On²Vers

Online Ontology Versioning

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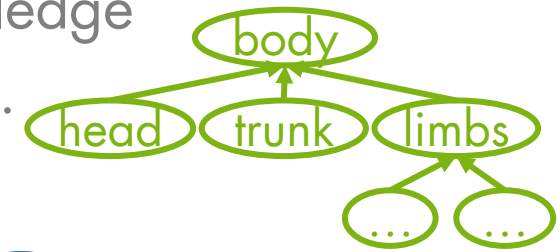
Ontology Evolution

- Ontologies: structured representation of knowledge
- Applications: annotations, semantic search, …



- Ongoing research, new requirements
  → ontology changes, new versions

ON²VERS - ONLINE ONTOLOGY VERSIONING

- Provide services for comprehensive, individual ontology evolution analyses

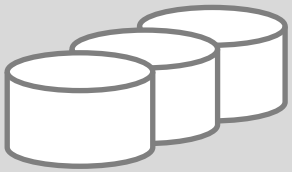
Application Scenarios

- Monitoring Ontology Changes
- Evolution of Term Enrichment Analysis Results
- ...

Evolution Analysis and Data Migration Services

- Basic Analyses (Statistics, Search, ...)
- Complex Evolution Analyses (Diff and Region Detection)
- Mapping Migration

Version Management Services

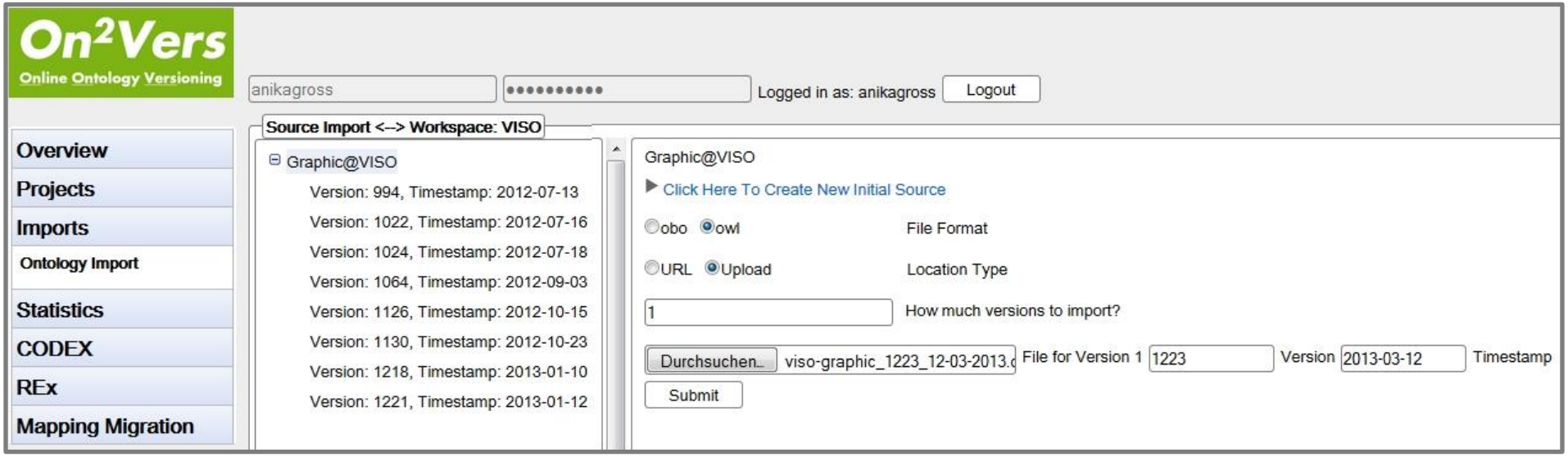


Ontology and Mapping Versions

Import Services OWL, OBO, CSV, RDF, XML,...

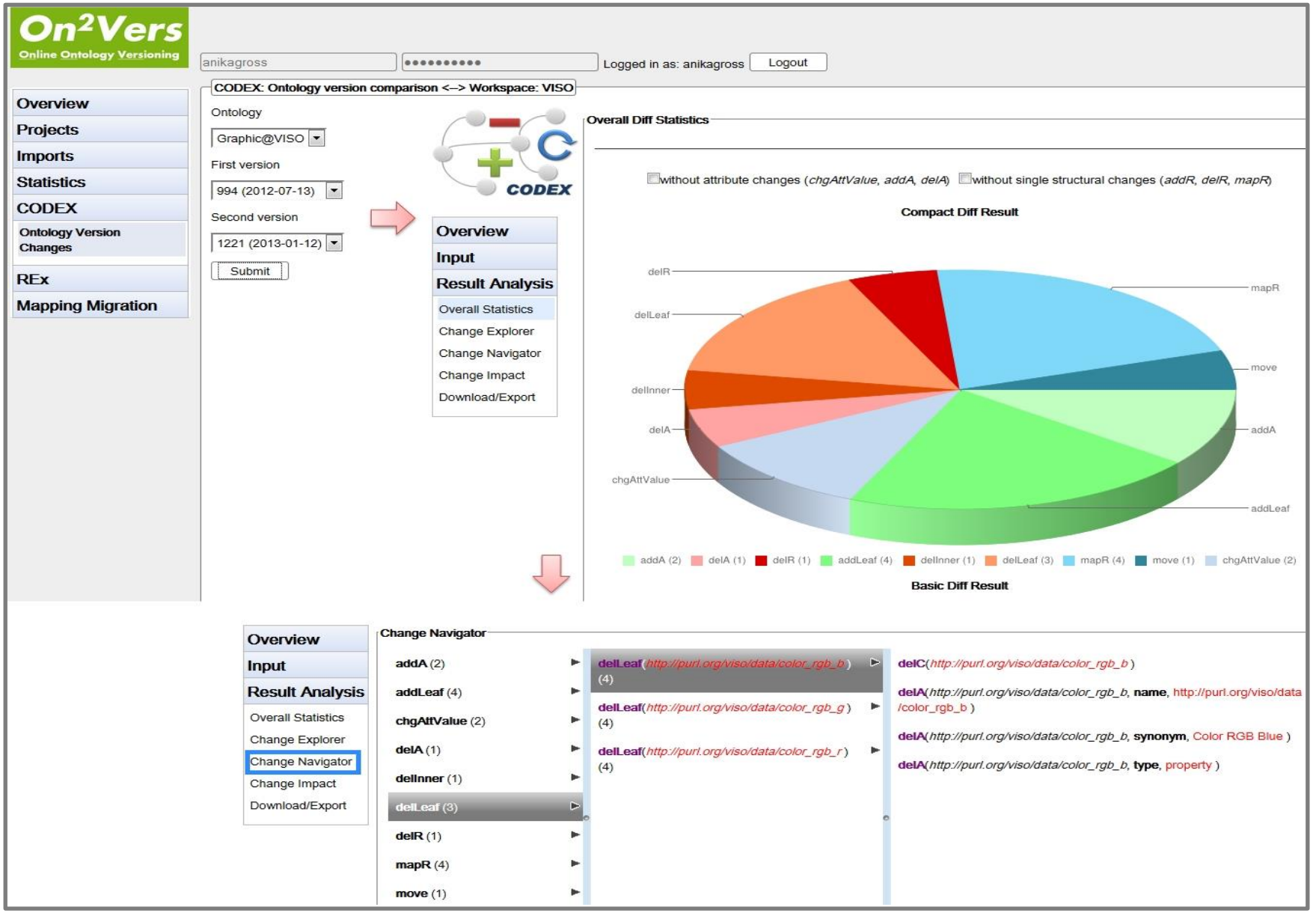
Import Ontology Versions of Interest

- Example: Import versions of VISO*

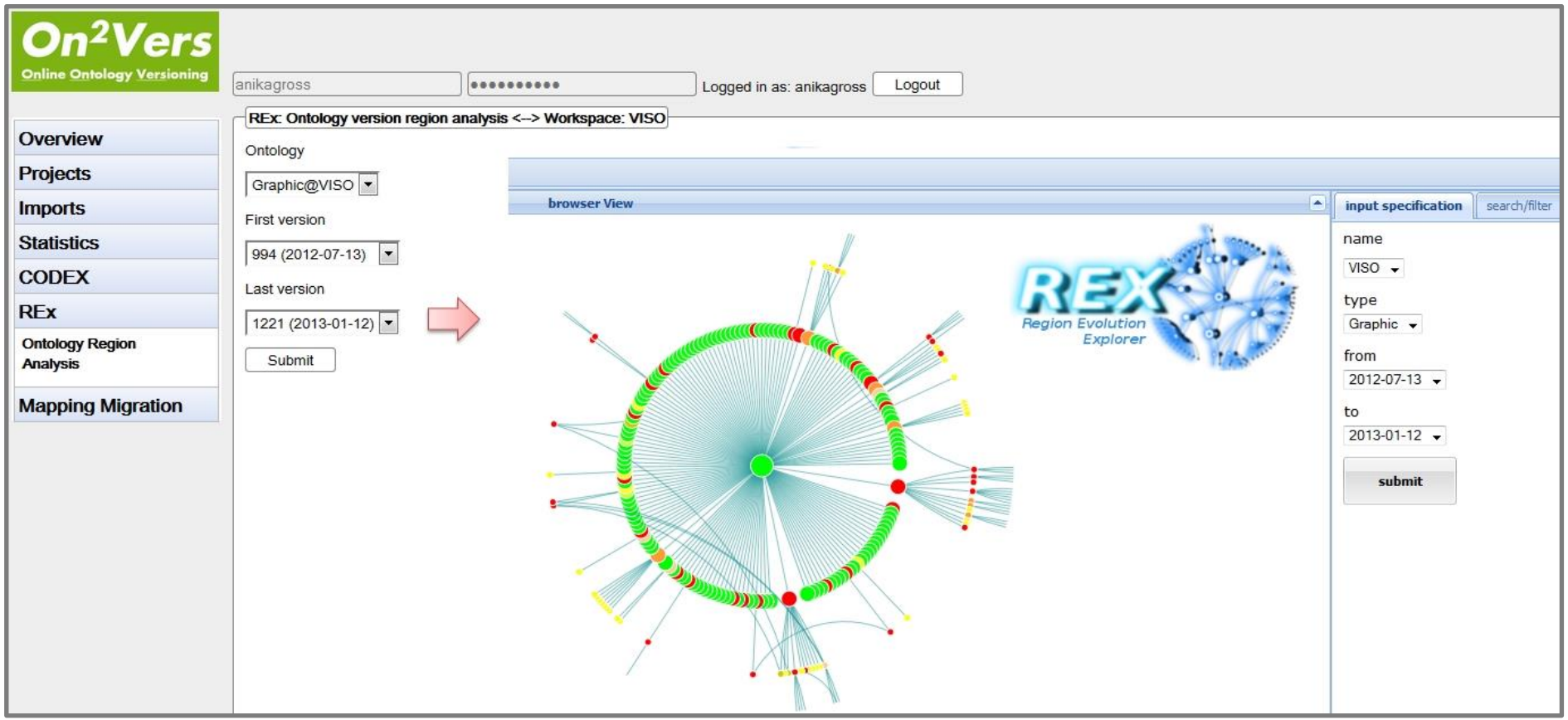


* Polowinski, J.; Voigt, M.: *VISO: a shared, formal knowledge base as a foundation for semi-automatic InfoVis systems.* CHI'13 Extended Abstracts on Human Factors in Computing Systems, 2013.

Compute Diff Between Ontology Versions



Detect Differently Changing Ontology Regions



Update Ontology Mappings

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Online Ontology Versioning

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- Overview
- Projects
- Imports
- Statistics
- CODEX
- REx
- Mapping Migration
  - Adapt Old Mapping

Migration: Ontology version migration <--> Workspace: LifeSciences

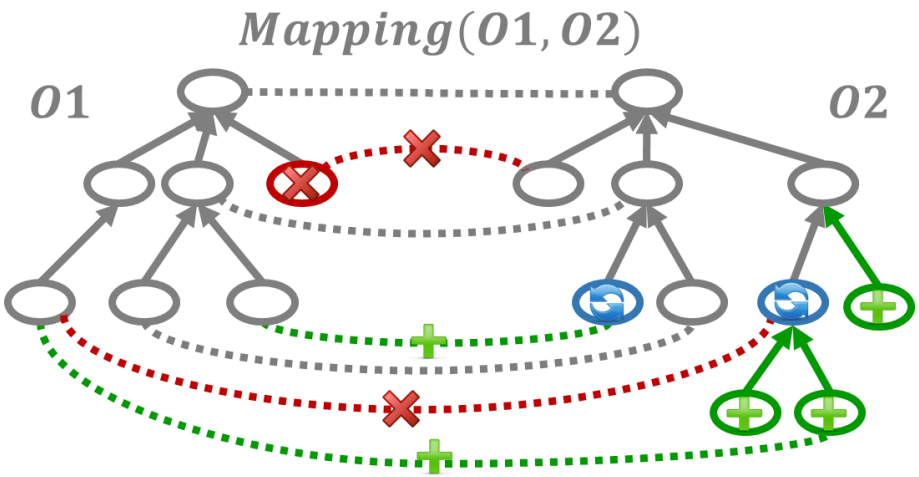
Source ontology: AnatomicalEntity@AdultMouseAnatomyOntology | Old source version: 1.184 (2008-03-09) | New source version: 1.210 (2013-03-12)

Target ontology: AnatomicalEntity@ZebraFishAnatomyOntology | Old target version: 1.15 (2008-04-29) | New target version: 1.48 (2013-02-07)

Mapping (Source ontology, Target ontology): Durchsuchen... AdultMouse_ZebraFish.txt

File Format: (•) csv ( ) rdf

Migrate mapping to new versions



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Online Ontology Versioning

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ESF Europäischer Sozialfonds
SACHSEN

Ontology Evolution

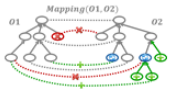
- Ontologies: structured representation of knowledge
- Applications: annotations, semantic search, …
- Ongoing research, new findings → ontology changes, new versions

- Which changes occur between different ontology versions?
- Where are the changes located? Are there (un)stable ontology regions?
- How can we keep dependent ontology-based mappings upto-date?

→ Need services for comprehensive ontology evolution analyses applicable to individual user ontologies

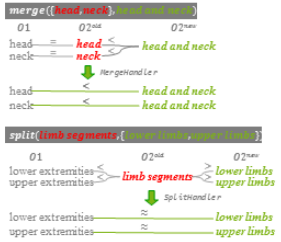
Mapping Migration

- Update associated ontology or annotation mappings when underlying ontologies change



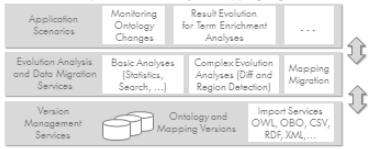
Semi-automatic mapping migration

- Migrate mappings based on diff between ontology versions
- *Change Handlers* for different change types (concept merge, split …)

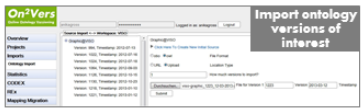


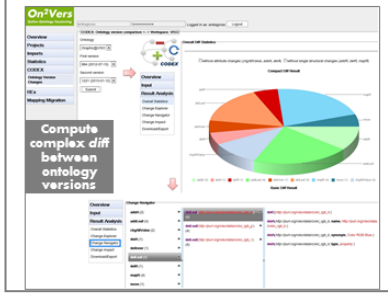
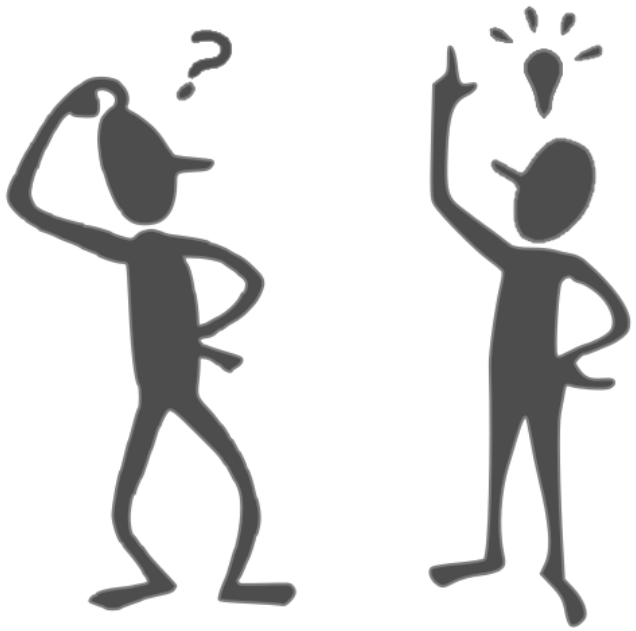
Architecture & Services

- Services for Online Ontology Versioning (*On²Vers*) in eScience network
  - Efficient version management, multi user application
  - Basic and complex evolution analyses, mapping migration



Evolution Analysis & Applications with *On²Vers*

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