

Ontohub: an OOR-compliant Repository for Distributed Ontologies

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2012-03-27

Ontohub: Repository for Distributed Ontologies

Demo site: <http://ontohub.informatik.uni-bremen.de>

Sources: <http://github.com/ontohub/ontohub>

- Ontohub is an **ontology repository engine** with a **web frontend**
- specialized on managing **distributed ontologies**
 - ISO Working Draft 17347 (Ontology Integration and Interoperability – Distributed Ontology Language)
<http://ontolog.cim3.net/cgi-bin/wiki.pl?OntoIOp>
 - Distributed means: **logically heterogeneous, modular, interlinked, annotated, and distributed over the Web.**

Ontohub and Distributed Ontologies

Ontohub does not yet support DOL as a language, but only

- **OWL** (RDF/XML works best)
- **Common Logic** (CLIF works best)

But its **notion** of an ontology is **generic**:

- a bag of **entities**
(a.k.a. symbols; they have kinds, e.g. “Class” in OWL)
- and **axioms**
- in some ontology **language**

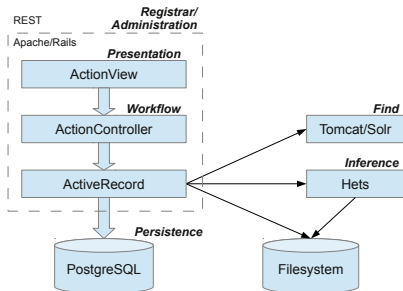
All objects identified by IRIs, can have **metadata** and **comments** (only supported for ontologies so far).

State of Development

- **early stage** but **fully functional**, after two weeks of agile web development
(Henning Müller and Julian Kornberger, supervised by Till Mossakowski and Christoph Lange acting as “customers”)
- to be continued (see <http://github.com/ontohub/ontohub>)
- didn't aim at reinventing BioPortal, but at **more distributedness than single-language engines**
- gaining practical experience required building a **self-contained prototype**
- implemented a small but essential **subset of the OOR requirements** (http://ontology.cim3.net/cgi-bin/wiki.pl?OpenOntologyRepository_Requirement)

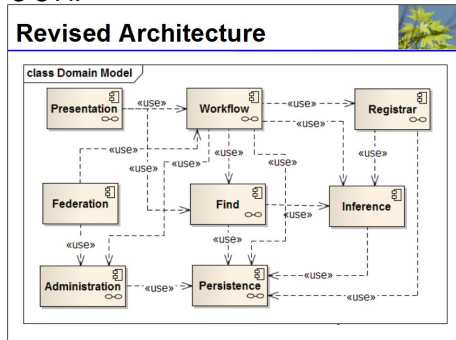
Current Architecture

Ontohub:



OOR:

Revised Architecture



<http://ontolog.cim3.net/cgi-bin/wiki.pl?>

OpenOntologyRepository_Architecture/Candidate03#

nid2MUD

Demo I (Main Page)

Try the public demo:

<http://ontohub.informatik.uni-bremen.de>

- as a user: simply **register**
- as an admin (for now):
christoph.lange@uni-bremen.de, password
“ontohub”

Note: beware of database cleanups!

The screenshot shows the Ontohub website interface. At the top, there is a dark header with the text "Ontohub" on the left, "Ontologies" in the center, and "Log In" and "Register" on the right. Below the header is a search bar with the text "Search for entries" and a "Search" button. The main content area starts with a "Welcome!" section, followed by a "Latest ontologies" section. This section lists several ontologies with their URIs, creators, and creation times. The first ontology is "FOAF (imported from RDF source file)" by "admin" 2 days ago. The second is "http://ontohub.orgizm.net/ontologies/2/versions/2" by "admin" 2 days ago. The third is "http://ontohub.orgizm.net/ontologies/10/versions/10" by "admin" 2 days ago. The fourth is "file:///78123234434" by "admin" 2 days ago. The fifth is "Cat" by "admin" 2 days ago. The sixth is "cem_C" by "admin" 4 days ago. Below the "Latest ontologies" section is a "Latest comments" section, which shows a comment by "admin" 2 days ago regarding the "file:///78123234434" ontology.

Ontohub Ontologies Log In Register

Search for entries Search

Welcome!

Latest ontologies

- 🔗 FOAF (imported from RDF source file) by 👤 admin 2 days ago
- 🔗 <http://ontohub.orgizm.net/ontologies/2/versions/2> by 👤 admin 2 days ago
- 🔗 <http://ontohub.orgizm.net/ontologies/10/versions/10> by 👤 admin 2 days ago
- 🔗 <file:///78123234434> by 👤 admin 2 days ago
- 🔗 Cat by 👤 admin 2 days ago
- 🔗 cem_C by 👤 admin 4 days ago

Latest comments

- 👤 admin commented 🔗 <file:///78123234434> 2 days ago

Demo II (Ontology Overview)

<http://ontohub.informatik.uni-bremen.de/ontologies>

Ontohub [Ontologies](#) ① [Log in](#) [Register](#)

Ontologies

[XML](#) [JSON](#)

621 Ontologies found

1 2 3 4 5 ... [Next >](#) [Last »](#) per page

[strict_linearity](#) ③ failed

file://Hets-lib/CommonLogic/colore/between/strict_linearity.clif

[sublogic_fullcl](#) ② [CommonLogic](#) | [2 Entities](#) | [1 Axiom](#)

file://Hets/CommonLogic/TestData/sublogic_fullcl.clif

[Cat](#) [CommonLogic](#) | [10 Entities](#) | [1 Axiom](#)

file://db/seeds/cat.clif

[Generations](#) [OWL](#) | [29 Entities](#) | [67 Axioms](#)

file://db/seeds/generations.owl

[Pizza](#) [OWL](#) | [114 Entities](#) | [947 Axioms](#)

file://db/seeds/pizza.owl

Demo III (Search Entities)

Ontohub

Ontologies

Admin

Person

Search



Logged in as admin

My Teams

Settings

Log out

Entity Search

refine search

Person kind:ObjectProperty

Search


15 Entities found in **4 Ontologies**

1. OpenAALOntology

11 Entities found. Showing 1 - 10

Text	Kind	Name	URI	Range
Class <http://www.openaal.org/SAM/Ontology/person#Person>	Class	<http://www.openaal.org/SAM/Ontology/person#Person>		
Class <http://www.openaal.org/SAM/Ontology/person#AP>	Class	<http://www.openaal.org/SAM/Ontology/person#AP>		
Class <http://www.openaal.org/SAM/Ontology/person#Activity>	Class	<http://www.openaal.org/SAM/Ontology/person#Activity>		
Class <http://www.openaal.org/SAM/Ontology/person#Carer>	Class	<http://www.openaal.org/SAM/Ontology/person#Carer>		
Class <http://www.openaal.org/SAM/Ontology/person#English>	Class	<http://www.openaal.org/SAM/Ontology/person#English>		
Class <http://www.openaal.org/SAM/Ontology/person#Fall>	Class	<http://www.openaal.org/SAM/Ontology/person#Fall>		
Class <http://www.openaal.org/SAM/Ontology/person#German>	Class	<http://www.openaal.org/SAM/Ontology/person#German>		
Class <http://www.openaal.org/SAM/Ontology/person#Language>	Class	<http://www.openaal.org/SAM/Ontology/person#Language>		
Class <http://www.openaal.org/SAM/Ontology/person#Acute-State>	Class	<http://www.openaal.org/SAM/Ontology/person#Acute-State>		
ObjectProperty <http://www.openaal.org/SAM/Ontology#has-person-state>	ObjectProperty	<http://www.openaal.org/SAM/Ontology#has-person-state>		

2. FOAF

2 Entities found.

Text	Kind	Name	URI	Range
Class <http://xmlns.com/foaf/0.1/Person>	Class	<http://xmlns.com/foaf/0.1/Person>		
Class <http://www.w3.org/2000/10/swap/pim/contact#Person>	Class	<http://www.w3.org/2000/10/swap/pim/contact#Person>		

Demo IV (Create an Ontology)

<http://ontohub.informatik.uni-bremen.de/ontologies/new>
(must be logged in)

The screenshot shows the 'Create an ontology' page on the Ontohub website. The page has a dark header with the 'Ontohub' logo and navigation links: 'Ontologies', 'Admin', 'Logged in as admin', 'My Teams', 'Settings', and 'Log out'. Below the header is a search bar with the text 'Search for entities' and a 'Search' button. The main content area is titled 'Create an ontology' and contains several input fields and a button, each with a red circle and a number indicating a step in the process:

- 1**: The 'Logged in as admin' link in the header.
- 2**: The 'Source File' label and the 'Browse...' button.
- 3**: The 'URI' label and the input field.
- 4**: The 'Name' label and the input field.
- 5**: The 'Create Ontology' button.

Additional form elements include a 'Source URL' label and input field, a 'Description' label and a large text area, and a 'Please enter the URL to import the ontology from.' instruction below the 'Source URL' field.

Demo V (Successful Import)

Hets (“inference” component) tells Ontohub about the **logic** of an imported ontology, and about its **entities** and **axioms**:

△ **FOAF** New version Edit Delete

Overview **Axioms 584** **Entities 96** Versions 1 Metadata Comments Permissions 1 XML 135KB

Overview 3

This is the FOAF (Friend of a Friend) OWL ontology.

URI	http://xmlns.com/foaf/0.1/
Name	FOAF
Logic	OWL
Owner	admin
Created	2 days ago
Updated	2 days ago
Hets status	done 1

[Download](#)

Entities in this ontology

40	ObjectProperties
27	DataProperties
18	Classes
11	AnnotationProperties

2

Works for any logic supported by Hets

Hets: Heterogeneous Tool Set, <http://www.dfki.de/cps/hets>

Demo VI (Unsuccessful Import)

When Hets fails to process an ontology (here: because [auto-detecting the] logic is not yet supported), Ontohub tells the user:

OntoIOp registry

New version

Edit

Delete

Overview

Axioms

Entities

Versions 1

Metadata


Comments

Permissions 1

XML JSON

Overview

This is a plain RDF ontology. RDF support in Hets is still under development.

URI	http://purl.org/dol/registry/
Name	OntoIOp registry
Logic	
Owner	 admin
Created	17 minutes ago
Updated	hets: Logic.sym_name not implemented for: RDF
Hets status	failed (error)

Demo VII (Entities Reported by Hets)

Hets reports **entities** and **axioms** with their **name**, **source text**, **URI** (later), and **range**.

⚠ **sublogic_fullcl**

[New version](#)
[Edit](#)
[Delete](#)
[Overview](#)
[Axioms 1](#)
[Entities 2](#)
[Versions 1](#)
[Metadata](#)
[Comments](#)
[Permissions](#)
[XML](#)
[JSON](#)

Entities

Text	Kind	Name	URI	Range
...Q	SequenceMarker	...Q		1.30
x	Name	x		1.26

Demo VIII (Versions of an Ontology)

Old versions are stored (not more than this, for now), one can upload a new one.

Generations

[New version](#)[Edit](#)[Delete](#)[Overview](#)[Axioms 67](#)[Entitles 29](#)[Versions 1](#)[Metadata](#)[Comments 2](#)[Permissions 2](#)[XML](#)[JSON](#)

Versions

Created	Source	Uploaded by	State	Error
4 days ago	File upload	 Ted	done	Download

Demo IX (Administration)

Administrator can manage:

- users, teams (also some self-management)
- logics (later: users can contribute \rightsquigarrow registry)
- (Hets) jobs

Logics

2 Logics found

Name	URI	Extension	MIME-Type		
OWL	http://purl.net/dol/logics/OWL	owl	application/rdf+xml	edit	delete
CommonLogic	http://purl.net/dol/logics/CommonLogic	clif	text/plain	edit	delete

Future I: General Repository Functionality

Improvements of existing features:

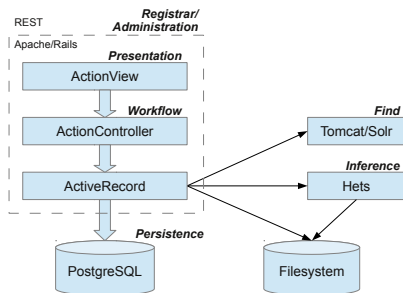
- **Search:** partial matches; refine entity search by ontology; show axioms that contain the entity searched for

New features:

- **Metadata and comments** for entities and axioms
- **Metadata** editing
- **Edit** relevant section of an ontology (e.g. “this axiom”)
- **Social features:** invite users, e-mail notifications

Your ideas? <https://github.com/ontohub/ontohub/issues>

Future II: Decouple Components



- ontology logic and structure detection currently done by locally installed Hets
- decouple, in OOR architecture spirit: let any RESTful web service offer structure and inference services

Your ideas? <https://github.com/ontohub/ontohub/issues>

Future III: More Distributedness

Next aspects of **distributed ontologies** to be realized:

- **Links** between ontologies
 - formal interpretations and informal alignments
 - optionally including entity→entity maps
- **Linked Data Compliance**
 - download ontologies from Ontohub by URI
 - annotate external ontologies without importing them into Ontohub
- **Registry for Ontology Languages and Translations**
 - ISO 17347 OntoOp/DOL: generic framework for existing and future ontology languages
 - host a community-maintained registry for DOL-conforming languages and translations (described in lightweight RDF, fully defined in textbook style or Common Logic)

Your ideas? <https://github.com/ontohub/ontohub/issues>