



OntoFast: Construct Ontology rapidly

Abdul-Mateen Rajput
Life Science Informatics,
Bonn University

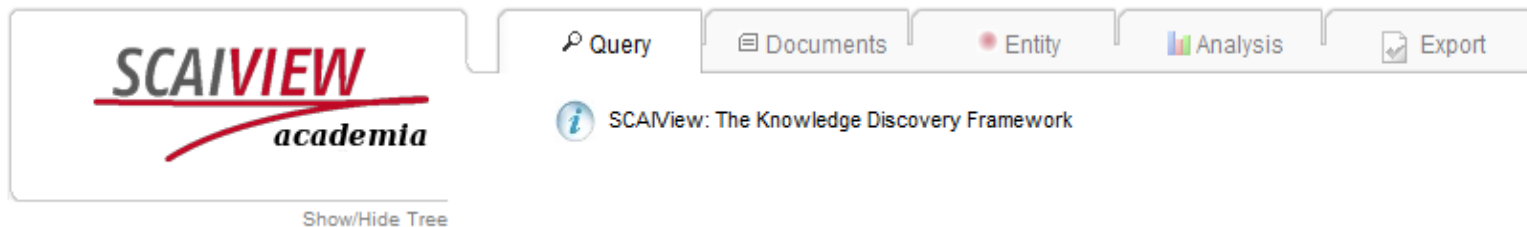
OUTLINE:

- Motivation
 - Aim – Disease Ontology !
- Problem
 - Too much repetition!
- State-of-the-art tools
- Results - OntoFast



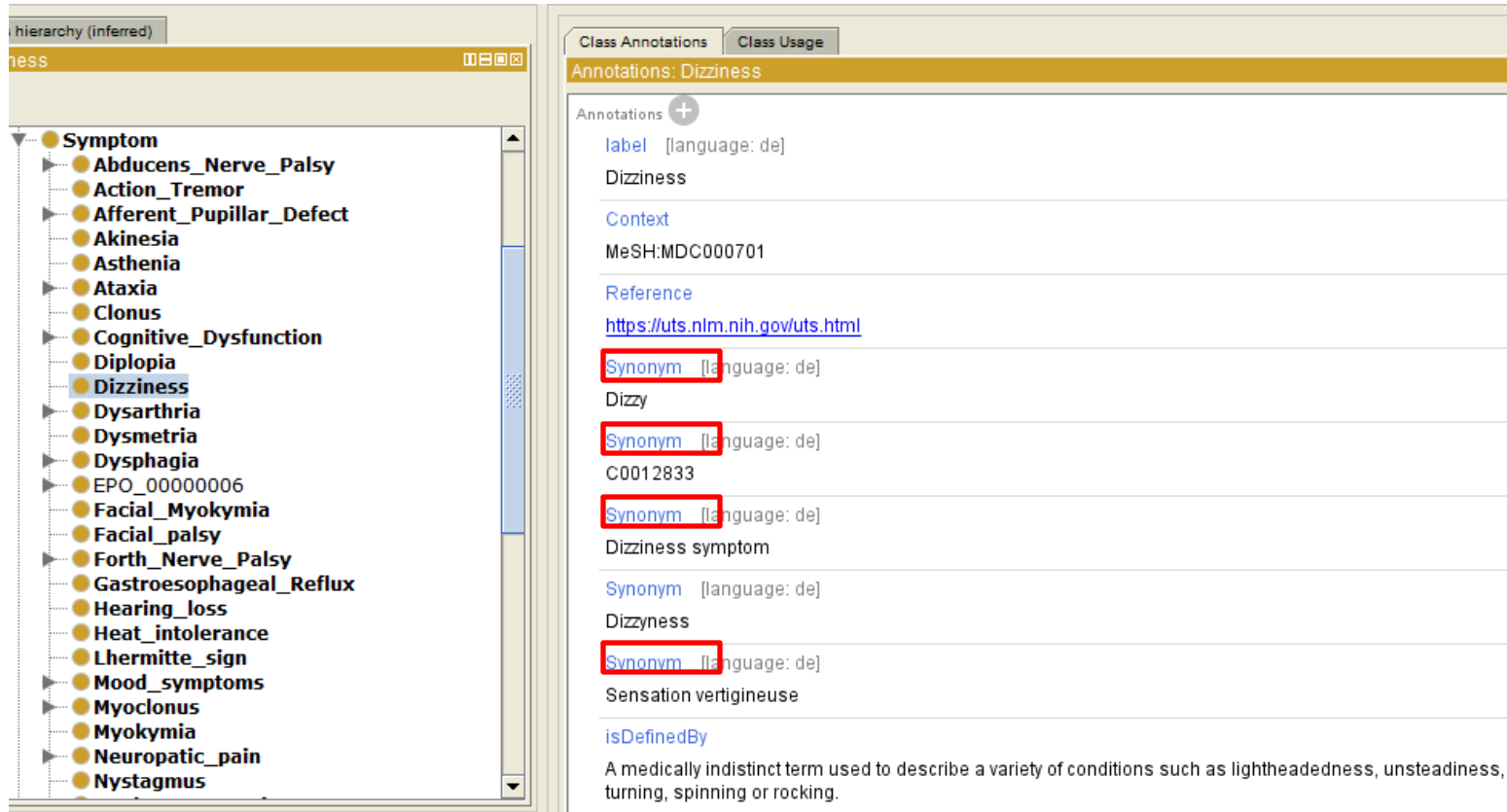
MOTIVATION

- To construct a **disease ontology**, which can help information retrieval from a biomedical search engine (Scaiview.com)
- There were **~1000 concepts** and dozens of Synonyms associated with each concept



MOTIVATION

- Separate annotation tag for each Synonym was also a requirement!



The screenshot displays a software interface with two main panels. The left panel, titled 'hierarchy (inferred)', shows a tree view of classes. The right panel, titled 'Annotations: Dizziness', shows the annotations for the 'Dizziness' class.

Class Hierarchy (Left Panel):

- Symptom
 - Abducens_Nerve_Palsy
 - Action_Tremor
 - Afferent_Pupillar_Defect
 - Akinesia
 - Asthenia
 - Ataxia
 - Clonus
 - Cognitive_Dysfunction
 - Diplopia
 - Dizziness
 - Dysarthria
 - Dysmetria
 - Dysphagia
 - EPO_00000006
 - Facial_Myokymia
 - Facial_palsy
 - Forth_Nerve_Palsy
 - Gastroesophageal_Reflux
 - Hearing_loss
 - Heat_intolerance
 - Lhermitte_sign
 - Mood_symptoms
 - Myoclonus
 - Myokymia
 - Neuropatic_pain
 - Nystagmus

Annotations for Dizziness (Right Panel):

Annotations +

- label [language: de]
Dizziness
- Context
MeSH:MDC000701
- Reference
<https://uts.nlm.nih.gov/uts.html>
- Synonym [language: de]
Dizzy
- Synonym [language: de]
C0012833
- Synonym [language: de]
Dizziness symptom
- Synonym [language: de]
Dizyyness
- Synonym [language: de]
Sensation vertigineuse
- isDefinedBy
A medically indistinct term used to describe a variety of conditions such as lightheadedness, unsteadiness, turning, spinning or rocking.

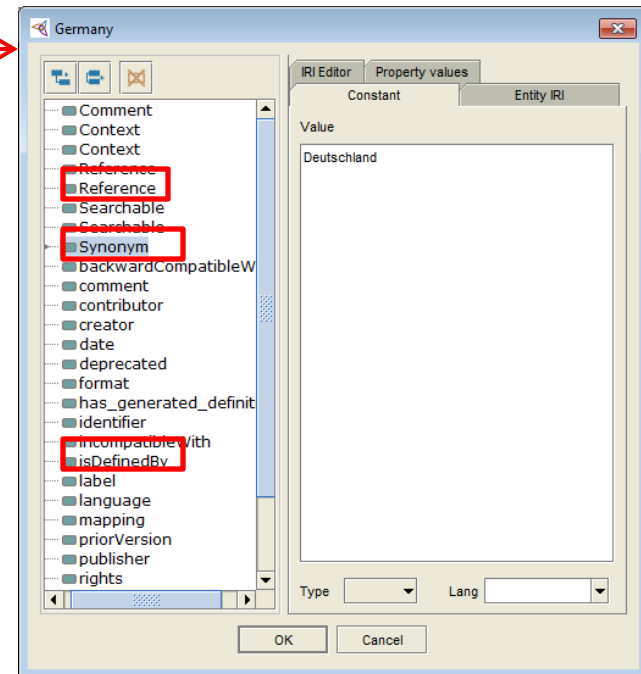
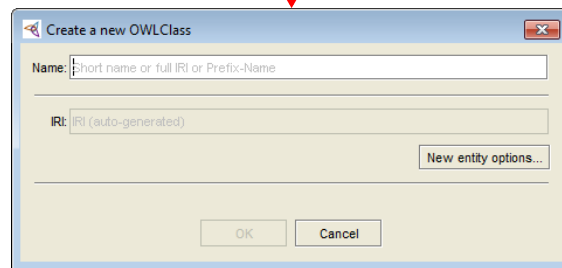
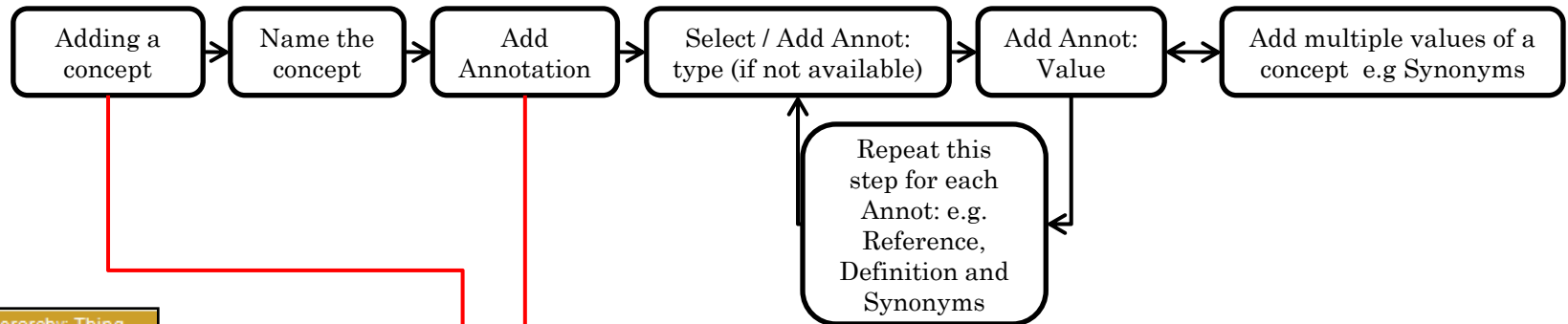


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A SINGLE CONCEPT ADDITION IN AN ONTOLOGY MANUALLY



STRUCTURE OF OWL FILE

<Declaration>

```
<Class IRI="#clonazepam"/>
</Declaration>
<Declaration>
  <Class IRI="#diazepam"/>
</Declaration>
<Declaration>
  <Class IRI="#neurontin"/>
</Declaration>
<Declaration>
  <Class IRI="#phenytoin"/>
</Declaration>
<Declaration>
  <AnnotationProperty abbreviatedIRI="protegeuserexample:Reference"/>
</Declaration>
<Declaration>
  <AnnotationProperty abbreviatedIRI="protegeuserexample:Synonym"/>
</Declaration>
```

Declaration Tags

<SubClassOf>

```
<Class abbreviatedIRI="protegeuserexample:Thing_Related_To_Clinical_Treatment"/>
<Class abbreviatedIRI="protegeuserexample:Clinical_Concepts"/>
</SubClassOf>
<SubClassOf>
  <Class abbreviatedIRI="protegeuserexample:Thing_Related_To_Clinical_Trial"/>
  <Class abbreviatedIRI="protegeuserexample:Clinical_Concepts"/>
</SubClassOf>
<SubClassOf>
  <Class abbreviatedIRI="protegeuserexample:Thing_Related_To_Diagnosis"/>
  <Class abbreviatedIRI="protegeuserexample:Clinical_Concepts"/>
</SubClassOf>
<SubClassOf>
  <Class abbreviatedIRI="protegeuserexample:Thing_Related_To_Pathology"/>
  <Class abbreviatedIRI="protegeuserexample:Clinical_Concepts"/>
</SubClassOf>
```

Subclass Tags

<AnnotationAssertion>

```
<AnnotationProperty abbreviatedIRI="rdfs:label"/>
<IRI>#Control_Group_Study_Arm</IRI>
<Literal xml:lang="de" datatypeIRI="&rdf;PlainLiteral">Control_Group_Study_Arm</Literal>
</AnnotationAssertion>
```

Annotation Tags

(Synonyms, isDefinedBy, Reference etc)



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STATE-OF-THE-ART TOOLS

- ASIUM → (Acquisition of Semantic Knowledge Using Machine Learning Methods) acquires ontological knowledge from text given as an input.
- Doddle → Exploit the machine readable dictionary and text corpus to populate the domain specific ontology.
- KnowItAll → Extracts facts from the web by using linguistic and statistics method and it is mainly designed for large scale information extraction.
- MedSynDikate, OntoLearn, String-IE and Text2Onto, Dog4Dag

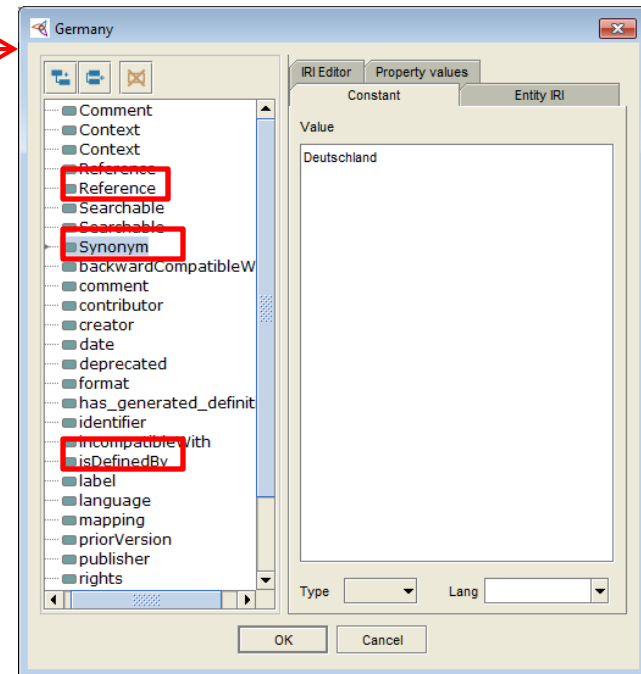
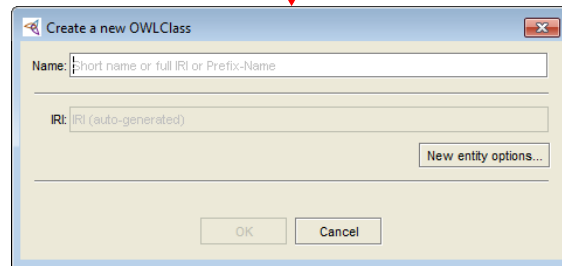
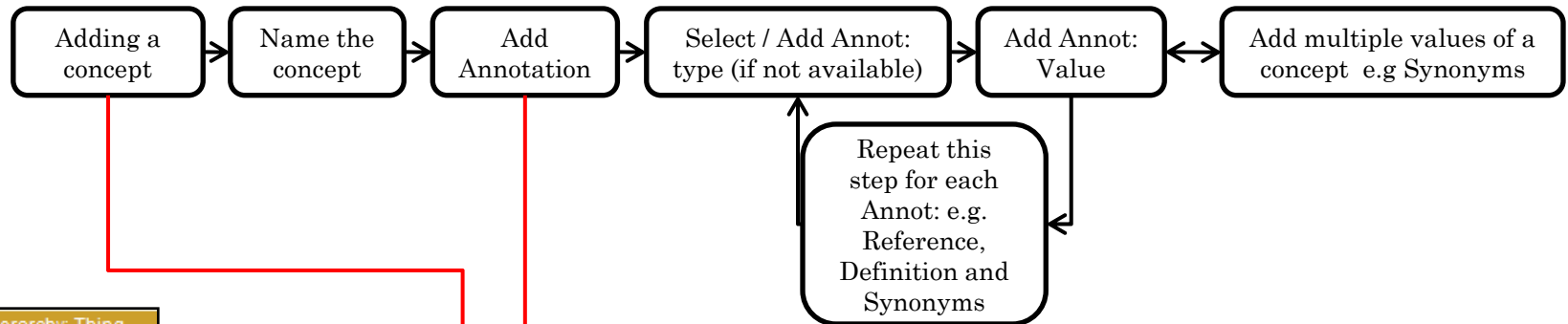


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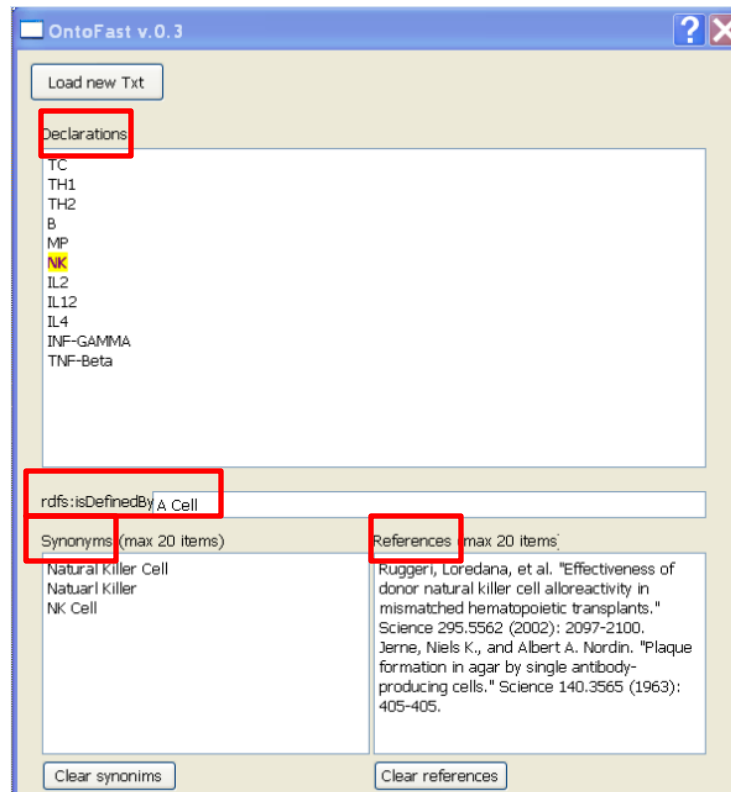
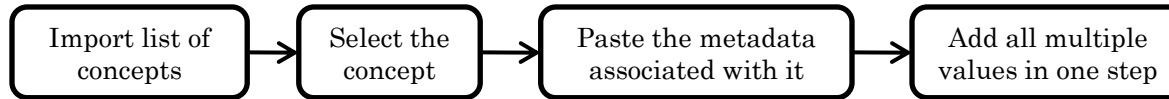
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A SINGLE CONCEPT ADDITION IN AN ONTOLOGY MANUALLY



MANY CONCEPTS ADDITION IN AN ONTOLOGY VIA ONTOFAST



Thank you!

