# Introduction to Protégé

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# Overview

- What is Protégé?
- Protégé Editors
- Protégé Plugins

# What is Protégé?

- Protégé is a free, open source ontology editor and knowledge-base framework.
- Protégé implements a rich set of knowledge-modeling structures and actions that support the creation, visualization, and manipulation of ontologies in various representation formats.
- Protégé can be extended by way of a plug-in architecture and a Java-based Application Programming Interface (API) for building knowledge-based tools and applications.

# What is Protégé?

- Links:
  - Protégé website: http://protege.stanford.edu
  - CO-ODE website: http://www.co-ode.org



# Protégé Editors

- Protégé-OWL (Protégé 4.x)
  - Enables users to build ontologies for the *Semantic Web*, in particular in the W3C's Web Ontology Language (OWL) format.

- Latest version
  - Protégé 4.1 alpha (March 4, 2010)
  - **full support for OWL 2.0**

  - Protégé 4.0.2 (December 3, 2009)
  - **partial support for OWL 2.0**

# Protégé Editors

- Protégé-Frames (Protégé 3.x)
  - Enables users to build and populate ontologies that are *frame-based*, in accordance with the Open Knowledge Base Connectivity protocol (OKBC). In this model, an ontology consists of a set of classes organized in a subsumption hierarchy to represent a domain's salient concepts, a set of slots associated to classes to describe their properties and relationships, and a set of instances of those classes - individual exemplars of the concepts that hold specific values for their properties.

- Latest version
  - Protégé 3.4.4 (March 8, 2010)
  - **support for OWL 1.0, RDF(S), and Frames**

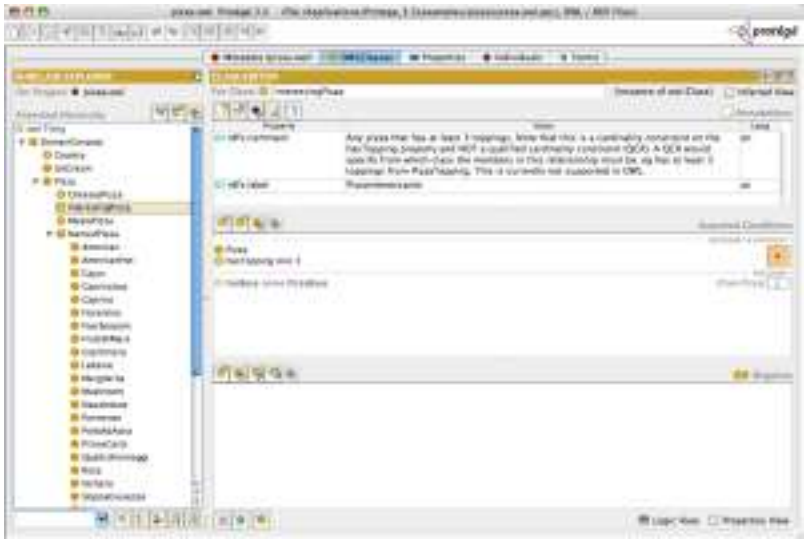
# Protégé Editors

- WebProtégé
  - Is an open source, lightweight, web-based ontology editor. The main goal in developing WebProtege is to support the process of collaborative ontology development in a web environment.

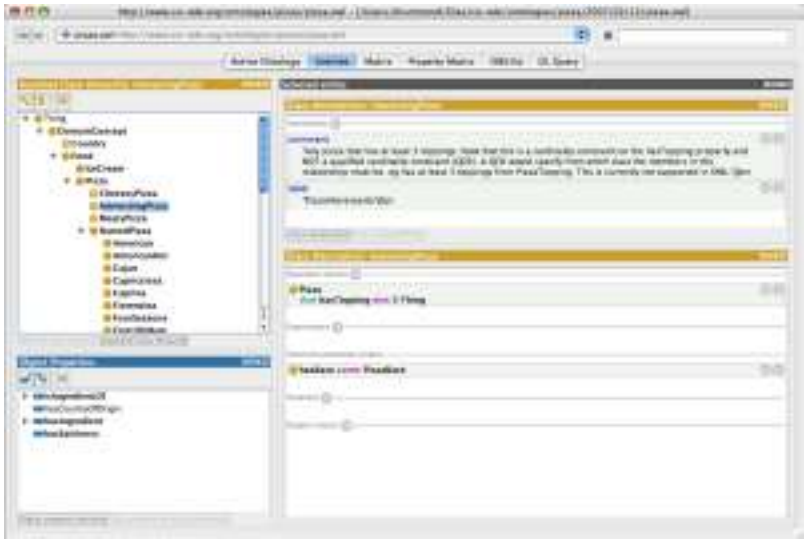
- Latest version
  - WebProtégé 0.5 alpha (August 14, 2009)

# Side by Side Comparison

Protégé 3.x



Protégé 4.x



# Side by Side Comparison

| Protégé 3.x | Protégé 4.x |
| --- | --- |
| Frames Support: Yes | Frames Support: No |
| RDFS: Yes | RDFS: Yes |
| OWL 1.0 support: Yes | OWL 1.0 support: Yes |
| OWL 2.0 support: **No** | OWL 2.0 support: **Yes** |
| SPARQL: Yes | SPARQL: **No** |
| SWRL: Yes | SWRL: Yes |
| Reasoner DIG Interface: Yes | Reasoner DIG Interface: No |
| Direct Connection with Reasoner: Yes | Direct Connection with Reasoner: Yes |
| Project File: Yes | Project File: No |
| OWL Import: Repository | OWL Import: Local, Repository, Web |
| Plugins: Yes | Plugins: Yes |
| Multi-user: Yes with client-server version | Multi-user: No |
| Database Storage Model: JDBC DB back-end | Database Storage Model: **No** |

# Recommendations

- For working with **frames-based ontologies** there is only one choice - Protege 3.4 is built on a very mature and stable codebase. Frames support is not currently available in P4.x.
- For coders writing **purely OWL applications**, I recommend 4.x.
- For applications where you cannot cleanly break away from **RDF** you should consider 3.4.
- Protege 4.x uses the open source, Java-based **OWL API** that is proving popular with many developers around the world. This makes writing or migrating to and from other systems more straightforward, and a larger developer community means more assistance and a more robust codebase.

# Recommendations

- Ultimately, **P3.x is coming to a stable state** such that the features of the platform are well known and the behaviour is predictable. There are many plugins available that aid particular tasks that are not currently available for P4.x. So for example, those wanting SWRL support will find the framework in P3.x much more substantial than in P4.x. Equally, users that need access to RDF(S) level constructs will need to use P3.x.

# Protégé Plugins

| Plugin | Associated topics |
|---|---|
| ACE View | Natural Language |
| Annotation Search View | Semantic Web<br>Navigation |
| Annotation Template View | Semantic Web |
| Axiomé | Rule Management<br>Rule Elicitation<br>Rule Visualization<br>Rule Paraphrasing<br>Rule Categorization<br>OWL<br>SWRLTab |
| Bayesian Network Tab (BNTab) | |
| BeanshellView | Semantic Web<br>Software Engineering |
| BioPortal Reference Plugin | Biomedical Informatics<br>Search<br>Navigation<br>Terminologies<br>Import |
| Bookmarks | Navigation |

# Protégé Plugins

| Plugin | Associated topics |
|---|---|
| Cardinality View | Semantic Web |
| Change View | Semantic Web |
| ChangeAnalysisTab | Visualization<br>Project Management<br>Validation |
| Changes Tab | Project Management |
| Cloud Views | Visualization |
| Collaborative Protege | Project Management |
| DL Query | Semantic Web |
| DataMaster | Import |
| EasyDB | Export<br>Import<br>Visualization |
| EditorPane | Visualization |
| EditorPanePlain | Visualization |
| Excel Import | Import |
| HERAKLES | Reasoning<br>Inference |
| HermiT | Reasoning<br>Inference |
| Jambalaya | Visualization |
| JessTab | Inference<br>Reasoning |

# Protégé Plugins

| Plugin | Associated topics |
|---|---|
| MESAM | Software Engineering<br>Semantic Web<br>Reasoning |
| Matrix | Semantic Web<br>Visualization |
| MetaAnalysis | Export |
| NaturalOWL | Natural Language Processing<br>Semantic Web |
| OBO Tools | Navigation |
| OBOConverter | Import<br>Export<br>Semantic Web |
| OLS2OWL | Search<br>Navigation<br>Visualization |
| OPL Plugin | Biomedical Informatics |
| OSGi Debug Plugin | |
| OWL Lint | Semantic Web<br>Validation |
| OWLDiff | Visualization<br>Navigation<br>Inference |

# Protégé Plugins

| Plugin | Associated topics |
|---|---|
| OWLDoc | Semantic Web<br>Visualization<br>Export |
| OWLPropViz | Visualization |
| OWLViz | Visualization |
| OntoGraf | Visualization<br>Navigation |
| OntoLing | Natural Language Processing<br>Terminologies |
| OntoViz | Visualization |
| OntologyBeanGenerator | Software Engineering<br>Code Generation |
| Outline and Existential Tree Views | Navigation |
| Owl2Cool | Semantic Web<br>Reasoning<br>Import<br>Export |
| PROMPT | Project Management |
| PromptViz | Project Management<br>Visualization |
| Protege Wizards | Semantic Web |
| Queries and Export Tab | Search<br>Export |

# Protégé Plugins

| Plugin | Associated topics |
| --- | --- |
| SKOS Editor | Semantic Web |
| SWRLTab | Inference<br>Reasoning |

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