



Chimæra

An Environment for Merging and Testing Large Ontologies

188.387 Semi-Automatic Information and Knowledge Systems
2 VU, WS 2006/07

Mathäus Zingerle

0525931

526

Background



- developed by Knowledge Systems Laboratory (KSL) at Stanford University, CA, USA
- was built on top of Ontolingua
- runs in web browser, available over the WWW

What is it about?



- merging ontologies
- diagnosing ontologies

- loading (and creating) knowledge bases
- reorganizing taxonomies
- resolving name conflicts
- browsing ontologies
- editing terms
- ...

How does it work...



In principle?

- Go to [URL](#) and login
- Create a new KB by selecting „Ontolingua“ from the „Create a new KB of this type“ drop down menu

KB Selection Form:

Create a new KB of this type:

Select an existing open KB, or from the library:

ATP KBs already open	ATP	Lib
No open KBs	CLASSIC	
	CLOS	
	CML	
	Ontolingua	
CLASSIC KBs already open	Tuple KB	Libra
No open KBs		No openable KBs

How does it work...



- Specify name in the textfield
- Select „Hpkb-Upper-Level-Latest“ as parent KB and click on „Do it“

KB Creation Form:

Specify name and parents for the new KB:

KB Name:

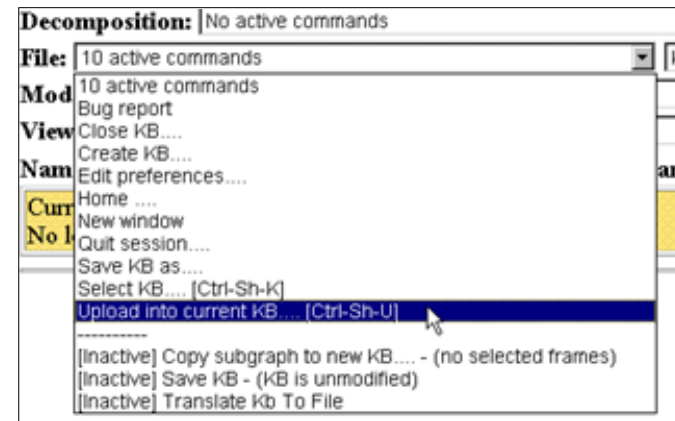
Parents:

- Frame-Ontology
- 3d-Tensor-Quantities
- Abstract-Algebra
- Agents
- Basic-Matrix-Algebra
- Bibliographic-Data
- Chemical-Crystals
- Chemical-Elements
- Cml
- Component-Assemblies
- Components-With-Constraints
- Device-Ontology
- Digital-Designer-Query-Ontology
- Dme-Cml
- Documents
- Enterprise-Ontology
- Hp-Product-Ontology
- Hpkb-Upper-Level-Kernel-Latest
- Hpkb-Upper-Level-Latest**
- Hpkb-Upper-Level-Relations-Latest

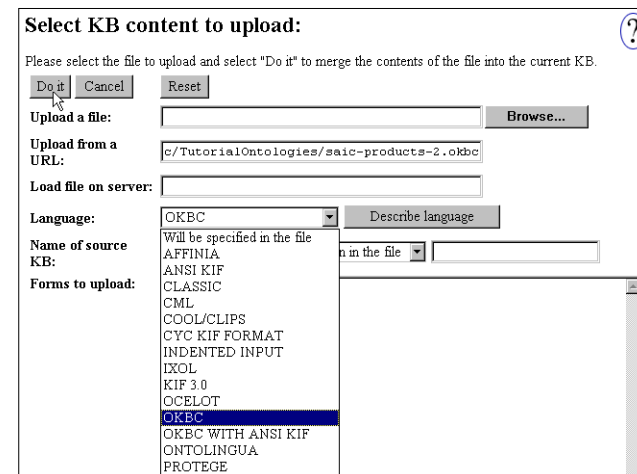
How does it work...



- Load a KB by selecting „Upload into current KB“ from the „File“ drop down menu.



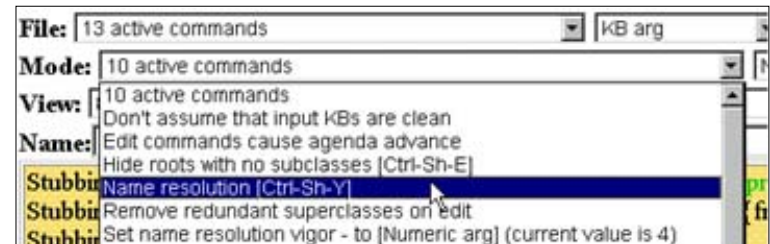
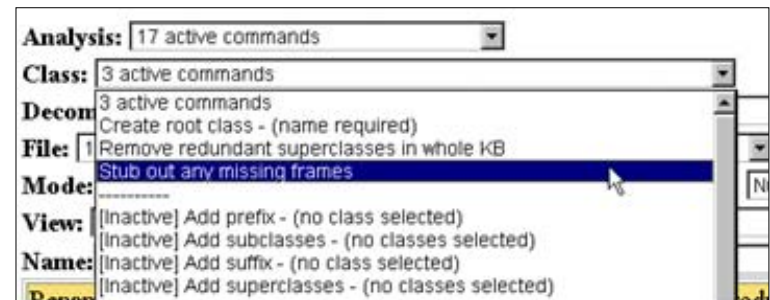
- Select KB content to upload by specifying the URL of the KB and selecting the language of the KB (OKBC)



How does it work...



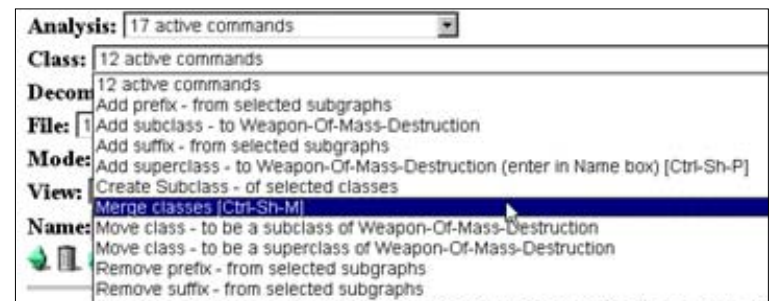
- Upload another KB
- Stub out missing frames by selecting it from the „Class“ menu
- Change into „Name Resolution“ mode by selecting it from the „Mode“ menu.



How does it work...



- Select „Shared the same name...: Weapon of Mass-Destruction, Weapon of Mass-Destruction\$-In-Cyc-Products-10\$“
- Merge classes by selecting it from the „Class“ menu



How does it work...



- Result of merging

Analysis: 17 active commands

Class: 3 active commands

Decomposition: No active commands

File: 13 active commands | KB arg

Mode: 12 active commands | Numeric arg

View: 11 active commands

Name: | **Pretty name:**

Names to resolve: Shared the same name at load time: Weapon-Of-Mass-Destruction, Weapon-Of-Mass-Destruction

2 classes merged into [Weapon-Of-Mass-Destruction](#) { from **cyc-products**, **saic-products-2**}

[Durable-Goods](#) { from **cyc-products**}

[Military-Hardware](#) { from **cyc-products**}

[Military-Weapon](#) { from **cyc-products**}

[Weapon-Of-Mass-Destruction](#) { from **cyc-products**, **saic-products-2**}

[Military-Equipment](#) { from **cyc-products**}

[Military-Hardware](#) { from **cyc-products**}

[Military-Weapon](#) { from **cyc-products**}

▶ [Weapon-Of-Mass-Destruction](#) { from **cyc-products**, **saic-products-2**}

How does it work...



- And in practice?
 - short demo (about 5 min)

Strengths



- Supports OKBC (Open Knowledge Base Connectivity) standard
- Supports more than 15 input formats (such as ANSI KIF, Ontolingua, Protégé, CLASSIC, iXOL, etc.)
- Supports different editing environments
- Supports the user by suggesting potential merging candidates (based on properties)
- Includes incompleteness tests, syntactic checks, taxonomic analysis, and semantic checks
- ...

Shortcomings



- Limited consistency checks
- User can't add domainspecific tests

Ongoing work



- reasoning capabilities
- semantic analysis
- extensibility
- usability by non-experts

References & Resources



Chimaera

<http://ksl.stanford.edu/software/chimaera/>

Chimaera Tutorial

<http://www.ksl.stanford.edu/software/chimaera/tutorial/>

Ontologies

<http://www-ksl-svc.stanford.edu:5915/doc/TutorialOntologies/index.html>

[McGuinness et al. 2000] Deborah L. McGuinness, Richard Fikes, James Rice, and Steve Wilder. An environment for merging and testing large ontologies. In Anthony G. Cohn, Fausto Giunchiglia, and Bart Selman, editors, KR2000: Principles of Knowledge Representation and Reasoning, pp. 483–493, San Francisco, Morgan Kaufmann, 2000.