SMW+ Tutorial

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Agenda

- Overview of SMW+
- Hands-on Session 1
  - Basic Authoring
  - Basic Tagging
- Introduction to Ontologies
  - Modelling an Ontology with SMW+
- Hands-on Session 2
  - Instantiating the Ontology
Prerequisites

- A Laptop
- A Browser
  - Chrome
  - Firefox
  - IE 8
- The Wiki that we'll use:
  - http://diqa-pm.servehttp.com/smwdemo
  - Please register while I give the demo
What is SMW+?

- SMW+ is a set of extensions on top of
  - MediaWiki
  - Semantic MediaWiki
- Now maintained by DIQA
- Sponsored by Vulcan Inc.
  - under the Halo Program
- Focusing on
  - Enhancing the accessibility of the semantic features
SMW⁺ in a Nutshell

SMW⁺ is a Semantic Enterprise Wiki for agile collaboration on rich text and data

- **It is a Wiki:**
  
  *Platform for web-based collaboration and quick authoring and provision of content.*

- **It is a database:**
  
  *Users embed data in text that can be retrieved with powerful data query mechanisms.*

- **It is a data integration tool:**
  
  *Users access data from external databases, web services or the Semantic Web from within the Wiki.*

- **It is enterprise-ready:**
  
  *Installs in 15 minutes and comes with business-critical features and professional services.*
Some SMW+ Features

- Built-in WYSIWYG Editor
- Rich text, incl.
- Tables
- Images
- Templates
Some SMW+ Features

Faceted Search

- Supports full-text search
- Drill-down
  - arbitrary ...
  - Categories
  - Properties, and
  - Property values
Some SMW+ Features

DataExplorer / OntologyBrowser
Some SMW+ Features

Query Interface

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**Create query**

**Load query**

**Main Query**

Add property

Add Category

Add Property

Add Instance

**Property:** Countries/validSince

**Type:** Number

**Property value:**

- Show in results
- Column label:
- Value must be set

**Restriction:**

- None
- Specific value
- Subquery

**Query Outline**

Main Query

- Countries/SelfGovernedCountry
- Countries/validUntil
- < 1995

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**Query Options**

**Result Preview**

<table>
<thead>
<tr>
<th>Countries/Czechoslovakia</th>
<th>1,993</th>
</tr>
</thead>
<tbody>
<tr>
<td>Countries/Democratic Yemen</td>
<td>1,990</td>
</tr>
<tr>
<td>Countries/Ethiopia 1993</td>
<td>1,993</td>
</tr>
<tr>
<td>Countries/Federal Republic of Germany the</td>
<td>1,990</td>
</tr>
<tr>
<td>Countries/German Democratic Republic the</td>
<td>1,990</td>
</tr>
<tr>
<td>Countries/Socialist Federal Republic of Yugoslavia the</td>
<td>1,992</td>
</tr>
</tbody>
</table>
Now it's your turn! -- Session 1

- Basic Authoring
  - Create a wiki page
  - Formulate text and layout with WYSIWYG editor
  - Add images
- Basic Semantics
  - Tag properties and categories with WYSIWYG editor and Semantic Toolbar
- Query and visualize this data
- Create a page representing your self
  - Start with a plain WYSIWIG page
  - Enter some texts, possibly an image, and play with the editor

- Create a page representing a Task, e.g.
  - Start with a plain WYSIWIG page

  **Task:** Update Screenshots

  **Description:** During the next phase, it is necessary to update the screenshots in the internal documentation.

  **Assignee:** YOU

  **Start:** April 25, 2012

  **Deadline:** December 31, 2012

  This task is part of The famous Test project.
- Create a query to find all task assigned to Fred and show their description, start and end date.
- Embed a similar query for all your tasks on the page you created earlier.
- Use Faceted Search to find your pages.
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What is an ontology?

“An ontology is a formal, explicit specification of a shared conceptualization.”
Constituents of an Ontology

Ontology entities and their counterpart in the wiki

- **Category**: Wiki page in namespace „Category“
- **Instance**: Any wiki page in the main namespace
- **Property**: Wiki page in namespace „Property“
Ontology statements in Semantic MediaWiki

- **Is-a**: Sub-category relation. Category page tagged with a category.
  - [[Category:Event]]

- **Instance-of**: Category assertion. Wiki page tagged with a category.
  - [[Category:Person]]

- **Relating instances**: Property on a page pointing to another page.
  - [[Attendee::Daniel]]

- **Attributes for instances**: Property on a page with a data value.
  - [[Budget::300000]]
Ontological Properties of Properties

- All characteristics are specified as annotations on property pages:
  - **Type** -- defines the “data type” of the property (cf. next page)
  - **Domain** -- articles of this category can have values for this property.
  - **Range** -- articles of this category can be objects of this property. Only relevant, if the property is of type is **Page**.
  - **Allowed values** -- Defines a set of values which are allowed for this property.
  - **Minimal/Maximum cardinality** -- The minimal/maximal number of values an article can have for this property.
- All this is good for autocompletion, proposing values, and checking validity.
## Datatypes in Semantic MediaWiki

<table>
<thead>
<tr>
<th>Page</th>
<th>Datatype</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type Annotation URI</td>
<td>Annotation URI</td>
<td>Holds URLs, but has some technical differences during export compared to the &quot;URL&quot; type</td>
</tr>
<tr>
<td>Type Boolean</td>
<td>Boolean</td>
<td>Holds boolean (true/false) values</td>
</tr>
<tr>
<td>Type Code</td>
<td>Code</td>
<td>Holds technical, pre-formatted texts (similar to type Text)</td>
</tr>
<tr>
<td>Type Date</td>
<td>Date</td>
<td>Holds particular points in time</td>
</tr>
<tr>
<td>Type Email</td>
<td>Email</td>
<td>Holds e-mail addresses (similar to type String)</td>
</tr>
<tr>
<td>Type Geographic coordinate</td>
<td>Geographic coordinate</td>
<td>Holds coordinates describing geographic locations</td>
</tr>
<tr>
<td>Type Number</td>
<td>Number</td>
<td>Holds integer and decimal numbers, with an optional exponent</td>
</tr>
<tr>
<td>Type Page</td>
<td>Page</td>
<td>Holds names of wiki pages, and displays them as a link</td>
</tr>
<tr>
<td>Type Quantity</td>
<td>Quantity</td>
<td>Holds values that describe quantities, containing both a number and a unit</td>
</tr>
<tr>
<td>Type Record</td>
<td>Record</td>
<td>Allows saving compound property values that consist of a short list of values with fixed type and order</td>
</tr>
<tr>
<td>Type String</td>
<td>String</td>
<td>Holds character sequences up to 255 characters</td>
</tr>
<tr>
<td>Type Telephone number</td>
<td>Telephone number</td>
<td>Holds international telephone numbers based on the RFC 3966 standard</td>
</tr>
<tr>
<td>Type Temperature</td>
<td>Temperature</td>
<td>Holds temperature values (similar to type Quantity)</td>
</tr>
<tr>
<td>Type Text</td>
<td>Text</td>
<td>Holds text of arbitrary length</td>
</tr>
<tr>
<td>Type URL</td>
<td>URL</td>
<td>Holds URIs, URNs and URLs (similar to type String)</td>
</tr>
</tbody>
</table>

It's your turn, again! -- Session 2

- Let's build an ontology, together
  - On the white board
  - Concurrency is difficult
  - Consensus is important
  - Formalize the ontology with the DataExplorer
- Populate the ontology with AutomaticSemanticForms (ASF)
- Query and visualize data with the QueryInterface
1. Create an instance of one of the just created categories
   - Start with the “Create New Article” dialog
   - Select the category from the drop-down list
2. Enter some data in the form and some text in the text-box
3. Formulate some queries with the QueryInterface to see what everyone else has entered.
Wrap Up

Today we have learned ...

- ... how to create articles and fill them with text, images, tables and semantic data
  ... with WYSIWYG editor, DataToolbar, AutomaticSemanticForms

- ... how to model an ontology
  ... with the DataExplorer

- ... how to retrieve the data entered collaboratively
  ... with the QueryInterface and FacetedSearch
The Community Portal for SMW+ ([http://smwplus.net](http://smwplus.net))
Thank you for your attention!

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