

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



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Embrapa Colloquium - April 24th 2024



Info about this presentation

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



- Vocabulary Symposium 2023
➔ November 15th 2023



<https://fr.slideshare.net/jonquet/ontology-repositories-and-semantic-artefact-catalogues-with-the-ontoportal-technology>

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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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The Semantic Web – ISWC 2023

(ISWC 2023)

Clement Jonquet , John Graybeal, Syphax Bouazzouni, Michael Dorf, Nicola Fiore, Xeni Kechagioglou, Timothy Redmond, Ilaria Rosati, Alex Skrenchuk, Jennifer L. Vendetti, Mark Musen & members of the OntoPortal Alliance

 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

Sections

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[Usage of the OntoPortal Technology](#)

[Perspectives and Discussion](#)

[Conclusion](#)

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)



**WP4**

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

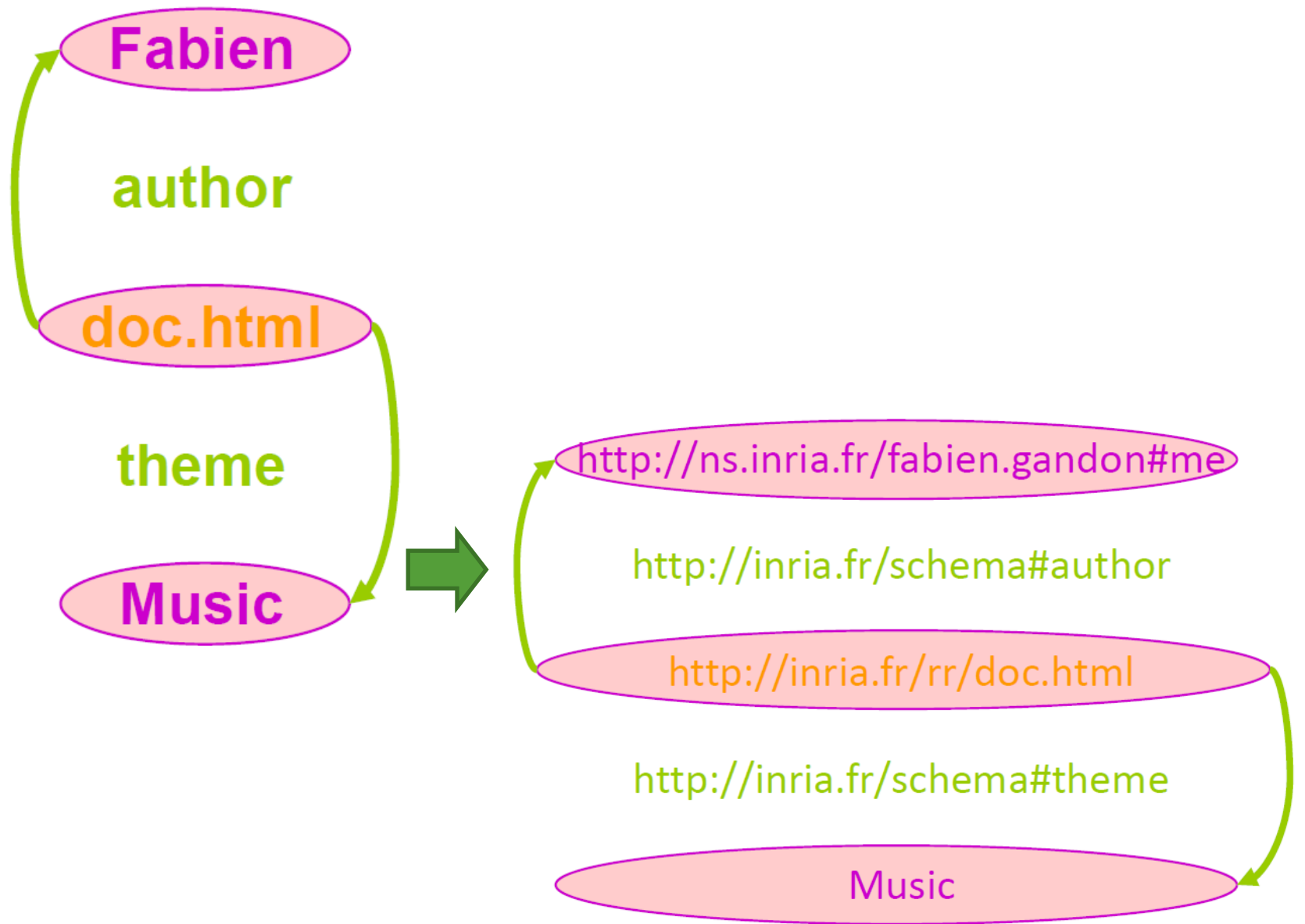
WP4 Metadata and Ontologies

*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.*

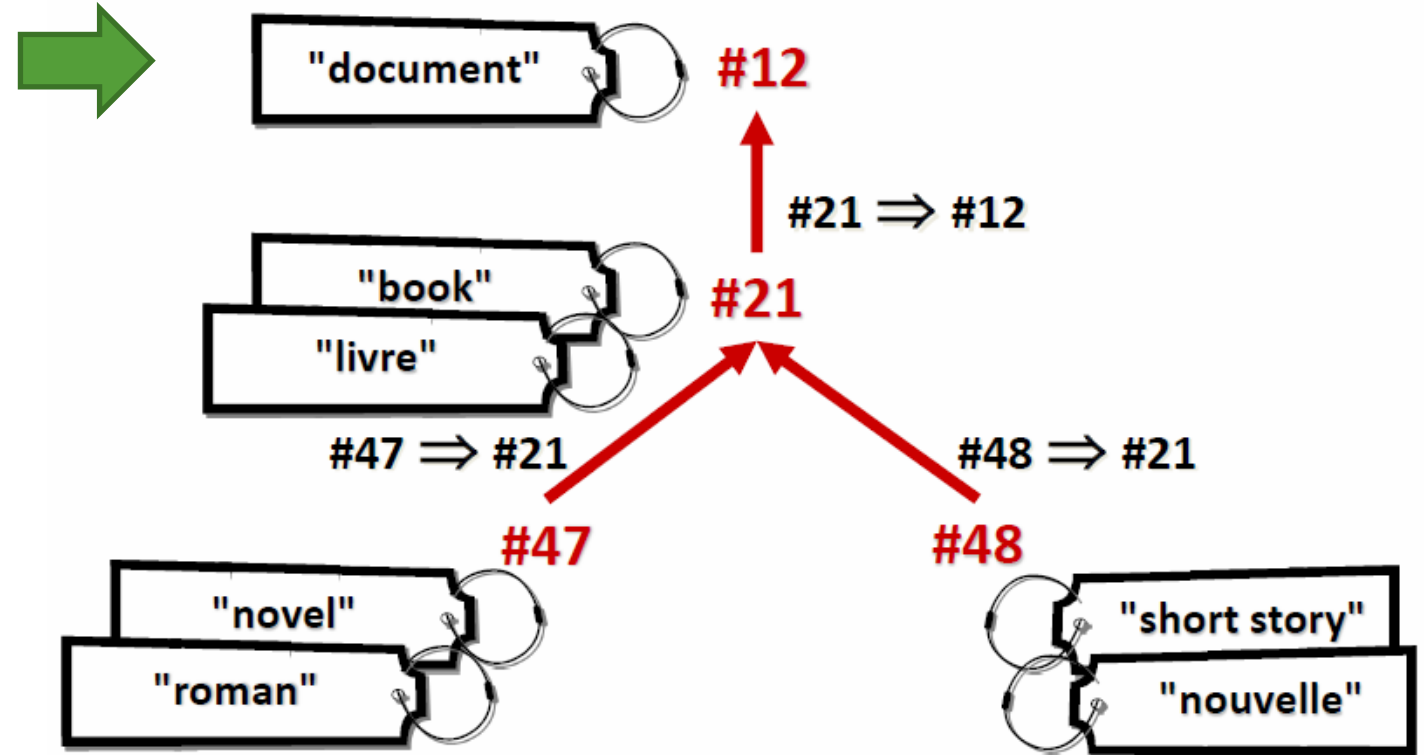
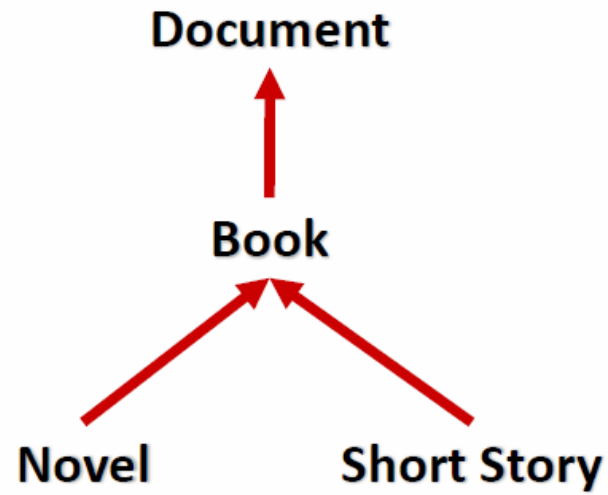


A few elements on ontology repositories

The Semantic Web relies on RDF

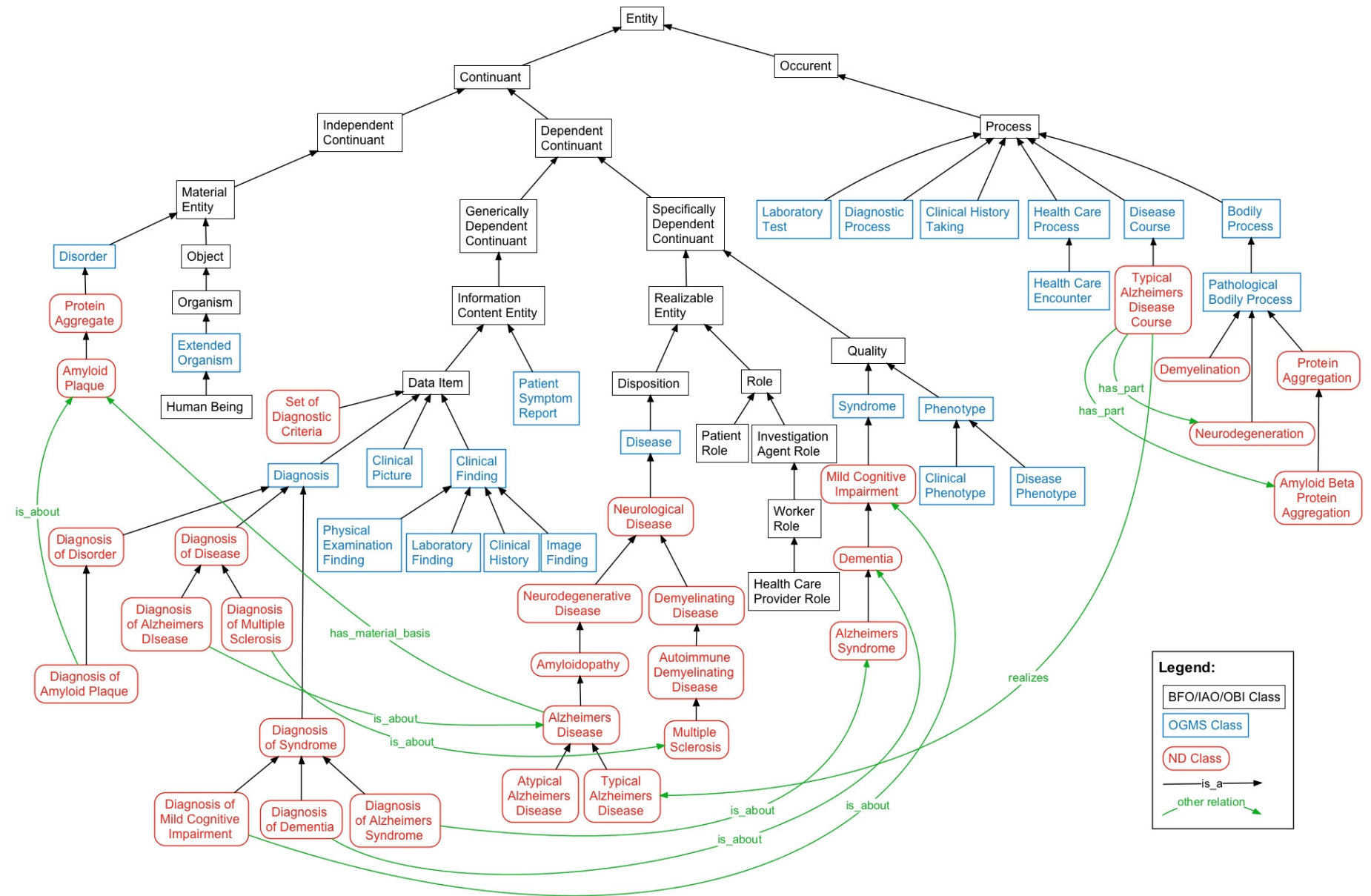


Ontologies (small)



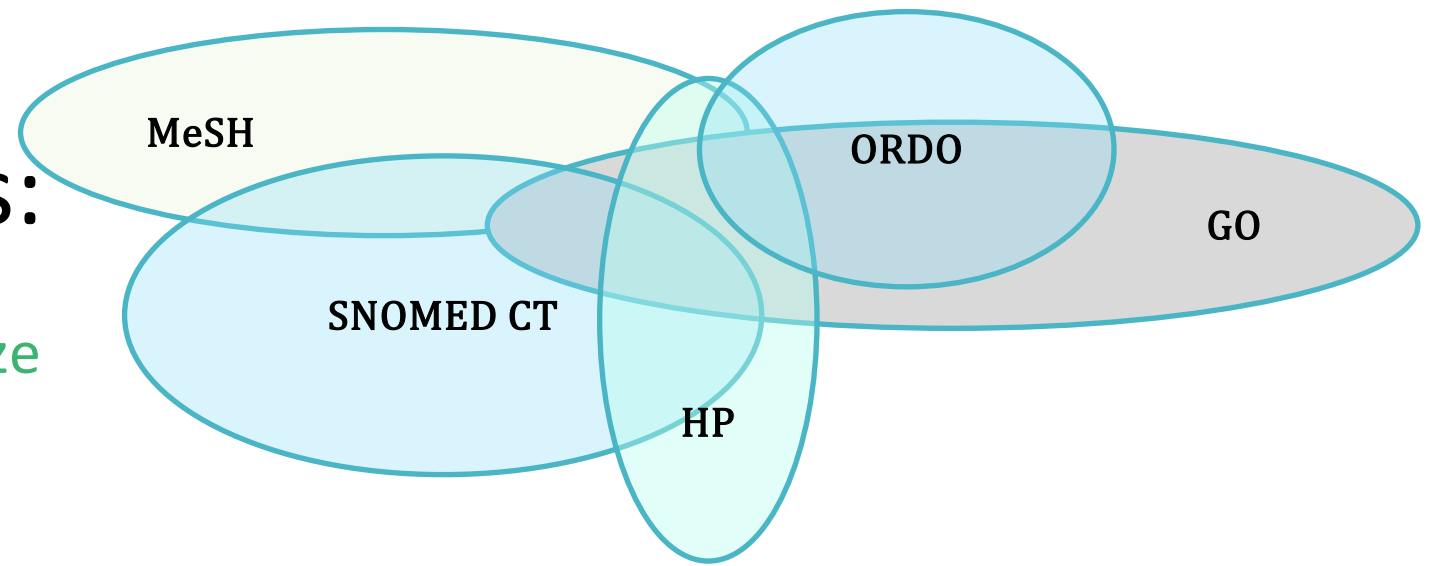
Credit: F. Gandon (Inria)

Ontologies (big)

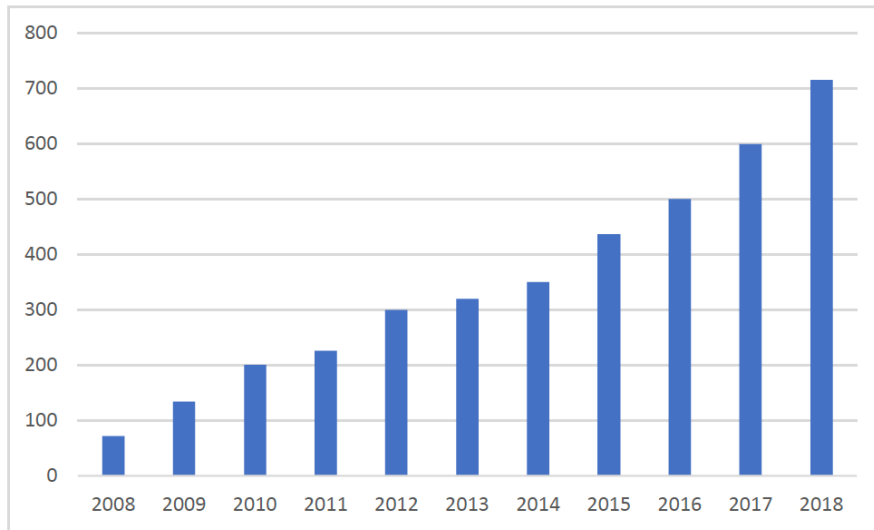


Issues with ontologies:

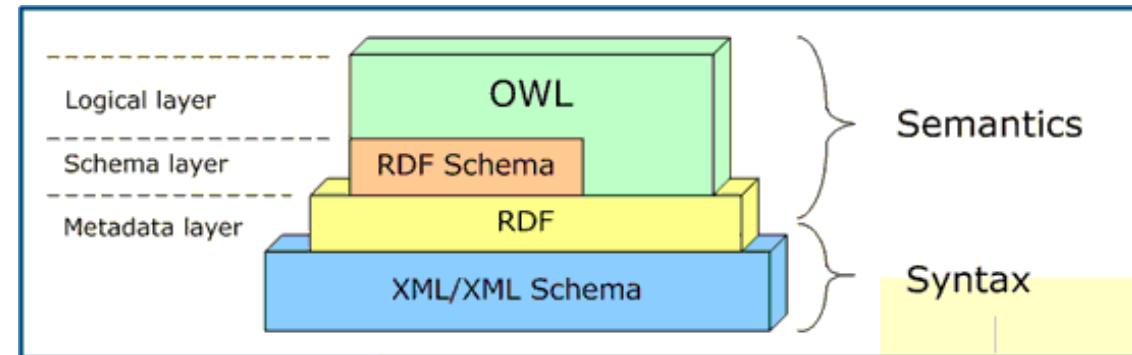
- spread out,
- in different formats, of different size
- with different structures
- increasing number
- overlapping



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

Reusable

AgroPortal

Submit ontology

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

Filters

Categories

Groups

Natural languages

Formality levels

Ontology types

API Documentation

General Usage

Common Parameters

Summary

Classes

Properties

Instances

Notes

Mappings

Widgets

Sparql

Details

Visualization

Notes (0)

Mappings (52)

ID

Preferred name

Synonyms

Details

Visualization

Notes (0)

Mappings (52)

Create New Mapping

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

AgroPortal

ontologies > INRAE Thesaurus

INRAE Thesaurus (INRAETHES) SKOS View license

Summary

Concepts

Properties

Schemes

Collections

Notes

Mappings

Widgets

Sparql

General information

Identifiers

Projects and usage information

Methodology and provenance

Community

Content

FAIR score

Ontology relations network

Views of 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 NATIONAL CENTER FOR
BIOMEDICAL ONTOLOGY

A screenshot of the BioPortal website. The header is dark blue with the BioPortal logo and links for Login, Tools, and Support. The main content area is white and features a welcome message, search bars for classes and ontologies, a bar chart of ontology visits for July 2017, and a table of BioPortal statistics. The footer is grey and contains links for products, support, about, and connect, along with a copyright notice and a page number 13.

BioPortal Login Tools Support

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

Search for a class

Enter a class, e.g. Melanoma

[Advanced Search](#)

Find an ontology

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

[Browse Ontologies](#)

Ontology Visits (July 2017)

Ontology	Visits
CPT	85,000
RXNORM	25,000
MEDDRA	20,000
SNOMEDCT	15,000
NDDF	5,000

[More](#)

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

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

ABOUT
[About Us](#)
[Mission & Vision](#)
[Team](#)
[Projects](#)

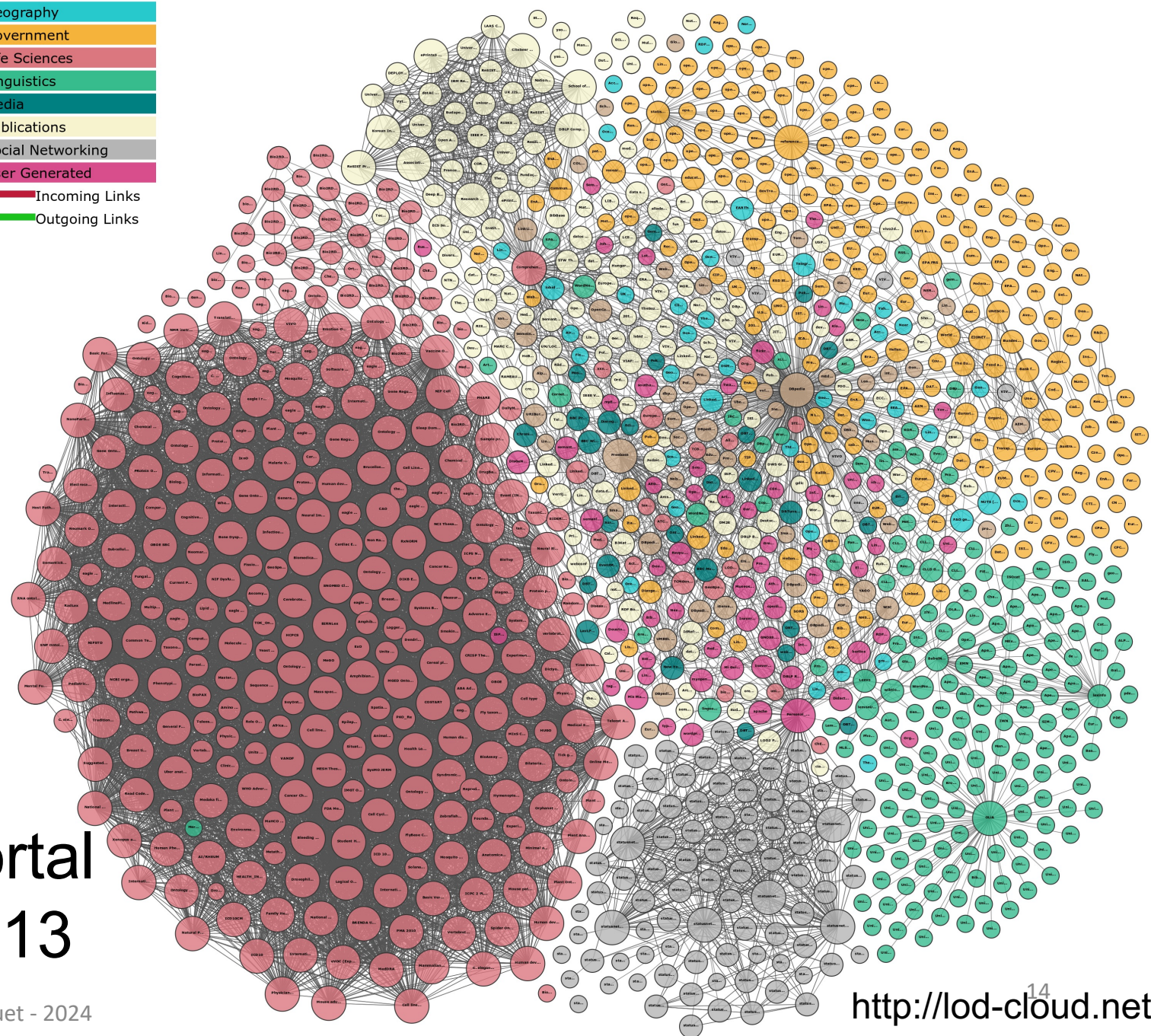
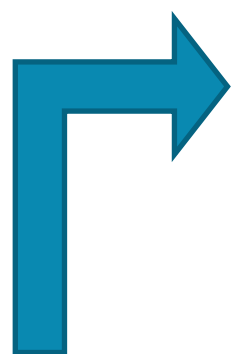
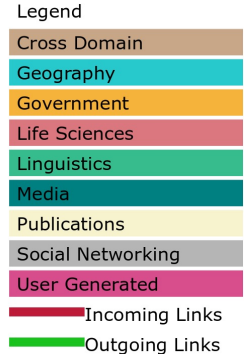
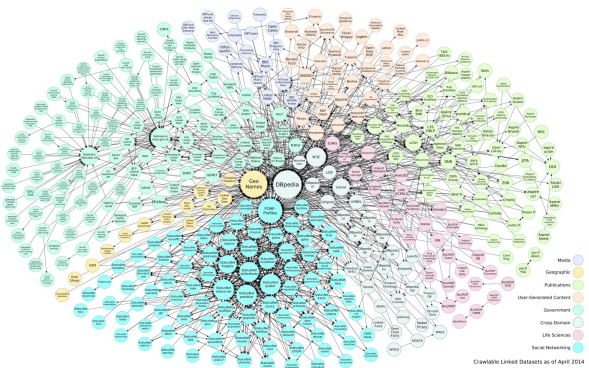
CONNECT
[f](#) [t](#) [in](#)

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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[CITE US](#) | [PRIVACY POLICY](#) | [TERMS](#)

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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

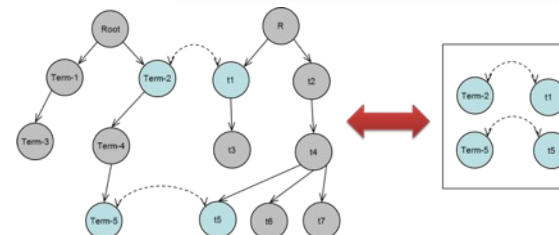
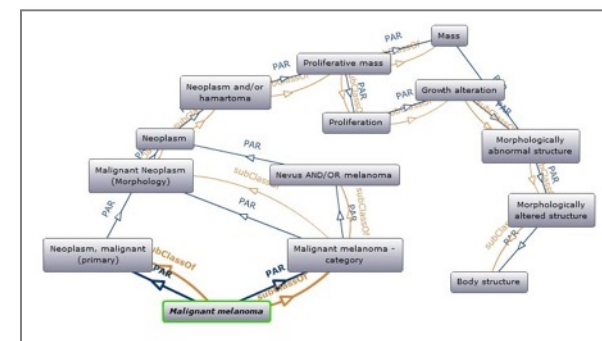
Annotation

Term recognition

Data Access

Search “data” annotated with a given term

<http://data.bioontology.org>

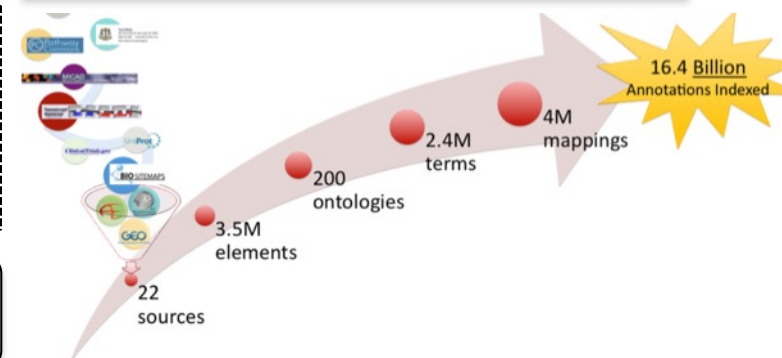


Jump To:

Legend

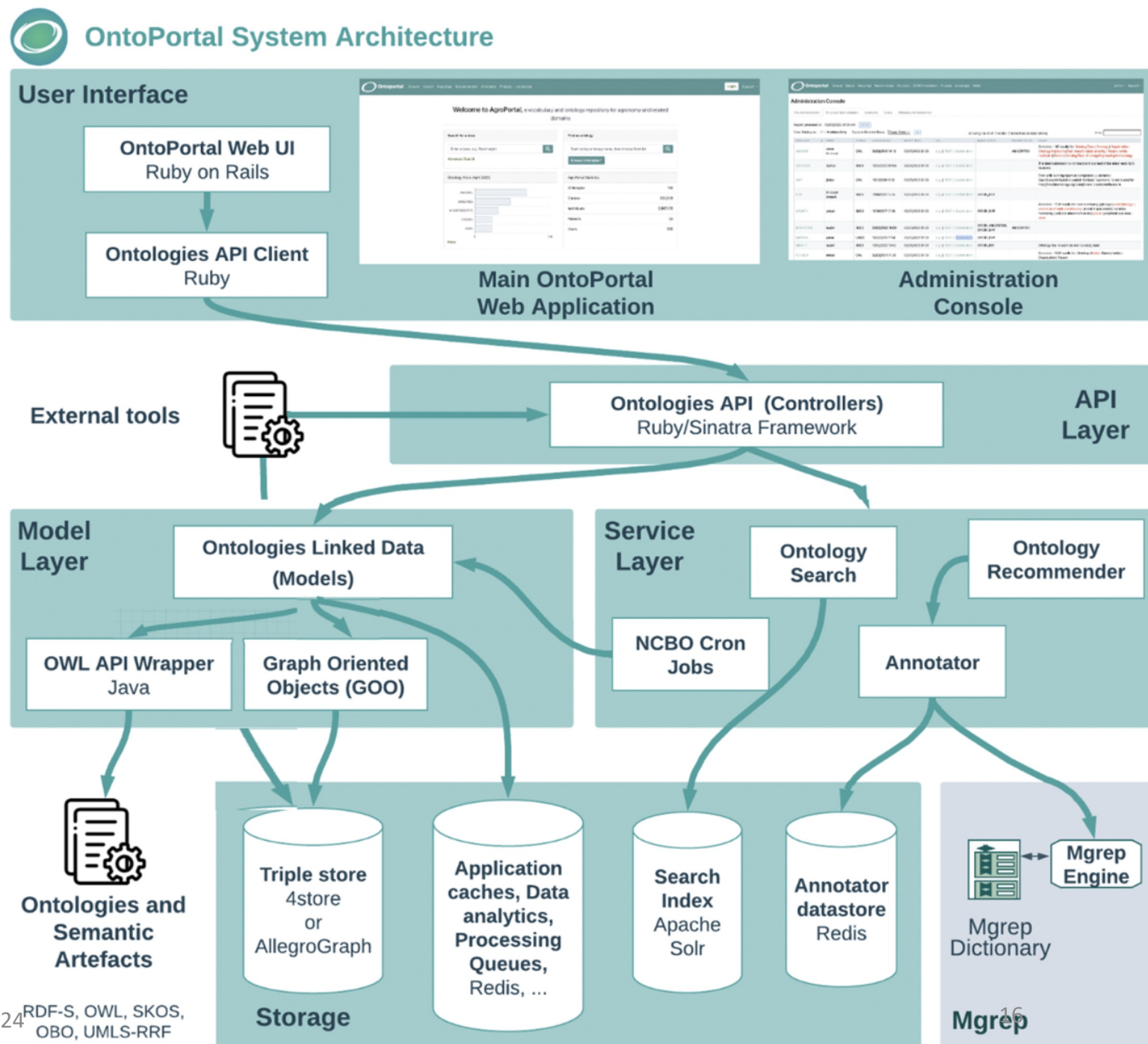
- Malignant **melanoma** (synonym)
- Amelanotic **melanoma** (preferred name)
- Excision of **melanoma** (preferred name)
- Melanoma** in situ (preferred name)
- Melanoma** vaccine (preferred name)

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



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

Logo

Navigation

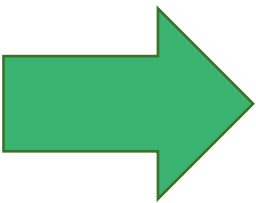
Search for a class

Find an ontology

Ontology Visits (July 2017)

BioPortal Statistics

Footer



Logo

Navigation

Welcome to AgroPortal

Search for an ontology or a term

Do you want to share an ontology?

Submit ontology

Discover ontologies

AgroPortal in figures

175 Ontologies

1M Classes

3M Individuals

11K Properties

60 Projects

17M Mappings

433 Users

BioPortal

Medical Subject Headings, version française

Details

Cell line ontology (Chinese simplified)

EcoPortal

Search for a class

Find a semantic resource

Ecoportal Statistics

AgroPortal

Welcome to AgroPortal

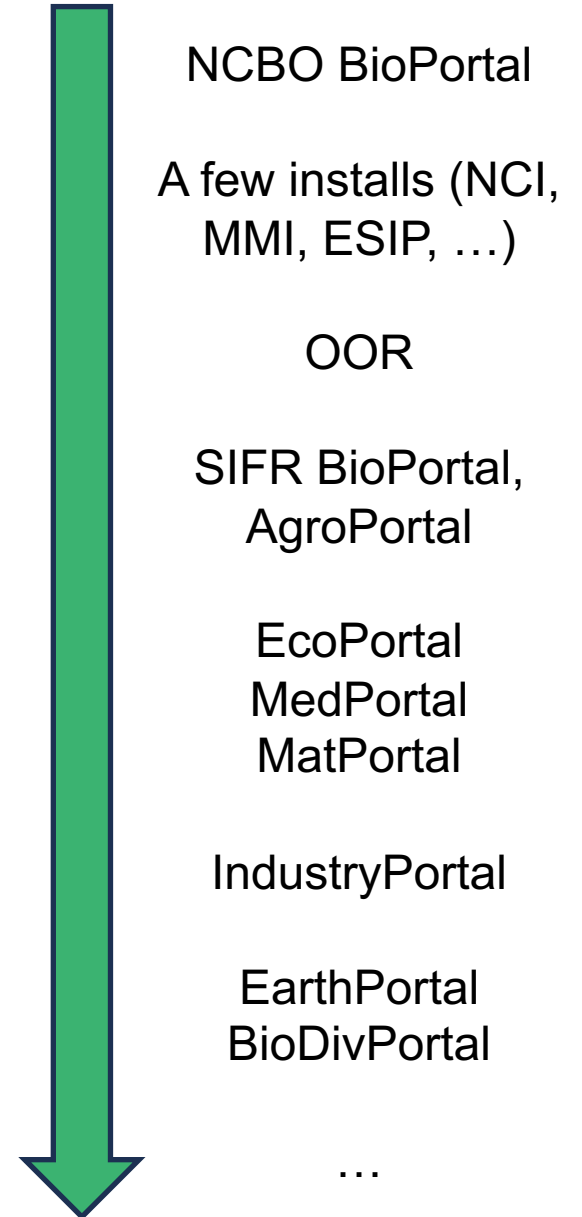
Search for an ontology or a term

Do you want to share an ontology?

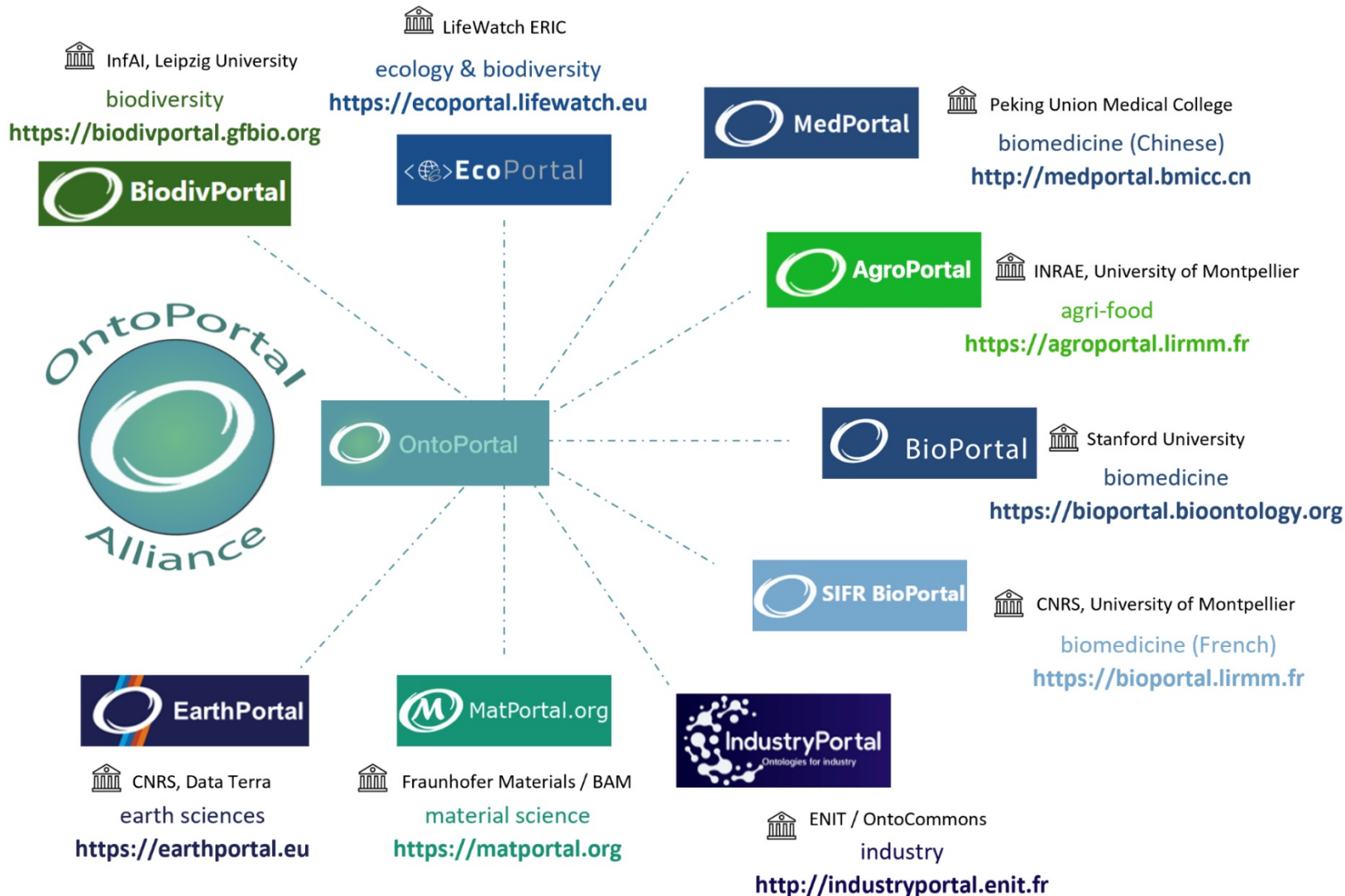
AgroPortal in figures

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>

Submit ontology

Filters

Categories

Groups

Natural languages

Formality levels

Ontology types

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

Showing 162 of 175

Soil organic carbon storage and agricultural practices modeling (CSOPRA)

AGROVOC (AGROVOC)

DEMETER Agriculture Information Model (DEMETER-AIM)

Agronomy Ontology (AGRO)

Soil Food Web Ontology (SFWO)

AnaEE Thesaurus (ANAETHES)

INRAE Thesaurus (INRAETHES)

588 instances

3,975 classes

1,235,531 concepts

34 classes

137 instances

182 classes

552 instances

4,163 classes

386 instances

834 classes

3,247 concepts

2 classes

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

AgroPortal

Browse Mappings Recommender Annotator Landscape

Login EN Support

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)

CSOPRA 170 visits

AGROVOC 116 visits

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 smeantic 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

175

Ontologies

1M

Classes

3M

Individuals

11K

Properties

60

Projects

17M

Mappings

433

Users

See details

Support & Collaborations

NUMEV

ANR

European Union

DzKAB

INRAE

INRAE

AgroPortal

Products

Support

Legal

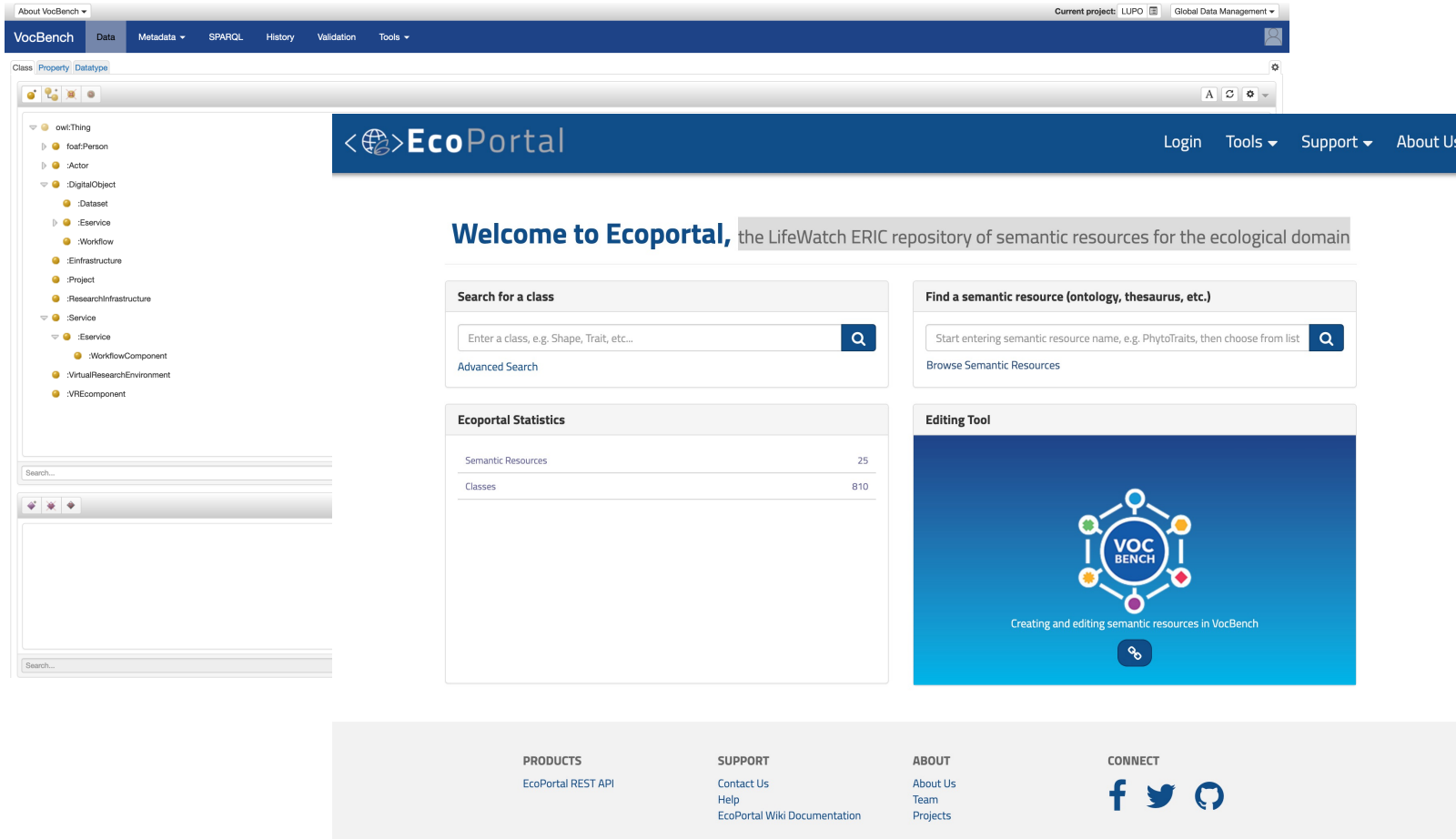
About

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

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

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

EcoPortal



The screenshot shows the EcoPortal web application interface. At the top, there is a navigation bar with 'VocBench' and 'Data' tabs, and a 'Current project: LUPO' dropdown. Below this is a 'Class Property Datatype' filter bar. The main content area features a 'Welcome to Ecoportal, the LifeWatch ERIC repository of semantic resources for the ecological domain' message. It includes a 'Search for a class' section with a search bar and 'Advanced Search' link, a 'Find a semantic resource (ontology, thesaurus, etc.)' section with a search bar and 'Browse Semantic Resources' link, and an 'Ecoportal Statistics' table showing 25 Semantic Resources and 810 Classes. There is also an 'Editing Tool' section with a 'VOC BENCH' logo and the text 'Creating and editing semantic resources in VocBench'. The footer contains links for 'PRODUCTS' (EcoPortal REST API), 'SUPPORT' (Contact Us, Help, EcoPortal Wiki Documentation), 'ABOUT' (About Us, Team, Projects), and 'CONNECT' (Facebook, Twitter, GitHub icons).



FINDABLE

ACCESSIBLE

INTEROPERABLE

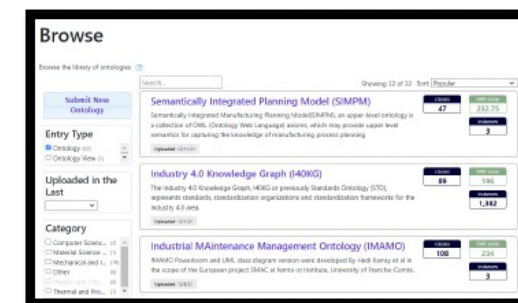
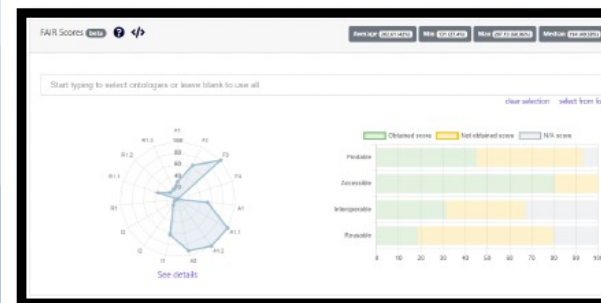
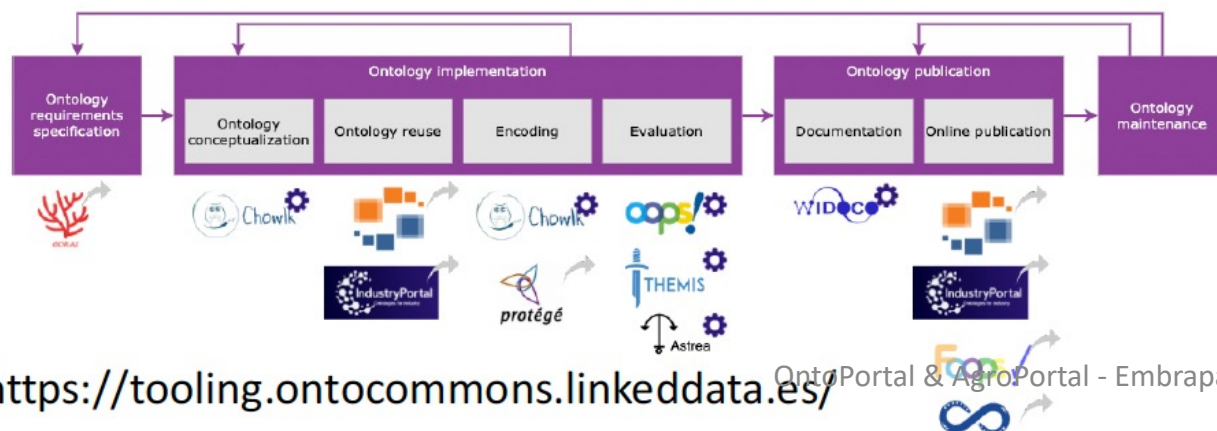
REUSABLE

<http://ecoportal.lifewatch.eu>

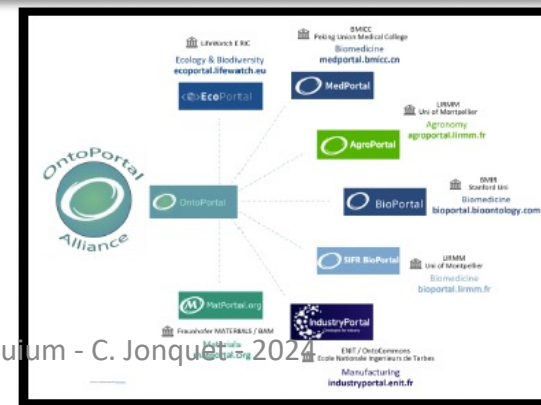
IndustryPortal helps ontology developers and users ...

- 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



<http://industryportal.enit.fr>



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

Guillaume ALVISET

Christelle PIERKOT

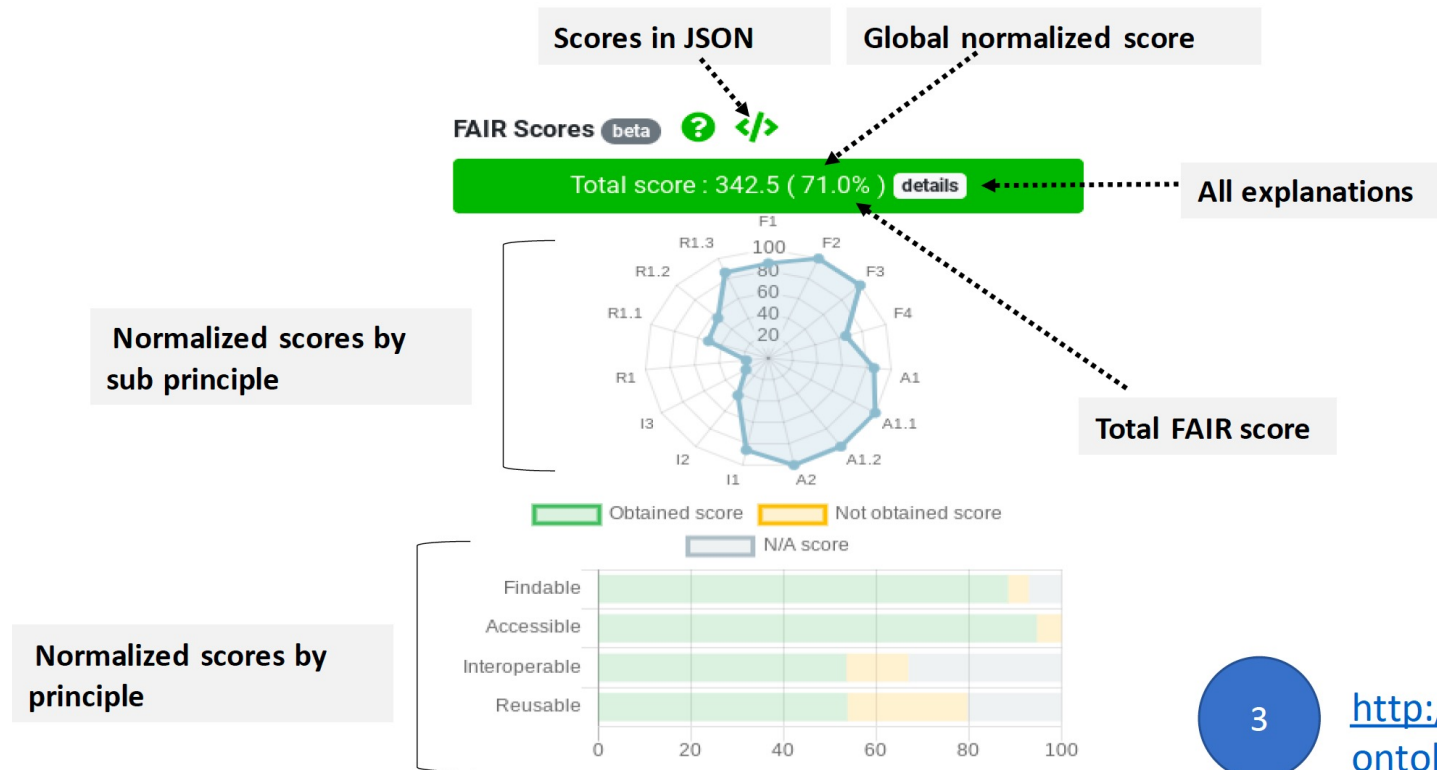


Always in-line with the OntoPortal technology but with many added features...

- 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



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)

<https://github.com/ontoportal>

Search or jump to...

/

Pull requestsIssuesCodespacesMarketplaceExplore

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

Overview

Repositories20

Projects1

Packages

Teams9

People26

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>

See our 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-new/choose>

Customize pins

projectPublic

centralized repository for the management of the centralized issues, discussions, ...)

documentationPublic

Instructions for installing the OntoPortal Virtual Appliance (3.0 and later)

SCSS ☆ 4 🔖 5

web_uiPublic

ontoportal_web_ui
for ontologies

1

ontologies_apiPublic

Forked from ncbo/ontologies_api
Hypermedia API for OntoPortal ontology-related projects

Ruby 🔖 1

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

RubyJavaJavaScriptC

SCSS

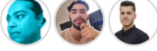
Portal - Embrapa's Colloquium - C. Jonquet - 2024

27

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

OntoPortal Alliance and Workshops

2020,
online



2022, Montpellier



2023,
Lecce

OntoPortal & AgroPortal - Embrapa's Colloquium - 1st Edition - 2024

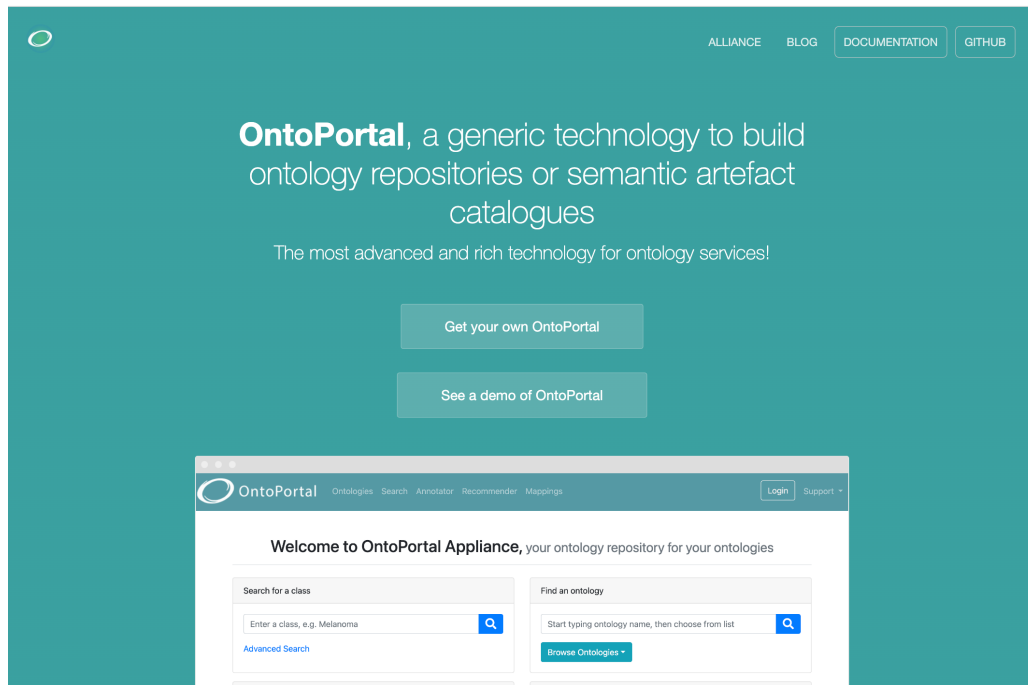
COMING UP IN
SEPTEMBER

2024,
Stanford

More information

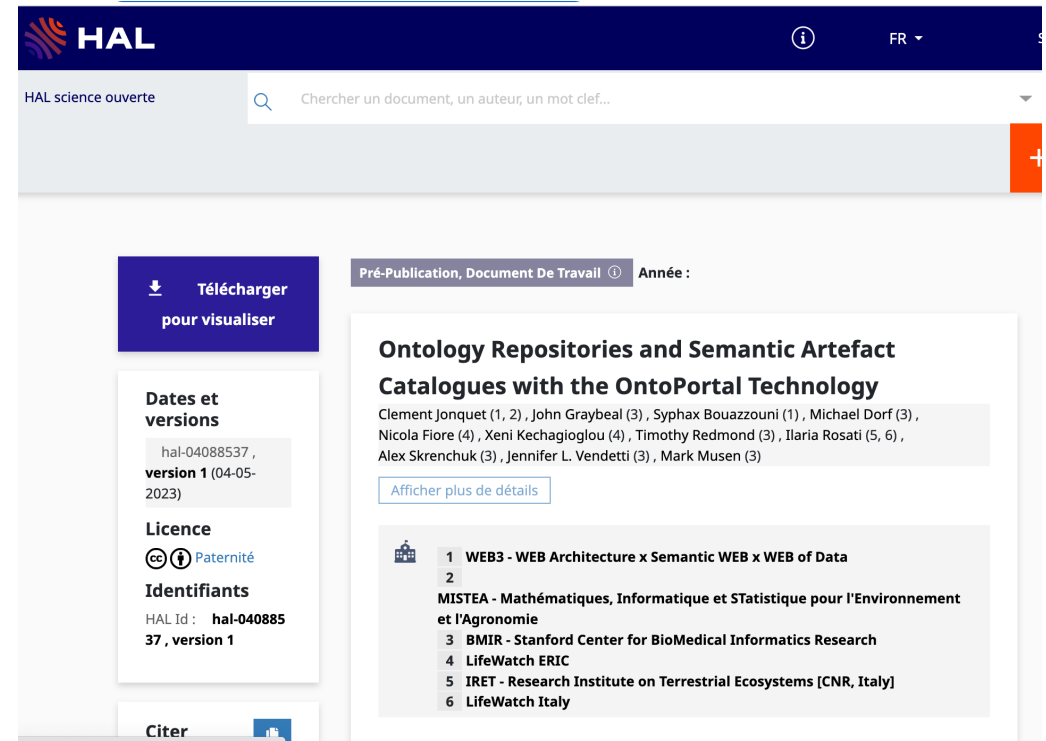
Web site and documentation:

<https://ontoportal.org>



ISWC 2023 Resource paper:

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





A deeper look into AgroPortal

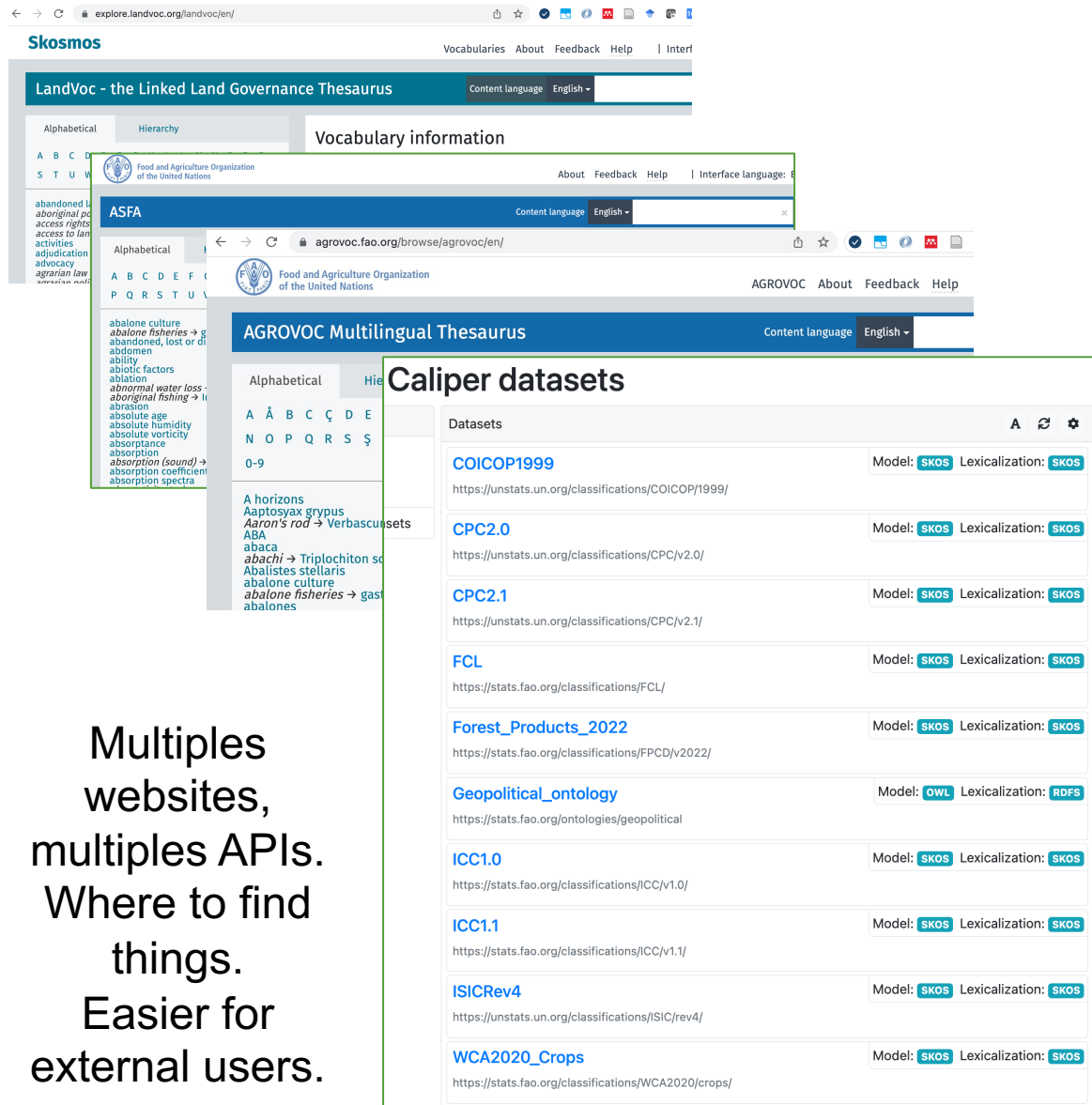
AgroPortal: a vocabulary and ontology repository for agronomy



<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**

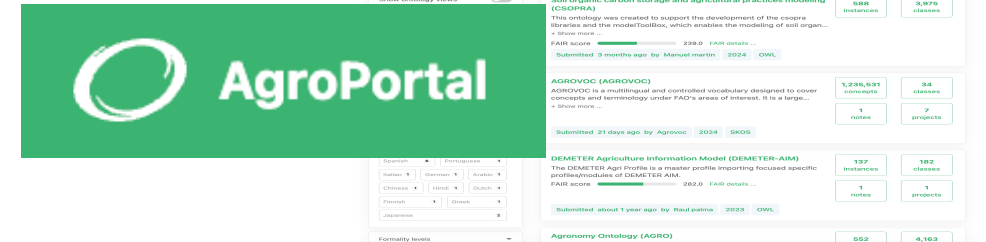
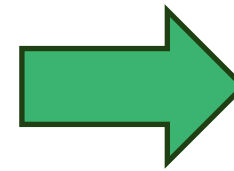
Offering a global service (for all semantic resources)



The image shows four overlapping screenshots of semantic resource interfaces:

- Skosmos**: A web interface for "LandVoc - the Linked Land Governance Thesaurus" with a search bar and navigation links.
- ASFA**: A screenshot of the "Food and Agriculture Organization of the United Nations" ASFA interface.
- AGROVOC Multilingual Thesaurus**: A screenshot of the "AGROVOC" interface with a search bar and navigation links.
- Caliper datasets**: A table listing various datasets with their URLs, models, and lexicalizations.

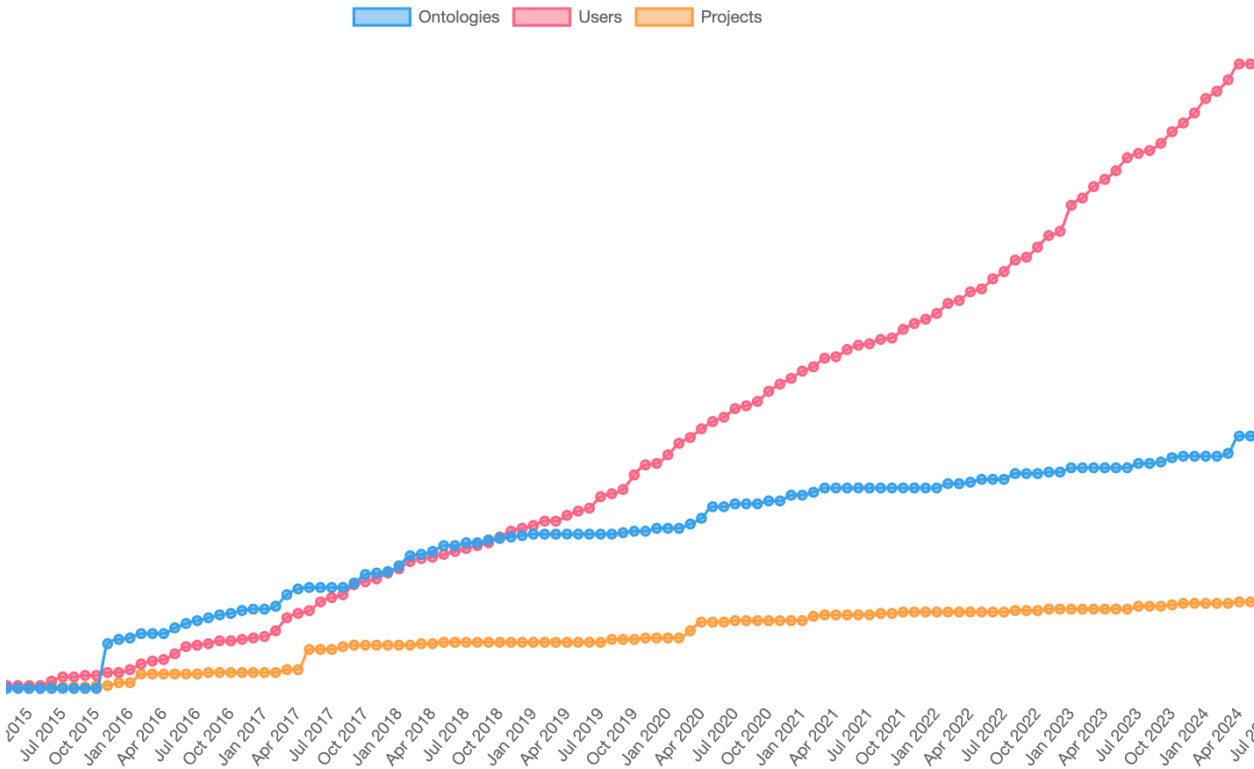
Datasets	Model	Lexicalization
COICOP1999	SKOS	SKOS
CPC2.0	SKOS	SKOS
CPC2.1	SKOS	SKOS
FCL	SKOS	SKOS
Forest_Products_2022	SKOS	SKOS
Geopolitical_ontology	OWL	RDFS
ICC1.0	SKOS	SKOS
ICC1.1	SKOS	SKOS
ISICRev4	SKOS	SKOS
WCA2020_Crops	SKOS	SKOS



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)	OBO	CROP, WHEAT	~80
IBP Crop Research (CO_715)	OBO	CROP	~250
Multi-Crop Passport Ontology (CO_020)	OBO	CROP	~90
Biorefinery (BIOREFINERY)	OWL	LOVINRA	~300
Matter Transfer (TRANSMAT)	OWL	LOVINRA	~1.1K
Plant Ontology (PO)	OWL	WHEAT, RICE, OBOF	~2K
Plant Trait Ontology (TO)	OWL	WHEAT, RICE, OBOF	~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 (ANAEE)	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 **facetted search** approach, based on the metadata

The screenshot displays the AgroPortal interface for browsing ontologies. At the top, a green navigation bar includes the AgroPortal logo, links for Browse, Mappings, Recommender, Annotator, and Landscape, a search bar, and buttons for Login, EN, and Support. Below the navigation bar, a 'Submit ontology' button is visible. The main content area is divided into a left sidebar for filters and a right section for ontology results.

Filters:

- Show ontology views: ☐
- Show retired ontologies: ☐
- Categories:
- Groups:** (highlighted with a red circle)
- Natural languages:
- Formality levels:
- Ontology types:

Ontology Results:

Showing 162 of 175

Soil organic carbon storage and agricultural practices modeling (CSOPRA)

- 588 instances
- 3,975 classes
- 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)

- 1,235,531 concepts
- 34 classes
- 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)

- 137 instances
- 182 classes
- 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

[Search](#)

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 ▾](#)
- [Reuses in 2 ontologies ▾](#)

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 ▾](#)

leaf area index - AnaEE Thesaurus (ANAEETHES)

Jump To

Type a class name from TO and jump to it in AgroPortal

Widget

See code { }

Jump To:

[Go to AgroPortal](#)

leaf area index

leaf area to spikelet number ratio

leaf area duration

leaf area trait

specific leaflet area

leaflet area

flag leaf area

specific leaf area

relative leaf area

large vascular bundle number to leaf area ratio

Results provided by LIRMM AgroPortal

Autocomplete

Fill your form fields with classes from TO

Example 1 (start

[ontologies](#) > SDGIO

Sustainable Development Goals Interface Ontology (SDGIO) OWL

No license

Last submission date August 11, 2018



Watch (0)

Summary

Classes

Properties

Instances

Notes

Mappings

Widgets

Sparql

English ▼



Jump to

- > material intensity
 - material trade balance
 - material trade balance per capita
 - measurement datum
 - net permanent forest loss
- > resource consumption
 - sustainable development goal indicator value
 - Agricultural export subsidies
 - Aid for Trade commitments and disbursements
 - Amount of water- and sanitation-related official development assistance that is part of a

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>

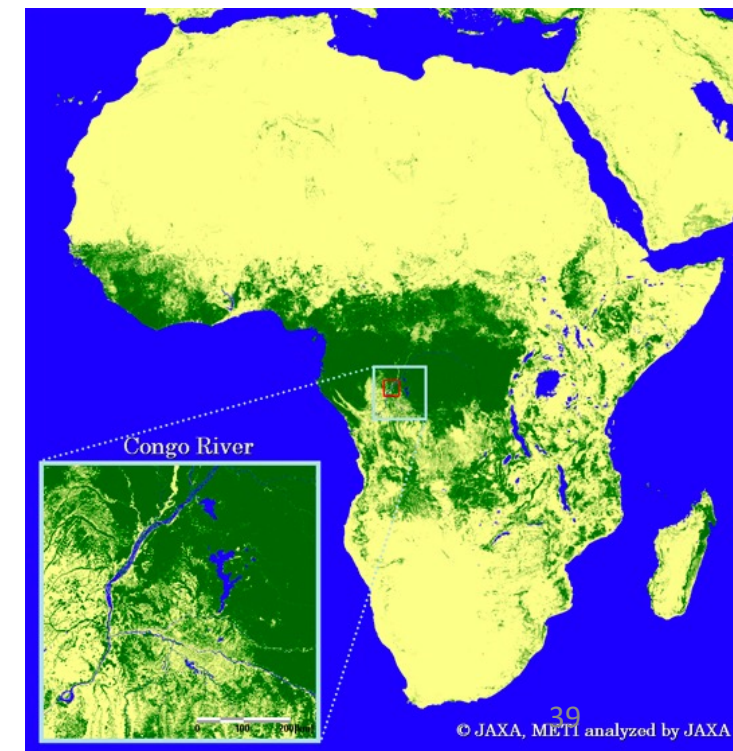
rdfs:label

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
simultan-
eously

Biodiversity Thesaurus (BIODIVTHES)

SKOS

View license

Watch (0)

↻

Last submission date September 27, 2022

Summary

Concepts

Properties

Schemes

Collections

Notes

Mappings

Widgets

Sparql

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

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

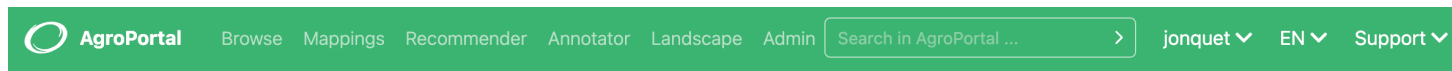
Type

http://www.w3.org/2004/02/skos/core#Concept

Raw data

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://data.inrae.fr/thesaurusINRAE/,
    label: http://www.w3.org/2004/02/skos/core#prefLabel,
    prefLabelXl: http://www.w3.org/2004/02/skos/core#prefLabelXl,
    altLabelXl: http://www.w3.org/2004/02/skos/core#altLabelXl,
    hiddenLabelXl: http://www.w3.org/2004/02/skos/core#hiddenLabelXl,
    synonym: http://www.w3.org/2004/02/skos/core#synonym,
    definition: http://www.w3.org/2004/02/skos/core#definition,
    obsolete: http://www.w3.org/2004/02/skos/core#obsolete,
    notation: http://www.w3.org/2004/02/skos/core#notation,
    prefixIRI: http://www.w3.org/2004/02/skos/core#prefixIRI,
    parents: "http://www.w3.org/2004/02/skos/core#parents",
    subclassOf: http://www.w3.org/2004/02/skos/core#subclassOf,
    semanticType: http://www.w3.org/2004/02/skos/core#semanticType,
    cui: http://www.w3.org/2004/02/skos/core#cui,
    xref: http://www.w3.org/2004/02/skos/core#xref,
    inScheme: http://www.w3.org/2004/02/skos/core#inScheme,
    created: http://www.w3.org/2004/02/skos/core#created,
    modified: http://www.w3.org/2004/02/skos/core#modified,
    @language: "en"
  }
}
```



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

Details Visualization Notes

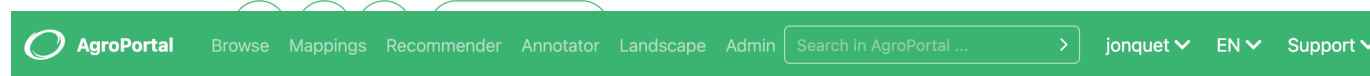
ID [http://opendata.inrae.fr/thesaurusINRAE/d_0202](#)

Preferred name [02.06 CHASSE ET PÊCHE](#)

In schemes [http://opendata.inrae.fr/thesaurusINRAE/thesaurusINRAE](#)

Type [http://www.w3.org/2004/02/skos/core#Concept](#)

Raw data



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](#)

- 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 BIOLOGIQUES

Details Visualization Notes (0) Mappings (0)

ID http://opendata.inrae.fr/thesaurusINRAE/d_0206

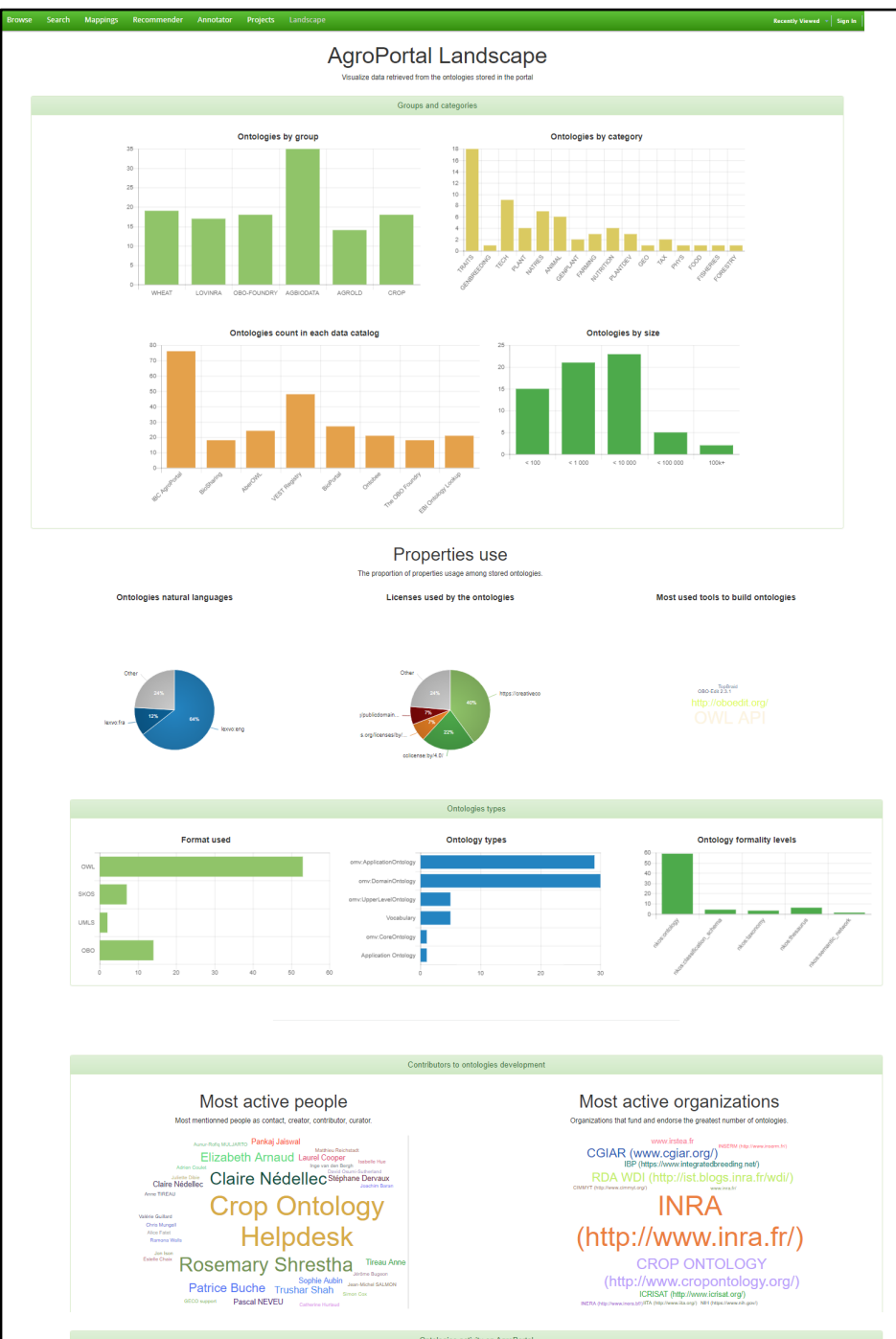
Preferred name [02.06 CHASSE ET PÊCHE](#)

In schemes <http://opendata.inrae.fr/thesaurusINRAE/thesaurusINRAE>

Type <http://www.w3.org/2004/02/skos/core#Concept>

Raw data





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).

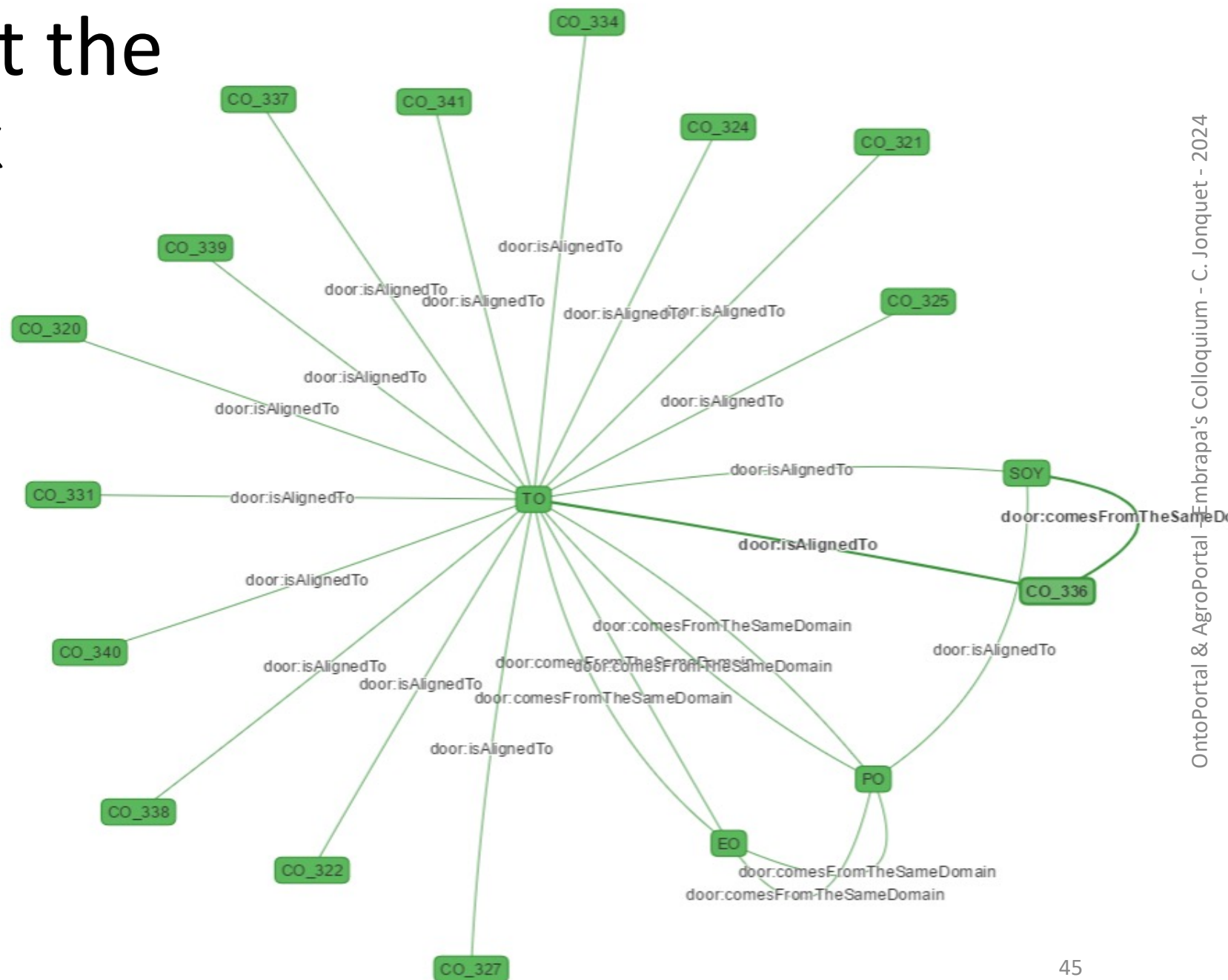


Clement Jonquet, Anne Toulet, Biswanath Dutta, Vincent Emonet. **Harnessing the power of unified metadata in an ontology repository: the case of AgroPortal.** *Journal on Data Semantics*, Springer, 2018, pp.1-31.

Information about the ontology network

- ☐ omv:useliImports
- ☐ 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.

Ontology filters

Select Ontologies

PO x TO x

clear selection select from list

Select UMLS Semantic Types ?

Type here to select UMLS semantic types

Select UMLS Semantic Groups ?

Type here to select UMLS semantic groups

Matching parameters

☒ Match Longest Only

☐ Match Partial Words

☐ Include Mappings

☐ Exclude Numbers

☐ Exclude Synonyms

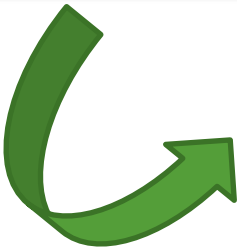
NegEx / ConText

☐ Detect negation ?

☐ Detect temporality ?

Include Ancestors Up To Level: None Include Score: cvalue

Get Annotations



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: JSON

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

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



[Browse](#)
[Search](#)
[Mappings](#)

Annotator

The IBC AgroPortal Annotator processes text submitted by users 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 more

Plant architecture
 Flowers (50%)
 Sepal Color
 Disc Color

Cassava Trait Ontology

Ontology filters

Select Ontologies

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

AgroPortal

LIRMM

Browse

Search

Mappings

Recommender

Annotator

Projects

Admin

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		☒
2	WHEATPHENOTYPE	22.8	31.6	0.0	13.7	22.6	3		☐
3	TO	17.2	15.8	0.0	45.1	11.9	2		☐
4	EFO	16.4	21.1	0.0	20.6	9.0	2		☐
5	ENVO	15.8	15.8	0.0	35.9	10.4	2		☐
6	STY	15.4	21.1	0.0	7.8	18.3	2		☐
7	NCBITAXON	13.7	21.1	0.0	7.8	6.5	2		☐
8	SIO	8.8	10.5	0.0	13.7	6.8	1		☐
9	PATO	8.4	10.5	0.0	7.8	9.5	1		☐
10	AEO	7.9	10.5	0.0	5.9	8.3	1		☐
11	AFEO	7.7	10.5	0.0	5.9	6.6	1		☐
12	PCO	7.7	10.5	0.0	7.8	5.3	1		☐

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:

abiotic environment

AnaEE-France service identification and partners

biotic environment

chemical compound

carbon forms

carbon dioxide

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

concept

by

concept

Details

Visualization

Notes (0)

Class Mappings (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.			

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
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REST Service API:

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

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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 support@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: - Using the <code>apikey</code> query string parameter - Providing 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>

sparql.agroportal.lirmm.fr/test/

SPARQL httpd server v1.1.5-122-g1788d29 test query

KB ontologies_api

```
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
```

Soft limit

xml

Execute

Effacer

Conclusion

- Feedback welcome: support@ontoportals.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 ?

