Implementing Clinical Ontologies

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Objectives

- Introduction to Protégé
- Creating an ontology – diabetes as an exemplar
- Annotating ontologies
- Sharing ontologies – Web Protégé
- SPARQL Queries
Getting familiar with the Protégé tool
Protégé Interface

Ontology Metrics

Main Tabs

Ontology IRI

Ontology Metrics
IRI = Internationalized Resource Identifier
IRI's can be used to look up an ontology
Entities Tab - delete

Class Annotations

Entities Tab
Entities Tab

Root class is known as “owl:Thing”

Class Annotations

Entities Tab
Basic operations for creating classes

Classes = ontological classes
Lab exercises

www.clininf.eu

Clininf.eu ➔ Education ➔ WISH Ontology Lab
Lab 1 – Creating a diabetes ontology

Lab 1: Create the diabetes ontology with the following top level structure

- Diagnosis
- History and investigations
- Outcome measures
- Process of care
- Risk factors
- Symptoms
- Therapy

Save your ontology:

File → Save
“diabetes-ontology.owl”
Add subclasses to the ontology

Add up to 3 subclasses for each upper level class

Find concepts from the paper:
Add meta-information for the ontology

Add annotation button
Add meta-information for the ontology

Create annotation window

Add the following annotations
- Author (Literal)
- Date_created (Literal)
- Author_website (IRI editor) – www.clininf.eu
- Version (Literal) – 1.0
SNOMED CT Browser

Find SNOMEDCT ID → “SCTID”
Find ICD Code

ICD-10 Browser

International Statistical Classification of Diseases and Related Health Problems
10th Revision

You may browse the classification by using the hierarchy on the left or by using the search functionality.

More information on how to use the online browser is available in the Help.
Add the annotation

Value
R63.2 (Polydipsia)
Publishing the diabetes ontology
<table>
<thead>
<tr>
<th>Project Name</th>
<th>Description</th>
<th>Owner</th>
<th>Download</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTU_CI6202_20161026</td>
<td>CLASS PROJECT</td>
<td>Cheng Chuan</td>
<td></td>
</tr>
<tr>
<td>(EcoRSE) Données Métro</td>
<td></td>
<td>david.rouquet</td>
<td></td>
</tr>
<tr>
<td>(EcoRSE) Référentiel V1</td>
<td>Référentiel d'indicateurs et de données élémentaires pour la description de territoires selon les trois piliers du développement durable (économique, social, environnemental). Distribué sous licence Creative Commons : Attribution - Pas d'Utilisation Commerciale + Partage dans les mêmes conditions (BY NC SA)</td>
<td>david.rouquet</td>
<td></td>
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<tr>
<td>(EcoRSE) Référentiel V2 sept 2015</td>
<td></td>
<td>david.rouquet</td>
<td></td>
</tr>
<tr>
<td>(OCD) Ontologia da Cidadade Democrática</td>
<td>Ontologia da Cidade Democrática, orientada aos dados do portal: <a href="http://www.cidadedemocratica.org.br/">http://www.cidadedemocratica.org.br/</a></td>
<td>rfabri</td>
<td></td>
</tr>
<tr>
<td>(OPS) Ontologia de Participação Social</td>
<td>Ontologia de Participação Social, levantada na Plataforma Corais e captaeada por organizações civis (e.g. Cidade Democrática) e do Estado (e.g. Secretaria Geral da Presidência da República)</td>
<td>rfabri</td>
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</tr>
</tbody>
</table>

WebProtege is developed by the Protege team in the Biomedical Informatics Research Group (BIRG) at Stanford University, California, USA. The work is supported by Grant GM1053316 from the National Institute of General Medical Sciences at the United States National Institute of Health.
Uploading the ontology

Upload the diabetes ontology
Upload the ontology

Add “Wish-diabetes” prefix
SPARQL Queries
Try some SPARQL queries on the Bioportal query engine

http://sparql.bioontology.org/examples
Thank you for listening!

Questions??