMICC.		3 members

OntoPortal Alliance and Workshops

2020,
online



2022, Montpellier



COMING UP IN
SEPTEMBER

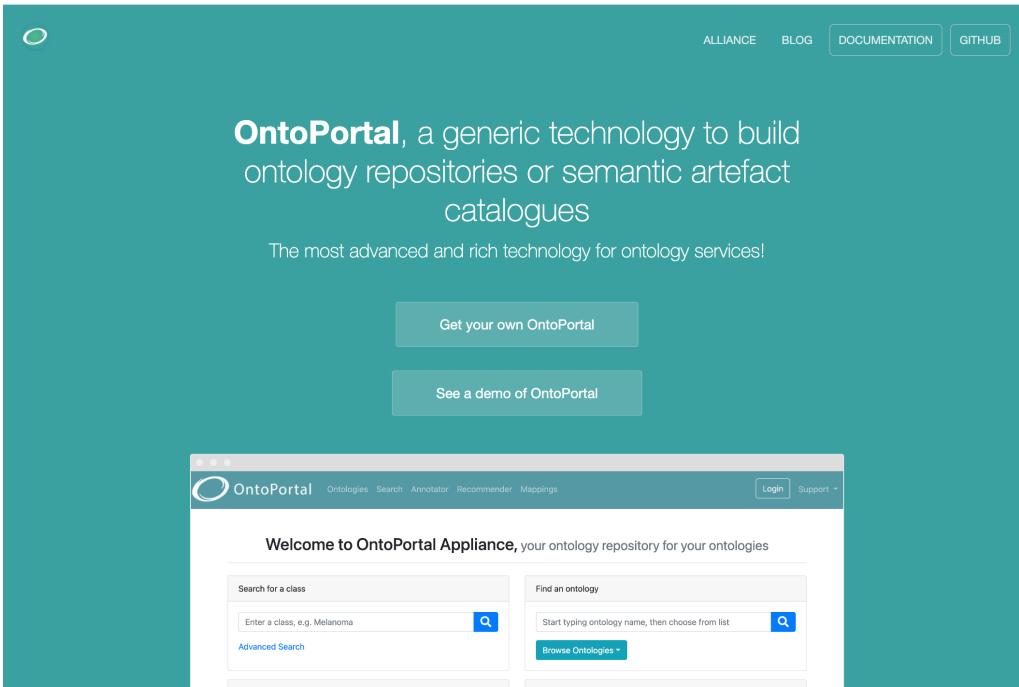
2024,
Stanford

2023,
Lecce



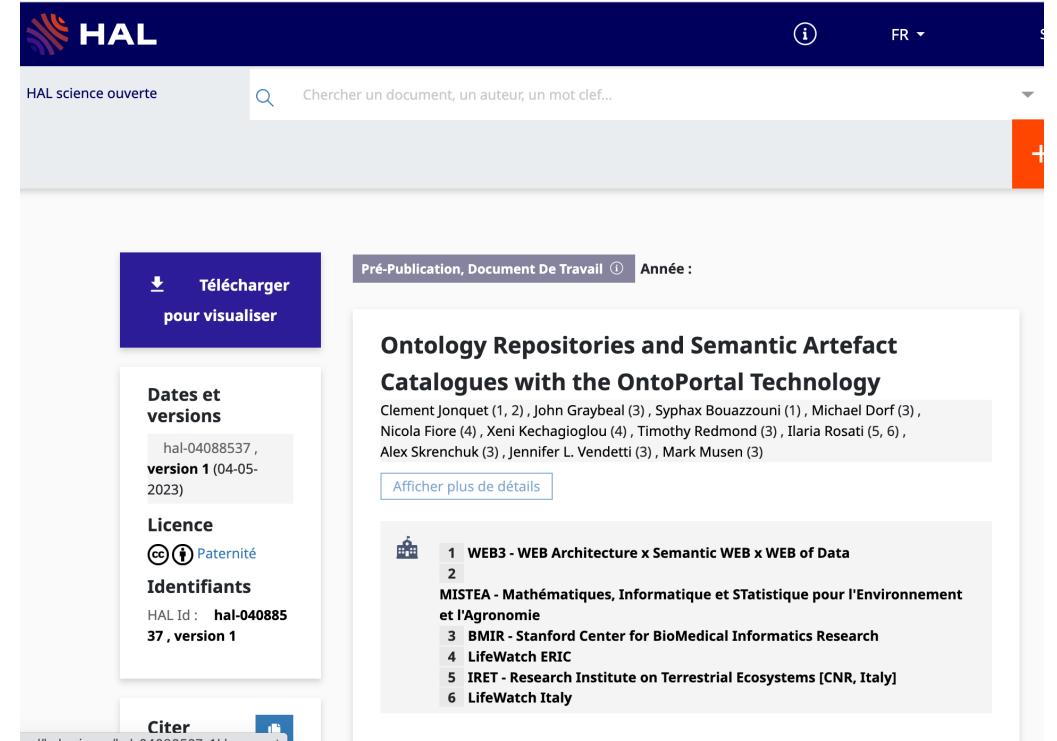
More information

Web site and documentation:
<https://ontoportal.org>

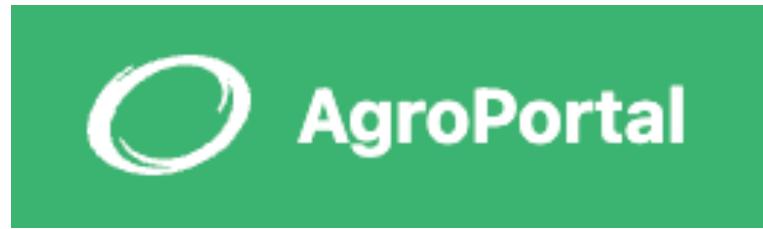


The screenshot shows the homepage of the OntoPortal website. At the top, there are navigation links for 'ALLIANCE', 'BLOG', 'DOCUMENTATION' (which is highlighted in blue), and 'GITHUB'. Below this, a large teal banner features the text 'OntoPortal, a generic technology to build ontology repositories or semantic artefact catalogues' and 'The most advanced and rich technology for ontology services!'. It includes two buttons: 'Get your own OntoPortal' and 'See a demo of OntoPortal'. Below the banner is a smaller screenshot of the OntoPortal interface, showing search and browse functionality.

ISWC 2023 Resource paper:
<https://hal.science/hal-04088537>



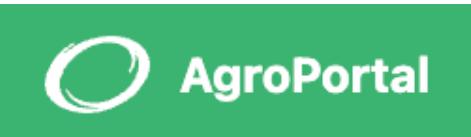
The screenshot shows a page from the HAL (HAL science ouverte) platform. The header includes a search bar, a user icon, and language options ('FR'). The main content is a resource entry for 'Ontology Repositories and Semantic Artefact Catalogues with the OntoPortal Technology'. Key details shown include the document type ('Pré-Publication, Document De Travail'), date ('Année : 2023'), download link ('Télécharger pour visualiser'), and identifiers ('hal-04088537, version 1 (04-05-2023)'). A sidebar lists various institutions and projects associated with the work, such as 'WEB3 - WEB Architecture x Semantic WEB x WEB of Data' and 'MISTEA - Mathématiques, Informatique et STatistique pour l'Environnement et l'Agronomie'.



A deeper look into AgroPortal

AgroPortal: a vocabulary and ontology repository for agronomy

<http://agroportal.lirmm.fr>



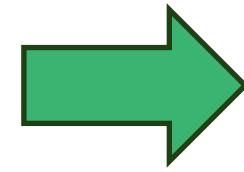
- Develop and support a reference ontology repository
 - Primary focus on the agronomy & close related domains (plant sciences, food and biodiversity)
- Reusing the NCBO BioPortal technology
 - Avoid to re-implement what has been done, facilitate interoperability
 - Reusing the scientific outcomes, experience & methods of the biomedical domain
- Enable straightforward use of agronomic related ontologies
 - Respect the requirements & specificities of the agronomic community
 - Fully semantic web compliant infrastructure
 - Enable new science

Offering a global service (for all semantic resources)

The screenshot shows several overlapping web interfaces:

- LandVoc - the Linked Land Governance Thesaurus**: A blue-themed interface with a sidebar for "Alphabetical" and "Hierarchy" navigation.
- ASFA**: A grey-themed interface with a sidebar for "Alphabetical" and "Hierarchy".
- AGROVOC Multilingual Thesaurus**: A blue-themed interface with a sidebar for "Alphabetical" and "Hierarchy".
- Caliper datasets**: A green-themed interface listing various datasets:
 - COICOP1999 (Model: SKOS, Lexicalization: SKOS)
 - CPC2.0 (Model: SKOS, Lexicalization: SKOS)
 - CPC2.1 (Model: SKOS, Lexicalization: SKOS)
 - FCL (Model: SKOS, Lexicalization: SKOS)
 - Forest_Products_2022 (Model: SKOS, Lexicalization: SKOS)
 - Geopolitical_ontology (Model: OWL, Lexicalization: RDFS)
 - ICC1.0 (Model: SKOS, Lexicalization: SKOS)
 - ICC1.1 (Model: SKOS, Lexicalization: SKOS)
 - ISICRev4 (Model: SKOS, Lexicalization: SKOS)
 - WCA2020_Crops (Model: SKOS, Lexicalization: SKOS)

Multiples websites, multiples APIs. Where to find things. Easier for external users.



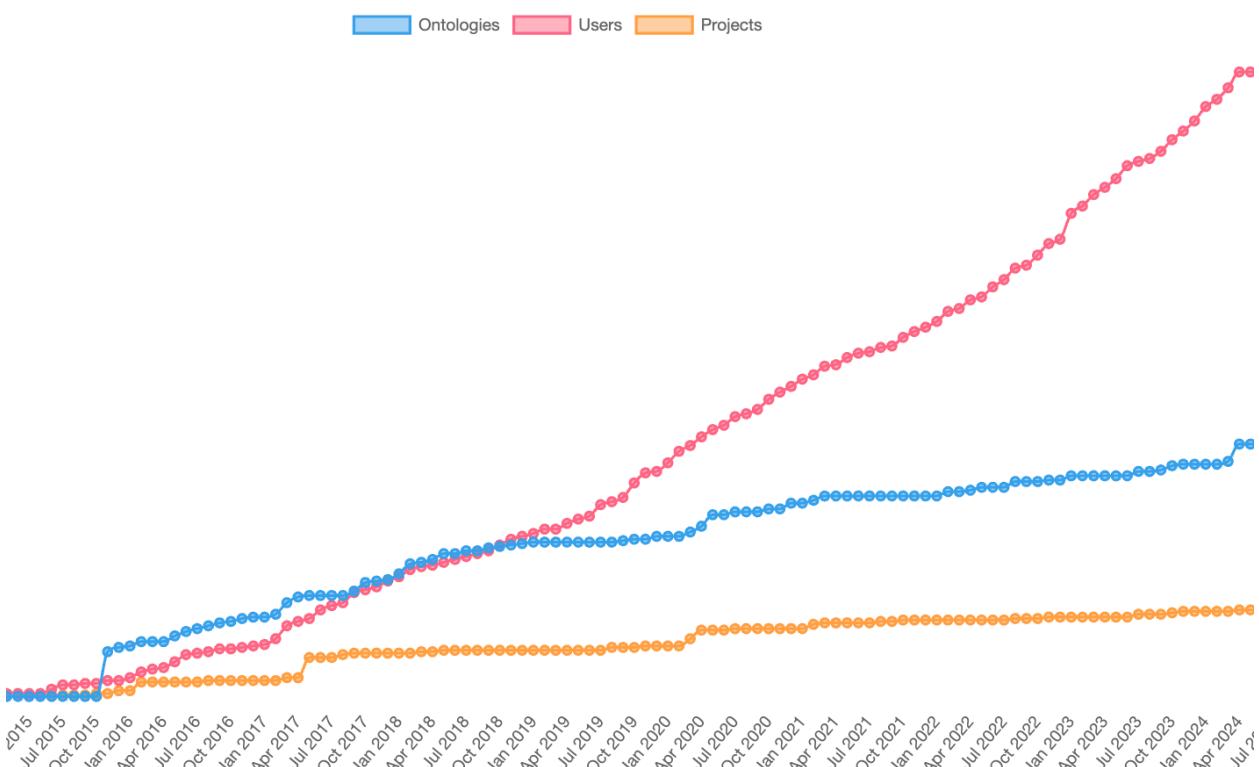
The screenshot shows the AgroPortal interface with the following sections:

- Start typing to filter ontologies, e.g., AGROVOC...**
- Filters**: Includes "Show ontology views" and "Submit ontology".
- Showing 162 of 175**
- Soil organic carbon storage and agricultural practices modeling (COSPORA)**: Includes a brief description, a "show more" link, and a FAIR score of 239.0.
- AGROVOC (AGROVOC)**: Includes a brief description, a "show more" link, and a FAIR score of 292.0.
- DEMIETER Agriculture information Model (DEMIETER-AIM)**: Includes a brief description, a "show more" link, and a FAIR score of 282.0.
- Agronomy Ontology (AGRO)**: Includes a brief description, a "show more" link, and a FAIR score of 552.0.

One web application.
One endpoint, one API.
One search service.
Unique user account.
Social functionalities
More visibility.
Easier for external users.
Mappings.
Relations btw semantic resources

....

A growing interest in the community



- RDA Agrisemantics WG
- GO-FAIR Food System Implementation Network
- Adoptions by projects e.g., PHIS, AgroLD
- SemanDiv CNRS WG
- AgroHackathons
- D2KAB ANR project
- Around 40 accounts @inrae.fr
- Related:
 - IC-FOODS initiative
 - ELIXIR F&N community
 - AgBioDatabases
- EOSC projects: FAIR-IMPACT, FAIR-EASE

AgroPortal model

- We adopt an “open approach” (users can upload themselves)
- Our editorial line: be related or of use for agri-food
- At the beginning we would load most of the ontologies, then less, then less
- We do curation of metadata, but not data
- We customize the ontology repository to address our community needs
- We use the portal to do science in informatics (semantics, annotation, metadata, etc.) and application domains

Examples of ontologies uploaded in AgroPortal

Title	Format	Groups	Size
IBP Rice Trait Ontology (CO_320)	OWL	CROP, RICE	~2K
IBP Wheat Trait Ontology (CO_321)	OWL	CROP, WHEAT	~1K
IBP Wheat Anatomy Ontology (CO_121)	OB0	CROP, WHEAT	~80
IBP Crop Research (CO_715)	OB0	CROP	~250
Multi-Crop Passport Ontology (CO_020)	OB0	CROP	~90
Biorefinery (BIOREFINERY)	OWL	LOVINRA	~300
Matter Transfer (TRANSMAT)	OWL	LOVINRA	~1.1K
Plant Ontology (PO)	OWL	WHEAT, OBOF	RICE, ~2K
Plant Trait Ontology (TO)	OWL	WHEAT, OBOF	RICE, ~4.4K
Durum Wheat (DURUM_WHEAT)	OWL	LOVINRA	~130
Agricultural Experiments (AEO)	OWL	LOVINRA	~60
Environment Ontology (ENVO)	OWL	WHEAT, OBOF	~6.3K
NCBI Organismal Classification (NCBITAXON)	RRF	WHEAT	~900K
AnaEE Thesaurus (ANAEETHESS)	SKOS	LOVINRA	~3.3K
French Crop Usage (CROPUSAGE)	SKOS	none	~300
Agrovoc (AGROVOC)	SKOS	none	~32K
Food Ontology (FOODON)	OWL	OBOF	~10K
National Agriculture Library Thesaurus (NALT)	SKOS	none	~67K

Browse and select ontologies

- Allows to search, order and select ontologies using a **faceted search** approach, based on the metadata

The screenshot shows the AgroPortal ontology browser interface. At the top, there is a navigation bar with links for AgroPortal, Browse, Mappings, Recommender, Annotator, Landscape, a search bar, a login button, and language and support dropdowns.

The main area features a "Filters" sidebar on the left and a "Search results" section on the right.

Filters:

- Submit ontology (button)
- Show ontology views (toggle switch)
- Show retired ontologies (toggle switch)
- Categories (dropdown menu)
 - Groups (selected, highlighted with a red circle)
 - OBO-FOUNDRY 29
 - AGBIODATA 21
 - WHEAT 15
 - D2KAB 18
 - INRAE 38
 - SEMANDIV 11
 - CROP 34
- Natural languages (dropdown menu)
- Formality levels (dropdown menu)
- Ontology types (dropdown menu)

Search results:

Start typing to filter ontologies, e.g., AGROVOC...

All formats ▾ Sort by popularity ▾

Showing 162 of 175

Soil organic carbon storage and agricultural practices modeling (CSOPRA)

This ontology was created to support the development of the csopra libraries and the modelToolBox, which enables the modeling of soil organ...
+ Show more ...

FAIR score 239.0 FAIR details ...

Submitted 3 months ago by Manuel martin 2024 OWL

AGROVOC (AGROVOC)

AGROVOC is a multilingual and controlled vocabulary designed to cover concepts and terminology under FAO's areas of interest. It is a large...
+ Show more ...

Submitted 21 days ago by Agrovoc 2024 SKOS

DEMETER Agriculture Information Model (DEMETER-AIM)

The DEMETER Agri Profile is a master profile importing focused specific profiles/modules of DEMETER AIM.
FAIR score 282.0 FAIR details ...

Submitted about 1 year ago by Raul palma 2023 OWL

588 instances 3,975 classes

1,235,531 concepts 34 classes

1 notes 7 projects

137 instances 182 classes

1 notes 1 projects

leaf area indexSearch 

Match in 25 ontologies

{ } Show options

leaf area index - Plant Trait Ontology (TO)http://purl.obolibrary.org/obo/TO_0012001

Leaf Area Index (LAI) is the ratio of total upper leaf surface of vegetation divided by the surface area of the land on which the vegetation grows.

[Details](#) [Vizualize](#) [7 more from this ontology](#)**Leaf area index - Common Bean Ontology (CO_335)**https://cropontology.org/rdf/CO_335:0000772

The leaf area index (LAI) is a dimensionless quantity that characterizes plant area.

[Details](#) [Vizualize](#) [5 more from this ontology](#)**Leaf area index - Sweet Potato Ontology (CO_331)**https://cropontology.org/rdf/CO_331:0001105

Defined as total surface area of foliage per unit ground area

[Details](#) [Vizualize](#) [1 more from this ontology](#)**Leaf area index - Oat Ontology (CO_350)**https://cropontology.org/rdf/CO_350:0000123

A dimensionless quantity that characterizes plant canopies and defined as

[Details](#) [Vizualize](#) [12 more from this ontology](#)**Leaf area index - Wheat Ontology (CO_321)**https://cropontology.org/rdf/CO_321:0000184

It is a dimensionless quantity that characterizes plant canopies and defined as the leaf area per unit ground surface area.

[Details](#) [Vizualize](#) [4 more from this ontology](#)

[ontologies](#) > SDGIO**Sustainable Development Goals Interface Ontology (SDGIO) owl**

No license

Last submission date August 11, 2018

[Summary](#) [Classes](#) [Properties](#) [Instances](#) [Notes](#) [Mappings](#) [Widgets](#) [Sparql](#)

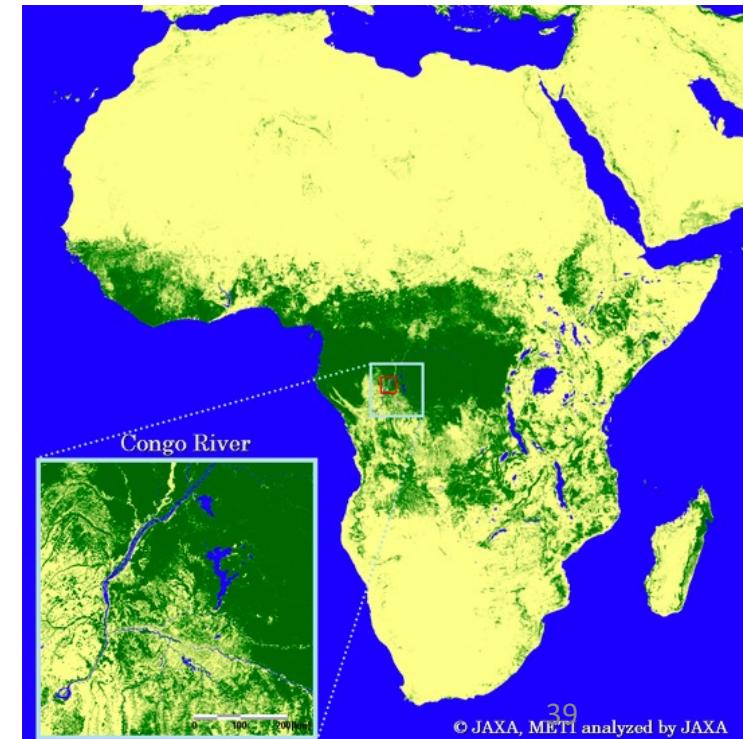
English ▾

Details Instances (0) Visualization Notes (0) Mappings (0)

ID	http://purl.unep.org/sdg/SDGIO_00020174
Preferred name	Forest area as a proportion of total land area
Raw data	
rdf:type	http://www.w3.org/2002/07/owl#Class
rdfs:label	Forest area as a p
rdfs:subClassOf	http://purl.unep.org/sdg/SDGIO_00020174



Identify concepts to describe your data



Community based functionalities

Latest Mappings

[tissue \(BT\) <=> tissue \(CL\)](#)
REST Mapping 06/24/2015 by jonquet

[tissue \(CL\) <=> tissue \(BT\)](#)
REST Mapping 06/24/2015 by jonquet

Latest Notes

[object quality \(Phenotypic Quality Ontology\)](#)
about 19 hours ago by emonet
What is the difference with object quality or process quality? To which object those this quality...

[quality vs trait \(Phenotypic Quality Ontology\)](#)
about 20 hours ago by jonquet
Is this ok in PATO to have 'trait' as a synonym of quality?

Animal Health Ontology for Livestock

Last uploaded: November 8, 2019

More Permissions <https://www.etalab.gouv.fr/wp-content/uploads/2018/11/open-licence.pdf>

Natural Language

Ontology Related To [ATOL](#), [EOL](#)

Publisher INRA (<http://www.inra.fr/>)

Projects using AHOL

Agrisemantics Map of Data Standards
Sicpa Sanitaire Web
Vocabulaires Ouverts @INRAE

Browse Schemes and Collections defined in a SKOS resource simultaneously

Biodiversity Thesaurus (BIODIVTHES) SKOS [View license](#)

Last submission date September 27, 2022

Summary Concepts Properties Schemes Collections Notes Mappings Widgets Sparql [English](#)

Details Visualization Notes (0) Mappings (1) [\(\)](#)

ID	http://data.loterre.fr/ark:/67375/BLH-WP8VJ9ZL-L  
Preferred name	behavioral ecology
Synonyms	ecoethology
Member of	Discipline > Animal ecology >
In schemes	http://data.loterre.fr/ark:/67375/BLH
Type	http://www.w3.org/2004/02/skos/core#Concept

Raw data

Jump to [Filter](#)

Schemes

- BLH (main) 

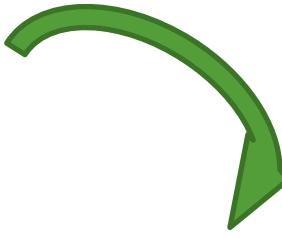
Collections

- Discipline 
- Animal ecology 

- > applied ecology •
- > biological substance
- > cultural heritage
- > ecological parameter
- > ecological process
- > ecological system
- ✓ ecology •
 - ✓ animal ecology •  
 - behavioral ecology •  
 - sensory ecology •  
 - > zoogeography •  

Multilingual support

```
{
  id: "http://opendata.inrae.fr/thesaurusINRAE/d_0202",
  prefLabel: "AGR hunting and fishing",
  definition: [ ],
  synonym: [ ],
  obsolete: false,
+ inScheme: [ ... ],
  memberOf: [ ],
+ parents: [ ... ],
  modified: null,
  created: null,
  label: [ ],
  prefLabelXl: [ ],
  altLabelXl: [ ],
  hiddenLabelXl: [ ],
  notation: null,
  prefixIRI: null,
  subClassOf: [ ],
  semanticType: [ ],
  cui: [ ],
  xref: null,
+ properties: { ... },
@id: "http://opendata.inrae.fr/thesaurusINRAE/d_0202"
@type: "http://www.w3.org/2004/02/skos/core#Concept"
+ links: { ... },
- @context: {
    @vocab: "http://www.w3.org/ns/skos"
    label: "http://www.w3.org/ns/skos#label"
    prefLabel: "http://www.w3.org/ns/skos#prefLabel"
    altLabelXl: "http://www.w3.org/ns/skos#altLabel"
    hiddenLabelXl: "http://www.w3.org/ns/skos#hiddenLabel"
    synonym: "http://www.w3.org/ns/skos#synonym"
    definition: "http://www.w3.org/ns/skos#definition"
    obsolete: "http://www.w3.org/ns/skos#obsolete"
    notation: "http://www.w3.org/ns/skos#notation"
    prefixIRI: "http://www.w3.org/ns/skos#prefixIRI"
    parents: "http://www.w3.org/ns/skos#parents"
    subClassOf: "http://www.w3.org/ns/skos#subClassOf"
    semanticType: "http://www.w3.org/ns/skos#semanticType"
    cui: "http://biopax.org/resource/CUI"
    xref: "http://www.w3.org/ns/skos#xref"
    inScheme: "http://www.w3.org/ns/skos#inScheme"
    created: "http://www.w3.org/ns/skos#created"
    modified: "http://www.w3.org/ns/skos#modified"
    @language: "en"
}
}
```



AgroPortal Browse Mappings Recommender Annotator Landscape Admin Search in AgroPortal ... jonquet EN Support

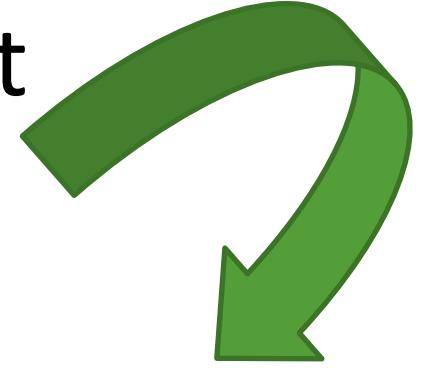
[ontologies](#) > INRAETHES

INRAE Thesaurus (INRAETHES) SKOS [View license](#)

Last submission date March 17, 2021

Summary Concepts Properties Schemes Collections Notes Mappings

- [Jump to](#) [Filter](#)
- [02. AGRICULTURE AND AGRONOMY](#)
 - [02.01 FARMS AND FARMING SYSTEMS](#)
 - [02.02 PLANT CULTURAL PRACTICES AND EXPERIMENTATIONS](#)
 - [02.03 ANIMAL HUSBANDRY AND BREEDING](#)
 - [02.04 AGRICULTURAL PRODUCTS](#)
 - [02.05 AGRICULTURAL MACHINERY AND EQUIPMENT](#)
 - [02.06 HUNTING AND FISHING](#)
- [03. CONVERSION OF BIOBASED RESOURCES](#)
- [04. HUMAN, ANIMAL AND PLANT HEALTH](#)
- [05. BIOLOGY](#)



AgroPortal Browse Mappings Recommender Annotator Landscape Admin Search in AgroPortal ... jonquet EN Support

[ontologies](#) > INRAETHES

INRAE Thesaurus (INRAETHES) SKOS [View license](#)

Last submission date March 17, 2021

Summary Concepts Properties Schemes Collections Notes Mappings Widgets Sparql

- [Jump to](#) [Filter](#)
 - [ID](#) ht
 - [Preferred name](#) 02
 - [In schemes](#) [http://opendata.inrae.fr/thesaurusINRAE/d_0202](#)
 - [Type](#) ht
 - [Raw data](#)
- [01. ENVIRONNEMENT](#)
 - [02. AGRICULTURE ET AGRONOMIE](#)
 - [02.01 AGRICULTURE ET SYSTÈMES DE PRODUCTION](#)
 - [02.02 PRATIQUES CULTURALES ET EXPÉRIMENTATIONS](#)
 - [02.03 PRATIQUES D'ÉLEVAGE ET EXPÉRIMENTATIONS](#)
 - [02.04 PRODUITS AGRICOLES](#)
 - [02.05 MATÉRIELS ET INSTALLATIONS AGRICOLES](#)
 - [02.06 CHASSE ET PÊCHE](#)
 - [03. TRANSFORMATION DES BIORESSOURCES](#)
 - [04. SANTÉ HUMAINE, ANIMALE ET VÉGÉTALE](#)
 - [05. SCIENCES BILOGIQUES](#)

[ontologies](#) > INRAETHESINRAE Thesaurus (INRAETHES) SKOS [View license](#)

Last submission date March 17, 2021

[Summary](#) Concepts Properties Schemes Collections Notes Mappings Widgets Sparql

General information

Abstract

INRAE Thesaurus contains more than 16,000 concepts relevant to domains covered by the National Research Institute for Agriculture, Food and the Environment. Concepts are described with terms in French (100%) and English (81%) terms, some having textual definitions and mappings to other semantic...

[See more...](#)

Description

INRAE Thesaurus is the open and shared thesaurus covering INRAE's research fields. It serves as a controlled vocabulary within the institute for indexing and annotating documents, web pages, descriptions of activities, datasets, etc. for research or information analysis purposes. It is maintained by an editorial committee under the responsibility of INRAE DipSO.

Initial created on March 17, 2021. For additional information, contact Comité Thésaurus Inrae (thesaurusinrae@inrae.fr).

Languages



Keywords and classes

[agriculture](#) [environment](#) [food](#) [scientific research](#)<http://www.w3.org/2004/02/skos/core#Concept>

Categories and subjects

[Physical and Chemical Sciences](#) [Farms and Farming Systems](#)[Plant Phenotypes and Traits](#) [Breeding and Genetic Improvement](#)[Plant Anatomy and Development](#) [Natural Resources, Earth and Environment](#)[Food Security](#) [Animal Science and Animal Products](#)

Identifiers

URI

<http://opendata.inrae.fr/thesaurusINRAE/thesau>

Version IRI

<http://opendata.inrae.fr/thesaurusINRAE/2>

Other identifier

<https://doi.org/10.15454/J8GANU>

Dates

Creation date

March 17, 2021

Submission date

March 17, 2021

Modification date

February 5, 2024

Persons and organizations

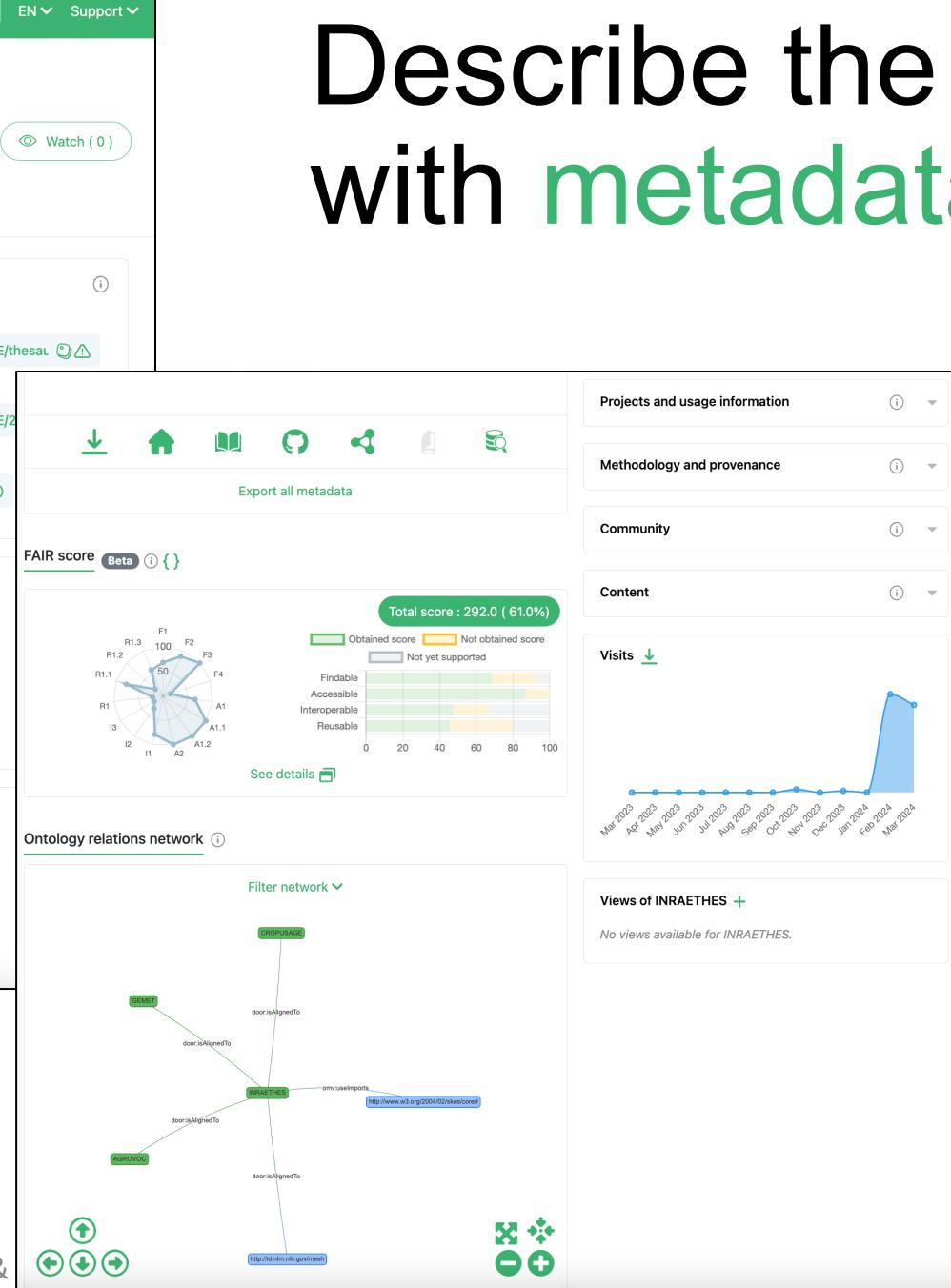
Contact

Comité Thésaurus INRAE

Publisher

INRAE - National Research In...

OntoPortal &



AgroPortal Landscape

Visualize data retrieved from the ontologies stored in the portal



AgroPortal landscape page

- Display “per property”
 - Global presentation of the properties
 - Synthesis diagrams & listing
- Allows to explore the agronomical ontology landscape by automatically aggregating the metadata fields of each ontologies in explicit visualizations (charts, term cloud and graphs).

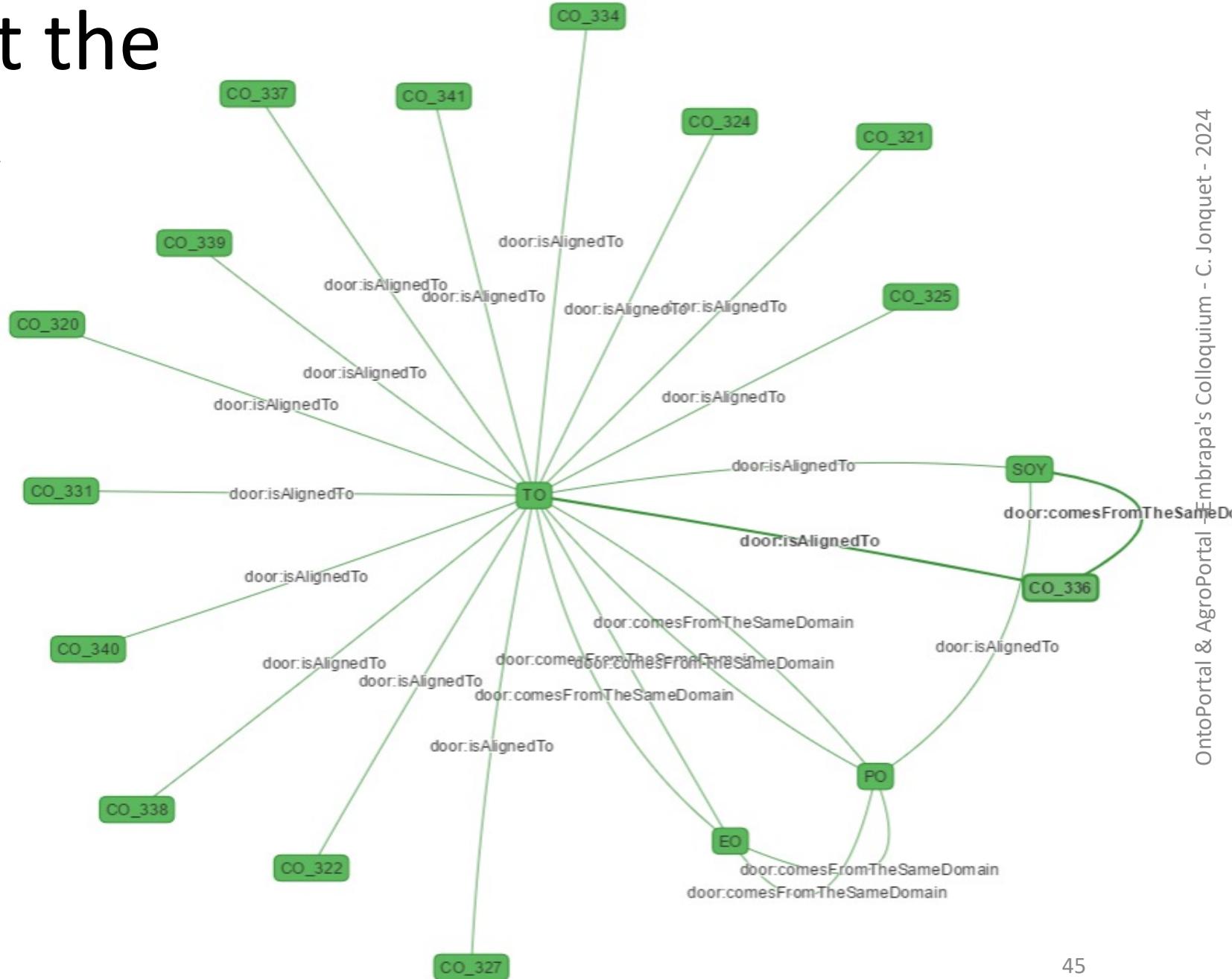


Clement Jonquet, Anne Toulet, Biswanath Dutta, Vincent Emonet. **Harnessing the power of unified metadata in an ontology repository: the case of AgroPortal**. *Journal on Data Semantics*, Springer, 2018, pp.1-31.

Information about the ontology network

- omv:useImports
- door:isAlignedTo
- door:ontologyRelatedTo
- omv:isBackwardCompatibleWith
- omv:isIncompatibleWith
- door:comesFromTheSameDomain
- door:similarTo
- door:explanationEvolution
- voaf:generalizes
- door:hasDisparateModelling
- dct:hasPart
- voaf:usedBy
- schema:workTranslation
- schema:translationOfWork

Filter Network



Annotator

The IBC AgroPortal Annotator processes text submitted by users, recognizes relevant ontology terms in the text and returns the annotations to the user. Use the interface below to submit sample text to get ontology-based annotations. Hover the mouse pointer on any button to see what it does. Click on the (?) to see a detailed help panel.

Subscribe to the [NCBO Annotator Users Google group](#) to learn more about who and how the Annotator is being used in different projects.

Plant height is a whole plant morphology trait which is the height of a whole plant. Plant height is sometime measured as height from ground level to the top of canopy at harvest.

Insert sample text

Ontology filters

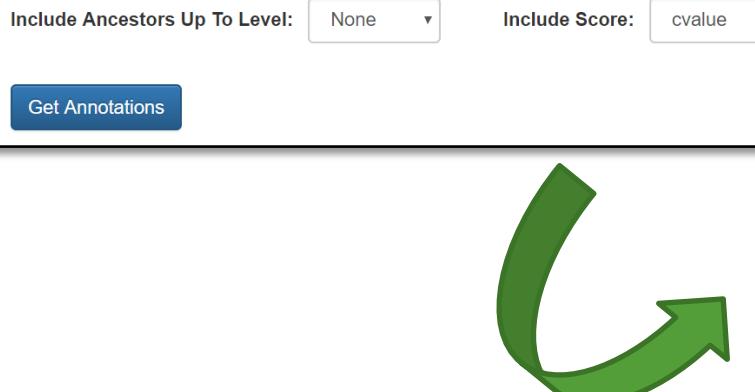
Select Ontologies

clear selection select from list

Select UMLS Semantic Types [?](#)

Select UMLS Semantic Groups [?](#)

Include Ancestors Up To Level: Include Score:



Matching parameters

- Match Longest Only
- Match Partial Words
- Include Mappings
- Exclude Numbers
- Exclude Synonyms

NegEx / ConText

- Detect negation [?](#)
- Detect temporality [?](#)

Annotations

total results 7 (direct 7 / ancestor 0 / mapping 0)

CLASS filter	ONTOLOGY filter	TYPE filter	CONTEXT	MATCHED CLASS filter	MATCHED ONTOLOGY filter	SCORE
whole plant	Plant Trait Ontology	direct	... of a whole plant . Plant height is ...	whole plant	Plant Trait Ontology	10.000
plant height	Plant Trait Ontology	direct	Plant height is a whole ...	plant height	Plant Trait Ontology	8.644
plant height	Plant Trait Ontology	direct	... whole plant. Plant height is sometime measured ...	plant height	Plant Trait Ontology	8.644
whole plant morphology trait	Plant Trait Ontology	direct	... is a whole plant morphology trait which is the ...	whole plant morphology trait	Plant Trait Ontology	6.644
whole plant	Plant Ontology	direct	... of a whole plant . Plant height is ...	whole plant	Plant Ontology	6.644
height	Plant Trait Ontology	direct	... is the height of a whole ...	height	Plant Trait Ontology	4.322
height	Plant Trait Ontology	direct	... measured as height from ground level ...	height	Plant Trait Ontology	4.322

Format Results As:

AgroPortal Annotator

identifies ontology concepts within plain text for semantic indexing

Sprouting
Initial Vigor

Color of unexpanded apical leaves

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 and stems

Total fresh weight foliage Root surface texture

Number harvested
Root number

Fresh weight of storage root

Fresh root yield

Dry yield

Harvest index

Proportion of lodged plants

Leaf retention

Plant architecture

Flowers (50%)

Sepal Color

Disc Color

Sigma color

Ovary color

Anther color

Female stamenoids

Male Sterile

Days to Flower

Fruit set

Fruit Exocarp



Annotator

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

Subscribe to the NCBO Annotator Users Google group to learn i

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

Ontology Recommender

Get recommendations for the most relevant ontologies based on an excerpt from a biomedical text or a list of keywords [?](#)

Input
 Text Keywords (separated by commas)

Output
 Ontologies Ontology sets

[insert sample input](#)

Some useful technical specifications for timber purchase. For example, the following criteria can be used in the technical specifications of a contract that is sustainable in environmental terms:
 - the assurance that the rate of harvesting of timber does not exceed levels that can be permanently sustained;
 - use of environment-friendly non-chemical methods of pest control, and the avoidance of use of chemical pesticides.

[advanced options](#)
[Get Recommendations](#)

AgroPortal Recommender

get the most relevant ontologies for your data

Ontology Recommender

Get recommendations for the most relevant ontologies based on an excerpt from a biomedical text or a list of keywords [?](#)

Input

 Text Keywords (separated by commas)

Output

 Ontologies Ontology sets

[insert sample input](#)

Some useful technical specifications for timber purchase. For example, the following criteria can be used in the technical specifications of a contract that is sustainable in environmental terms: - the assurance that the rate of harvesting of timber does not exceed levels that can be permanently sustained; - use of environment-friendly non-chemical methods of pest control, and the avoidance of use of chemical pesticides

[advanced options](#)

[Edit Input](#)

Recommended ontologies

POS.	ONTOLOGY	FINAL SCORE	COVERAGE SCORE	ACCEPTANCE SCORE	DETAIL SCORE	SPECIALIZATION SCORE	ANNOTATIONS	HIGHLIGHT ANNOTATIONS
1	ANAEETHES	29.5	26.3	0.0	0.0	100.0	3	<input checked="" type="checkbox"/>
2	WHEATPHENOTYPE	22.8	31.6	0.0	13.7	22.6	3	<input type="checkbox"/>
3	TO	17.1	15.8	0.0	45.1	11.9	2	<input type="checkbox"/>
4	EFO	16.0	21.1	0.0	20.6	9.0	2	<input type="checkbox"/>
5	ENVO	15.6	15.8	0.0	35.9	10.4	2	<input type="checkbox"/>
6	STY	15.5	21.1	0.0	7.8	18.3	2	<input type="checkbox"/>
7	NCBITAXON	13.7	21.1	0.0	7.8	6.5	2	<input type="checkbox"/>
8	SIO	8.1	10.5	0.0	13.7	6.8	1	<input type="checkbox"/>
9	PATO	8.1	10.5	0.0	7.8	9.5	1	<input type="checkbox"/>
10	AEO	7.8	10.5	0.0	5.9	8.3	1	<input type="checkbox"/>
11	AFEQ	7.7	10.5	0.0	5.9	6.6	1	<input type="checkbox"/>
12	PCO	7.7	10.5	0.0	7.8	5.3	1	<input type="checkbox"/>

Align ontologies one another

AgroPortal LIRMM

Browse Search Mappings Recommender Annotator Projects Admin Recently Viewed antool

AnaEE Thesaurus

Summary Classes Properties Notes Mappings Widgets Edit ontology information Add submission Edit submission information (1.0)

Jump To:

Details Visualization Notes (0) Class Mappings (4) 4

Create New Mapping Create New External Mapping

Internal mappings

MAPPING TO	ONTOLOGY	SOURCE	RELATION
carbon dioxide	Environment Ontology	LOOM	
carbon dioxide	Experimental Factor Ontology	LOOM	
CarbonDioxide	XEML Environment Ontology	LOOM	
Carbon dioxide	Biorefinery	LOOM	

Interportal mappings

MAPPING TO	ONTOLOGY	SOURCE	RELATION
There are currently no interportal mappings for this class.			

External mappings

MAPPING TO	ONTOLOGY	SOURCE	RELATION
There are currently no external mappings for this class.			

concept by concept

- + abiotic environment
- + AnaEE-France service identification and partners
- + biotic environment
- + chemical compound
 - + carbon forms
 - + carbon dioxide 4
 - carbonate
 - Dissolved organic carbon
 - inorganic carbon
 - insoluble organic carbon
 - organic carbon
 - Particulate organic carbon
 - total carbon
 - total organic carbon
- + chemical elements
 - chloride
 - ions
 - metals
 - molecule
 - nitrogen forms
 - organic matter
 - organic molecules
 - oxygen forms
 - pesticide
 - phosphorus forms
 - pollutant
 - reactive oxygen species
 - silica forms

Mappings

ONTOLOGY	MAPPINGS
Agri-Food Experiment Ontology	1
Agricultural Experiments Ontology	5
Banana Anatomy	2
Basic Formal Ontology	1
Biorefinery	13
Cell Ontology	4
Chickpea Ontology	14
Comparative Data Analysis Ontology	3
Durum Wheat	2
EDAM bioinformatics operations, data types, formats, identifiers and topics	25
Environment Ontology	72
Environment Ontology for Livestock	10
Experimental Factor Ontology	93
Gene Ontology	5
GENO Ontology	5
Genomic Feature and Variation Ontology	5
Gramene Taxonomy Ontology	3
Groundnut Ontology	16
IBP Cassava Trait Ontology	23
IBP Cowpea Trait Ontology	25
IBP Crop Research Ontology	22

REST Service API:

<http://data.agroportal.lirmm.fr/documentation>

The screenshot shows the API Documentation page for the REST Service API. On the left, a sidebar lists various API endpoints such as Home, General Usage, Search, Annotator, Recommender, Resource Index, Batch, Ontology Analytics, and Resources. The main content area is titled "API Documentation" and "General Usage". It explains that the API is composed of a set of resources and related endpoints, and recommends using a web browser like Chrome or Firefox. Below this is a table titled "Common Parameters" with three rows:

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: <ol style="list-style-type: none">Using the <code>apikey</code> query string parameterProviding an <code>Authorization</code> header: <code>Authorization: apikey token=your_apikey</code> (replace 'your_apikey' with your actual key)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 new call.
include	all (comma-separated list of attributes, EX: attr1,attr2)	By default, the API will show a subset of the available attributes for a given media type. This behavior can be overridden by providing <code>include=all</code> to show all attributes or <code>include=attribute1,attribute2</code> to include a specific list. The API is optimized to return the default values, so overriding this can impact the performance of your request. The <code>include=all</code> option is most useful for testing in the browser. Use it to identify the set of attributes required and use only those by passing them as a comma separated list, e.g. <code>include=preflabel,cui</code> . The <code>include</code> parameter is currently unsupported on Annotator and Recommender endpoints.
format	json jsonp xml	The API returns JSON as the default content type. This can be overridden by using the <code>format</code> query string parameter. The API also respects <code>Accept</code> header entries, with precedence given to the <code>format</code> parameter.

SPARQL endpoint:
<http://sparql.agroportal.lirmm.fr>

The screenshot shows the SPARQL endpoint interface at <http://sparql.agroportal.lirmm.fr/test/>. The title bar says "SPARQL httpd server v1.1.5-122-g1788d29 test query". The main area is titled "KB ontologies_api". A SPARQL query is displayed:

```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>

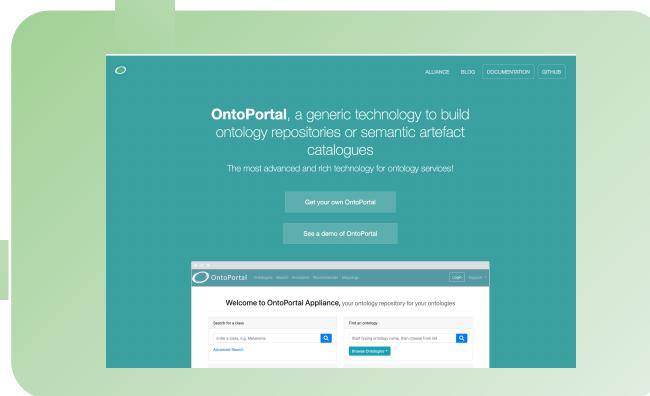
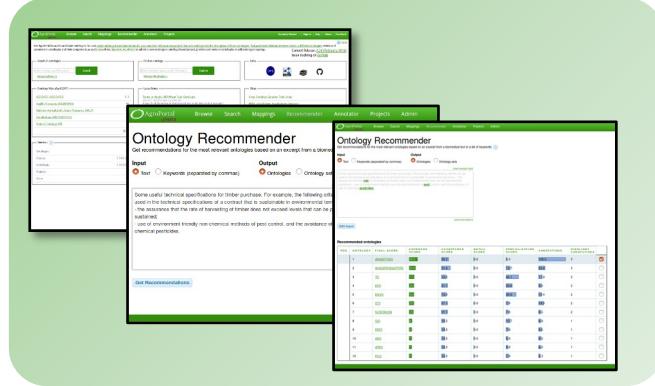
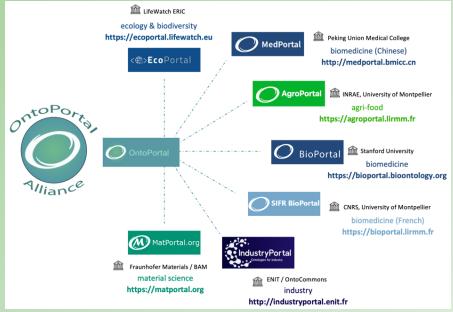
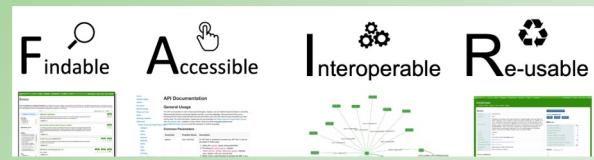
SELECT * WHERE {
?s ?p ?o
} LIMIT 10
```

At the bottom, there are buttons for "Soft limit", "xml", "Execute", and "Effacer".

Conclusion

- Feedback welcome: support@ontoportal.org or agroportal-support@lirmm.fr
- Proposition to make **OntoPortal** deployable at the click of the mouse for a project or community
- Every new community, every new use cases brings new ideas. Participate. Join.
- Federated portals: yes, we are working on it.
- Exchanges with other communities: astronomy, social sciences & humanities, environment agencies, archeology, etc.

Summary



Questions ?