Community-driven Ontology Construction using the myOntology Platform

http://myontology.deri.at/prototype

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What is the Semantic Web?
The Gopher – HTTP/HTML Analogy

1990: Gopher
Textual information

mid 1990s: HTML
Multimedia added

2006 and beyond: RDF, OWL
Meaning added

Gopher screenshot courtesy of the University of Minnesota.
Two Paths to Automation

• Empower machines to process natural language (HLT approach)
• Encode data in a machine-suitable way.

```
<PRODUCT>
  <NAME>Modell 1</NAME>
  <PRICE cur="EUR" vat="yes">4</PRICE>
</PRODUCT>

„Modell 1 kostet 4 EUR inkl. MwSt“

<PRICE cur="EUR" vat="included">4</PRICE>
```
Datamodeling = Specifying Boxes, Relationships, and Important Attributes
Ontology Construction: “Finding a structure for information that is suitable for many users and many purposes”

→ Not just for a particular application or database, but such that it fits many applications!
Standards, Data, Ontologies

Bottleneck 1: Can we derive instance data according to the structure of the ontology?
→ ideally, no manual intervention

Bottleneck 2: Can we convert instance data into common target structures?
→ sufficient level of detail for rule-based transformation
Goal: „Objective“ Structures

• Precision in Meaning: What do we really want to say about an object?
  – „Room“ vs. „Offer to rent a room“
  – Student: Human being that is a student vs. the role of being a student
  – „Event“ vs. ticket that grants me access to a particular event
How Visible are Austrian Tourism Offers on the Web?
Hotel Search: Most Relevant Information Categories

Location: 67%

List Price: 62%

Room Features: 39%

Star Rating: 28%

Breakfast/Meals: 25%

Directions: 24%

Staff: 24%

Accommodation Features: 22%

Swimming Pool: 11%

Technical Equipment: 10%

Parking: 10%

Images: 9%

Sauna: 6%

Fitness Room: 5%

Based on Austrian Chamber of Commerce data; in: Hepp, Siorpaes, Bachlechner (2006)
Representative Sample of WWW Coverage

- Vendor-operated Web site: 60%
- No vendor Web site, but tourism portal member: 33%
- No WWW presentation: 5%
- Unknown / Not found: 2%

Hepp, Siorpaes, Bachlechner (2006)
Percentage of Accommodation Web Pages That Provide Respective Information

Accommodation Web sites providing sufficient information for decision making

- Location: 55%
- List Price: 70%
- Room Features: 57%
- Star Rating: 37%
- Breakfast/Meals: 15%
- Directions: 15%
- Staff: 3%
- Accommodation Features: 55%
- Swimming Pool: 20%
- Technical Equipment: 33%
- Parking: 2%
- Images: 58%
- Sauna: 43%
- Fitness Room: 10%
- Availability: 7%
- Category: 98%

Hepp, Siorpaes, Bachlechner (2006)
Match between Information Supply and Demand

Information Supply
- Fitness Room
- Sauna
- Images
- Parking
- Technical Equipment
- Swimming Pool
- Accommodation Features

Information Demand
- Location
- List Price
- Room Features
- Star Rating
- Breakfast/Meals
- Directions
- Staff

Hepp, Siorpaes, Bachlechner (2006)
The myOntology Platform for Collaborative Ontology Construction

Walk-through

http://myontology.deri.at/prototype
Step 1: Register

Create new User

Username
(Your username is used to log in, you cannot change your username)

First Name
(Your first name and eventually middle names)

Last Name
(Your last name)

Address
(Your address, street, number, city, postal code)

Free text; do not use any hypertext like HTML!

Password
(Your password, please enter twice the same)

EMail
(Your confirmation mail is going to be sent to this address)

Skype
(Your skype account)

Picture
(Profiles)

Gender
(Gender)
Welcome to myOntology!

Lightweight Community-driven Ontology Building and Maintenance

myOntology beta version. Please note that this is a prototype. Data loss might occur.

Domain Vocabularies (Ontology, Domain Model)

Concepts (Class, Category)

Attributes/Relationships (Attribute, Characteristic)

Has Dispatch Conditions

Welcome to myOntology!

myOntology beta version. Please note that this is a prototype. Data loss may occur.

Navigation: Tree view

Create new element
Create new ontology

Create new concept within ontology
Create new concept

**New Concept**

- **Create**
- **Cancel**

**Label**
(A concise and brief word given for purposes of identification.)

<table>
<thead>
<tr>
<th>Cellphone</th>
</tr>
</thead>
</table>

Note that a label is only of high value if everybody would label it equal!

**WordNet suggests following senses:**
Note that elements should be labeled so that others will know its sense without further information!

- **Overview of noun cellphone**
  
  The noun cellphone has 1 sense (no senses from tagged texts)

1. cellular telephone, cellular phone, cellphone, cell, mobile phone -- (a hand-held mobile radiotelephone for use in an area divided into small sections, each with its own short-range transmitter/receiver)

**Description**
(A concise and brief textual description.)

| The mobile phone or mobile, also called a wireless, cellular phone, cell phone (AKA: cellphone), cell or hand phone (HP),[1] is a long-range, portable electronic device used for mobile communication that uses a network of specialized base stations known as cell sites. In addition, the user also has a
| Free text; do not use any hypertext like HTML!

Show what Wikipedia suggests for **Cellphone**

- **Wikipedia**
- **Search**

The first paragraph of http://en.wikipedia.org/wiki/Cellphone is:

The mobile phone or mobile, also called a wireless, cellular phone, cell phone (AKA: cellphone), cell or hand

**Related elements**

- **Included in Domain Vocabularies**
(A Concept can belong to one or more Domain Vocabularies.)

  - **TelephoneOntology**

  - **Search to Add**

  - **Input the label of the element to add.**

- **SubConcepts**

  - **-**
Create new property
Create new property

Label
(A concise and brief word given for purposes of identification.)

hasProducer

Note that a label is only of high value if everybody would label it equal.

As WordNet suggests nothing this label seems to have no synonyms.
Note that elements should be labeled so that others will know its sense without further information!

Description
(A concise and brief textual description.)

This relationship relates a cellphone to its producer.

Free text; do not use any hypertext like HTML!

Show what Wikipedia suggests for Wikipedia Search

Synonyms

Example of Usage

Flickr Images

YouTube Videos

Equivalent as Properties

Partly Overlaps With

Narrower Than

Broader Than

Allowed Values
(An Attribute has a Range of values.)

Datatypes

Individual Entities of following Concepts

producer

Compatible
(One or more Concepts)

Cellphone
DigitalCamera
MobilePhone
Single Product
Product
Dispatch Option
MobileTelephone
Create new Concept
Assign properties
History Function

Revision history of Domain Vocabulary TelephoneOntology

Fri Feb 29 08:00:56 CET 2008 (changes in: Included in Domain Vocabulary) (Restore previous Included in Domain Vocabulary)
Fri Feb 29 07:57:56 CET 2008 (changes in: YouTube Video**) (Restore previous YouTube Video**)
Fri Feb 29 07:57:33 CET 2008 (changes in: Flickr Image*) (Restore previous Flickr Image*)
Wed Feb 27 17:52:45 CET 2008 (changes in: Included in Domain Vocabulary) (Restore previous Included in Domain Vocabulary)
Wed Feb 27 17:51:37 CET 2008 (initialized)

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Freeze Points – Stable Snapshots

Freeze Points of Domain Vocabulary **TelephoneOntology**

<table>
<thead>
<tr>
<th>File</th>
<th>Date</th>
<th>User</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fri Feb 29 08:09:48 CET 2008</td>
<td>sti sti</td>
<td>This is Katharina's freeze point for the IT day.</td>
</tr>
</tbody>
</table>

*) This product uses the Flickr API but is not endorsed or certified by Flickr.  
***) This product uses the YouTube API but is not endorsed or certified by YouTube. 
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<rdf:RDF

  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:dc="http://purl.org/dc/elements/1.1/"
  xmlns:myontology="http://myontology.deri.at/ontology/prototype/id"

  <owl:AnnotationProperty rdf:about="http://myontology.deri.at/ontology/prototype/id/htmlDocumentation.rdf"
    rdf:type="owl:AnnotationProperty"
    rdf:label="The telephone is a telecommunications device that is used to transmit and receive sound (most commonly voice) between two points."

  <owl:Ontology rdf:about="http://myontology.deri.at/ontology/prototype/id" rdf:label="The TelephoneOntology.rdf"

  <owl:Class rdf:about="http://myontology.deri.at/ontology/prototype/id/Class/MobilePhone"
    rdf:type="owl:Class"
    rdf:comment="The mobile phone or mobile, also called a wireless, cellular phone, cell phone (AKA: cellphone), cell"

  <owl:Class rdf:about="http://myontology.deri.at/ontology/prototype/id/Class/Cellphone"
    rdf:type="owl:Class"
    rdf:comment="The mobile phone or mobile, also called a wireless, cellular phone, cell phone (AKA: cellphone), cell"

  <owl:ObjectProperty rdf:about="http://myontology.deri.at/ontology/prototype/id/ObjectProperty/hasProducer"
    rdf:type="owl:ObjectProperty"
    rdf:comment="This relationship relates a cellphone to its producer."

  </rdf:RDF>
Special pages

Special pages are automatically generated lists of noticeable entries.

Entries with missing description

Most Revisions
Last Edited
Most Frequent
Most Changes
No multimedia
Entries without translation
comment equals label
No revisions
not included in vocabulary

Special page: Entries with missing description

Concepts (Class, Category)

<Dealers
<Whirlpool

Attributes/Relationships (Attribute, Characteristic)

Water Treatment

Domain Vocabularies (Ontology, Domain Model)

digitalCamera
bath
firmena-2.wk
offer_fa
Import Step 1

Specify Input

- URL: [Input Field]
- [Retrieve from URL]

- File: [Input Field] [Browse] [Upload OWL file]
Thank you!

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