

# Protégé 4.1 and WebProtégé

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Ontolog call  
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# Protégé 4.1

- Protégé 4.1 is a comprehensive pluggable ontology development platform
- Java-Based (portability)
- Plugin Platform: OSGi + Eclipse Plugin Registry
- OWL API 3.0
  - OWL 2 Support

<http://protege.stanford.edu>

# Protégé 4.1 – In Development

- Exist Working Versions for
  - Client-Server
  - Database Backend
- Planned
  - Collaborative Extensions

# Protégé 4.1 Graphical Interface

The screenshot displays the Protégé 4.1 Graphical Interface for the ontology 'obi.owl'. The browser address bar shows the URL 'http://purl.obolibrary.org/obo/obi.owl'. The interface is divided into several panes:

- Active Ontology:** Includes tabs for 'Entities', 'Classes', 'Object Properties', 'Data Properties', and 'Individuals'. The 'Classes' tab is active.
- Class hierarchy:** Shows a tree view of classes. The selected class is 'adding substance to cell culture', which is highlighted in blue. Its parent class is 'adding a material entity into a target'.
- Annotations:** Shows the annotations for the selected class. The annotations are:
  - 'definition editor' with the value 'Bjoern Peters"@en
  - 'definition source' with the value 'FOO"@en
- Description:** Shows the description for the selected class. The description is:
  - Equivalent classes:
    - (realizes some 'material to be added role') and (realizes some ('target of material addition role' and (role\_of some 'cell culture')))
  - Superclasses:
    - '\_defined processes'
    - achieves\_planned\_objective some 'adding material objective'
    - has\_specified\_input some 'cell culture'
    - has\_specified\_output some 'cell culture'
    - 'adding a material entity into a target'

At the bottom right of the interface, there are two buttons: 'Pellet: Ok' and 'Show Inferences' (checked).

# Protégé 4.1 UI Principles

- Views show recently selected entities
- Based on familiar Protege 3.\* UI
- Inference Built in to most views
- UI based on principles that follow the OWL 2.0 specification.

# Protégé 4.1 Visualization

obi.owl (http://purl.obolibrary.org/obo/obi.owl) - [/Users/tredmond/Shared/ontologies/obi/branches/obi.owl]

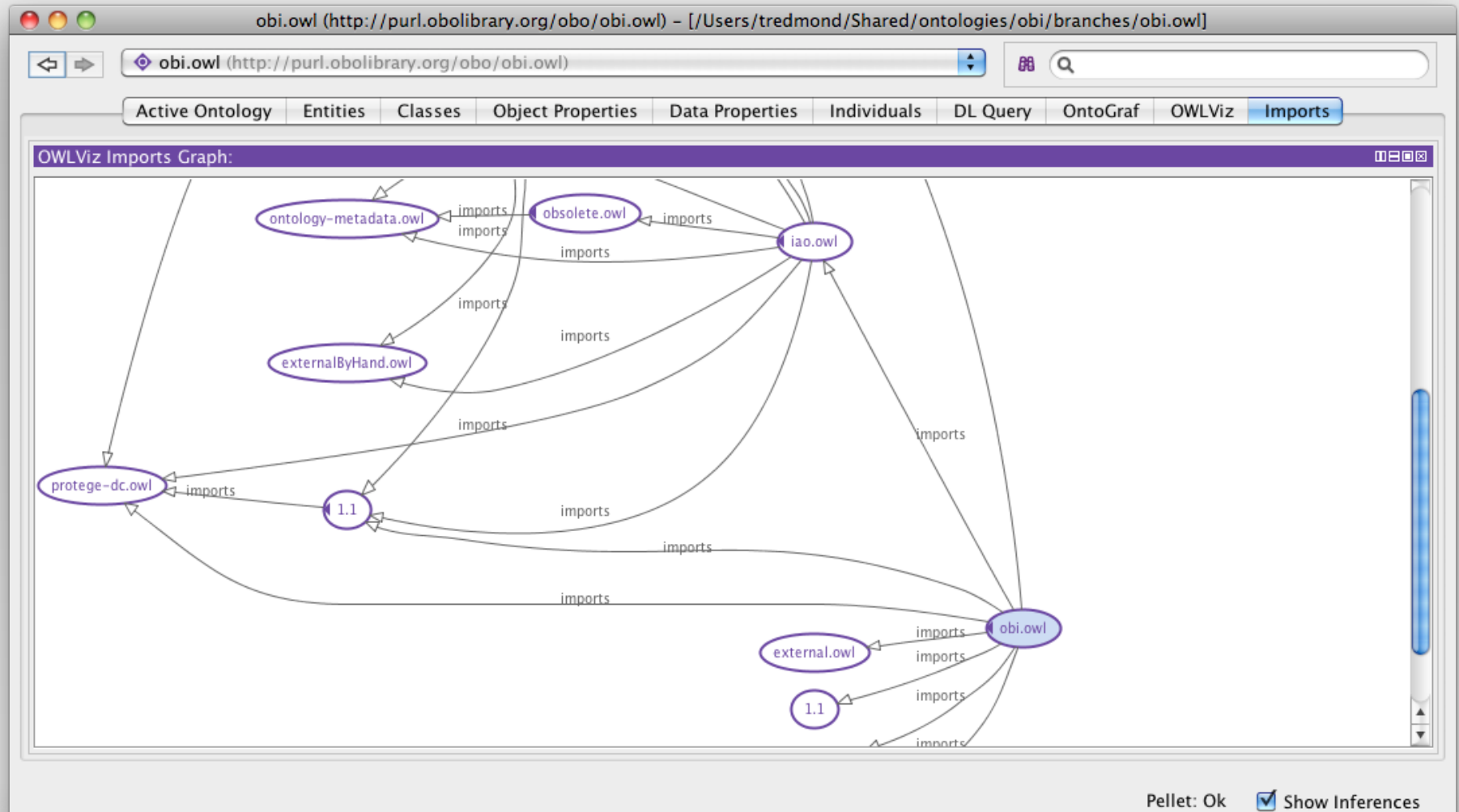
obi.owl (http://purl.obolibrary.org/obo/obi.owl)

Active Ontology | Entities | Classes | Object Properties | Data Properties | Individuals | DL Query | **OntoGraf**

OntoGraf: Search: contains Search Clear

Pellet: Ok  Show Inferences

# Protégé 4.1 Visualization



# Protégé 4 Plugins

- Core System consists of over 140 plugins
- Visualization Plugins
  - Ontograf, OWLViz
- Inference Plugins
  - Hermit, FaCT++, Pellet, Snorocket, others



# Protégé 4.1 Client-Server

- Server Interfaces
  - Checkout
  - Update
  - Commit
- Pluggable
  - Conflict Management
  - RPC
  - Server Backend

# Protégé 4.1 Client-Server

- Client modes:
  - Online
    - Sees updates as they happen
    - Modifies ontology in real time
  - Offline
    - Can edit but edits must be committed later.
  - Manual
    - Updates and commits by user request
  - Hybrid

# Protégé 4.1 Database

- Two OWL API database backends exist
- Integrated with Protege 4.1
- Some performance problems still exist

# WebProtégé

- A **web-based client** for browsing and editing ontologies
- Support for **collaboration**:
  - Notes, discussions, proposals
  - Watching entities & notifications
  - Review
  - Access policies
- Highly **customizable user interface**
- **Extensible** by plug-ins
- **Backends**:
  - Protégé 3 OWL API (used in production setting) – OWL 1
  - OWL-API 3.0 (alpha stage) – OWL 1 & 2
  - Protégé frames, RDF(S), etc.

# WebProtégé – User Interface

Welcome to WebProtégé Demo!

My WebProtégé | NCI Thesaurus | W3C Translational Medicine Ontology

Classes | Properties | Individuals | Notes and Discussions

Add content to this tab | Add to

### Classes

Create Delete Watch Search: Type search str

- Gene 1
  - Antigen\_Gene
  - Apoptosis\_Regulation\_Gene
  - Cancer\_Gene 1
    - BCAR2\_Gene
    - BCAS1\_Gene
    - BRCATA\_Gene
    - EPSTI1\_Gene
    - GR6\_Gene
    - HHCM\_Gene
    - Metastasis\_Gene
    - Metastasis\_Suppressor\_Gene
    - NAG\_Gene
    - Oncogene 1**
    - Susceptibility-Resistance\_Gene
      - Tumor\_Promoter\_Induced\_Gene
    - Tumor\_Suppressor\_Gene
  - Cell\_Cycle\_Gene
  - Chaperone\_Gene
  - Complement\_Component\_Gene
  - Cytokine\_Gene
  - Cytoplasmic\_Protein\_Gene
  - DNA\_Repair\_Gene
  - Enzyme\_Gene

### Properties for Oncogene

Add property value Delete property value

Property	Value	Lang
DEFINITION	~@http://www.w3.org/1999/02/22-rdf-syntax-ns#XMLLiteral A gene that normally directs cell growth. If mutated or overexpressed in a dominant fashion, it can release the cell from normal restraints on growth. It alone or in concert with other changes, converts the cell into a tumor cell. Alterations can be inherited or caused by an environmental exposure to carcinogens.NCI	

### Axioms for Oncogene

#### Superclasses (Necessary conditions)

- Cancer\_Gene
- Gene\_Found\_In\_Organism *some* Human
- Gene\_Plays\_Role\_In\_Process *some* Oncogenesis

### Notes Tree for Oncogene

New Topic Expand All Collapse All

▼ Oncogene definition in Wikipedia Guest Example 0 replies 0 mins ago

An **oncogene** is a **gene** that, when **mutated** or expressed at high levels, helps turn a normal cell into a tumorcell.

Direct link: <http://en.wikipedia.org/wiki/Oncogene>

Reply	Open	Edit	Archive	Delete	08/03/2010 12:59:37 PDT
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Demo: <http://webprotege.stanford.edu>

# WebProtégé - User Interface

- Built as a **portal**: portlets provide pieces of functionality (similar to views in Protégé 4)
- Build a new user interface by simply rearranging portlets in tabs
- **Declarative user interface** in a XML file
- Configurations can be for a particular user, or per user per project, or default
- My WebProtégé page
- Goal: **easily adjust** the user interface based on the user expertise and tasks

# ICAT ICD Collaborative Authoring Tool

- My ICD
- ICD Content**
- Category Notes and Discussions
- Reviews
- Change History
- Manage Hierarchy

**ICD Categories**

Create Watch Search: Type search string

- ICD Categories 1 4216
- 01 I Certain infectious and parasitic diseases 441
- 02 II Neoplasms 297
- 03 III Diseases of the blood and blood-forming organs and certain disorder
- 04 IV Endocrine, nutritional and metabolic diseases 57
- 05 V Mental and behavioural disorders 67
- 06 VI Diseases of the nervous system 484
- 07 VII Diseases of the eye and adnexa 2 404
- 08 VIII Diseases of the ear and mastoid process 2
- 09 IX Diseases of the circulatory system 22
- 10 X Diseases of the respiratory system 25
- 11 XI Diseases of the digestive system 331
- 12 XII Diseases of the skin 3 1605**
- 13 XIII Diseases of the musculoskeletal system and connective tissue
- 14 XIV Diseases of the genitourinary system 160
- 15 XV Pregnancy, childbirth and the puerperium 40
- 16 XVI Certain conditions originating in the perinatal period 14
- 17 XVII Congenital malformations, deformations and chromosomal abnormal
- 18 XVIII Symptoms, signs and abnormal clinical and laboratory findings, no
- 19 XIX Injury, poisoning and certain other consequences of external cause
- 20 XX External causes of morbidity and mortality
- 21 XXI Factors influencing health status and contact with health services
- 22 XXII Codes for special purposes 23
- Retired 769

**Details for 12 XII Diseases of the skin**

<b>Title &amp; Definition</b>	Classification Properties	Terms	Clinical Description	Manifestation Properties
Causal Properties	Temporal Properties	Severity Properties	Functional Properties	
Specific Condition Properties	Treatment	Diagnostic Criteria	SNOMED References	ICD 10 Notes and Hints

**ICD 10 Code** ? XII

**Sorting label** 12 XII

**ICD Title** ? Diseases of the skin

**Definition** ?

**Text**

Diseases of the skin incorporate conditions affecting the epidermis, its appendages (hair, hair follicle, sebaceous glands, apocrine sweat gland apparatus, eccrine sweat gland apparatus and nails), the dermis, the cutaneous vasculature and the subcutaneous tissue (subcutis).

**External Definitions** ?

Definition	CUI	Ontology ID
+ Add new value		

Form-based editing and configuration of the user interface for the development of ICD-11

<http://icatdemo.stanford.edu>

# Other examples of form-based editing

## Cold or Heat 寒热

- Cold 寒證
- Between heat and cold 寒中間証
- Upper body heat and lower body cold 寒上熱下
- Irritable heat sensation in hand and foot 手足煩熱
- Severe coldness of extremities 厥冷
- Cold abdominal colic 寒疝

## Understanding

- Watching
- Listening
- Learning
- Focusing attention
- Reading
- Writing
- Calculating
- Solving Problems

Prefilled

Under Discussion




In Conflict

TAG Approved

RSG Approved


WHO Approved

## Editorial Status

label	Term ID	Link		
Lung structure	39607008			

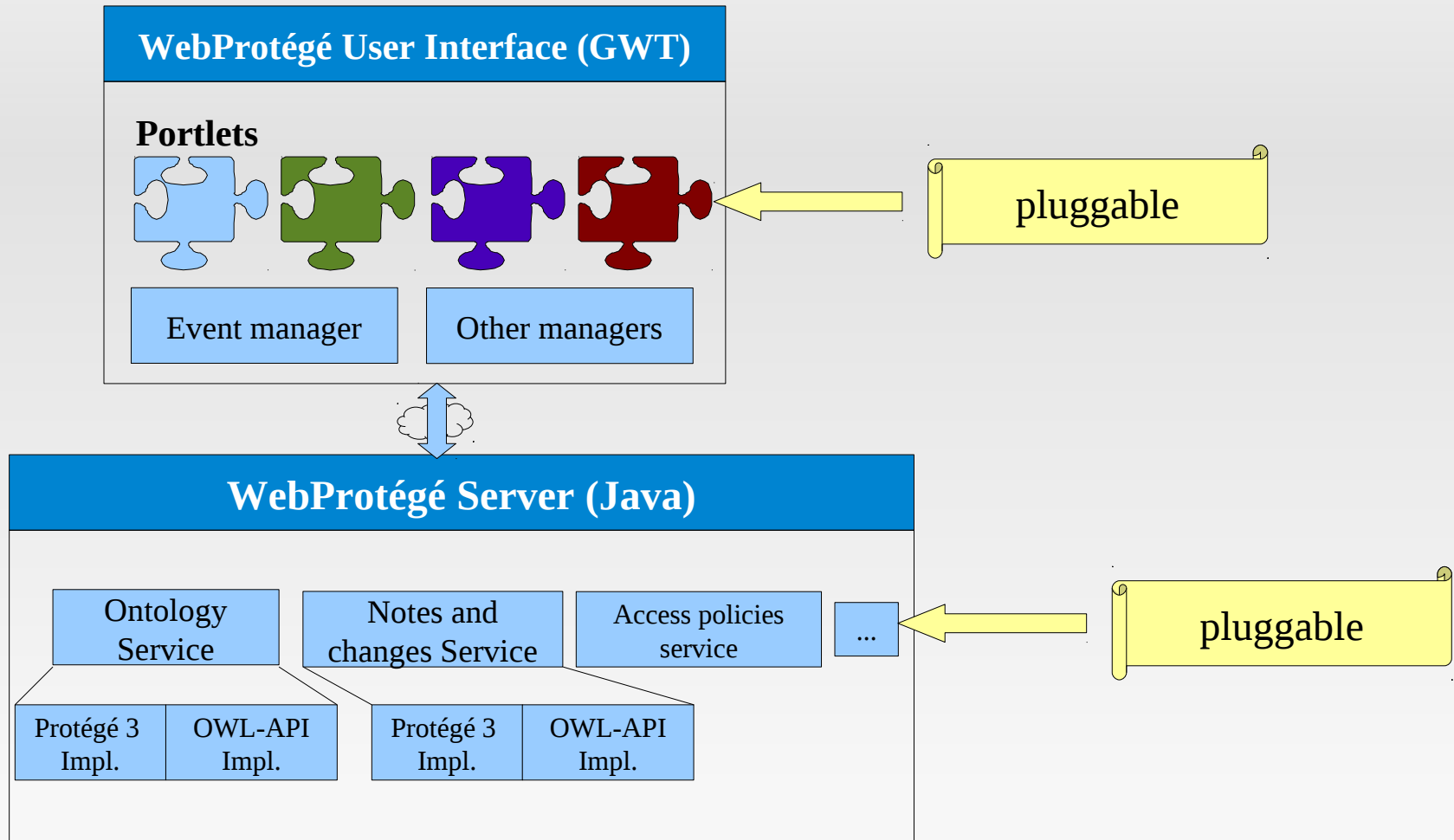
## Body Part

 Find term

 Add term



# WebProtégé pieces



# WebProtégé: Current status and future directions

- WebProtégé (with Protégé 3 backend) is stable and used in production for the development of ICD-11
- We are finalizing the implementation of the WebProtégé with the OWL-API backend. Missing pieces: access policies, integration with Protégé 4 client-server
- Add features based on user requests

# WebProtégé Acknowledgements

- Dilvan Moreira provided a concurrent OWL-API implementation using the Clojure library (used currently in the WebProtégé backend).