SEAL — a SEmantic portAL with content management functionality

CRIS 2002
29.08.02, Kassel, Germany

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work together with
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York Sure
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Ontoprise GmbH, Karlsruhe
- Semantics for the Web -
http://www.ontoprise.de

L3S Learning Lab, Hannover/Karlsruhe
http://www.learninglab.de
Agenda

- The Semantic Web
- The OntoWeb Community and it’s Portal
- Content Provision in OntoWeb
  i. Content Syndication
  ii. Content Objects
  iii. Review Process
- Architecture for SEmantic portALs (SEAL)
- Conclusion
Where are we now? Problems?

- ERP: Thousands of Tables
- WWW: Billions of documents
- CRIS: Petabyte of Information
- Content Management: Millions of Documents
- Laptop-Harddisk: 31518 Files with data
- Email Staab: 24874

Find & Content-based Aggregation
Rudi Studer works in the DAML Project.

In the DAML Project, the Semantic Web is created.

Rudi Studer knows the Semantic Web.

AGGREGATE CONTENT - GENERATE KNOWLEDGE

SEMANTIC TECHNOLOGIES

CONTEXT

NEW KNOWLEDGE

ANSWERS
KNOWLEDGE MODELLING: ONTOLOGY

Object

- Person
  - Employee
  - PhDStudent
- Lecture
- Topic
- Publication
  - Book
  - Article
cooperatesWith

Person

knows

writes

hasAuthor

Topic

hasTopic

Publication

Employee

Book

Article

PhDStudent

Lecturer

• writes and hasAuthor are inverse
• If a person writes a publication, she knows something about its topic

Rules
1. Modeling of Knowledge Areas

2. Generation of Metadata

3. Knowledge Generation with Rules
The Layer-Cake of Tim Berners-Lee: A Layering of Standards
CREAM – Creating Metadata

1st Semantic Web conference

Attribute Instances = instance of a property to a datatype instance

Relationship Instances = instance of a property to a class instance

[Handschuh, Staab, Märche; K-CAP 2001]
Towards Semantic Web Mining

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Research Paper at International Semantic Web Conference
(ISWC) 2002, June 9-12th, 2002 Sardinia, Italy

Abstract
Semantic Web Mining aims at combining the two fast-developing research areas Semantic Web and Web Mining. The idea is to improve, on the one hand, the results of Web Mining by exploiting the new semantic structures in the Web, and to make use of Web Mining, on the other hand, for building up the Semantic Web. This paper gives an overview of where the two areas meet today, and sketches ways of how a closer integration could be profitable.
Annotation by Typing Facts

Semantic Web Mining

M. Callahan, S. Staab, Y. Sure
Humboldt University Berlin

The goal of combining Semantic Web and Web Mining is to identify interesting pattern of the Web data. The paper gives an overview of the state of the art in this area.
Towards Semantic Web Mining

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Generate Class Instance

Attribute Instance

Relationship Instance
Markup of Objects
(Instantiation of Classes)

Towards Semantic Web Mining

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Namespace: http://annotation.semanticweb.org/ontoprise/Towards_Semantic_Web_Mining.html
Towards Semantic Web Mining

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<table>
<thead>
<tr>
<th>Attributes</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>title</td>
<td>Towards Semantic ...</td>
</tr>
<tr>
<td>year</td>
<td>2002</td>
</tr>
</tbody>
</table>

Research Paper at International (ISWC) 2002, June 9-12th, 200

Abstract
Towards Semantic Web Mining

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Research Paper at International Semantic Web Conference

Semantic Web Mining aims at improving, on the one hand, the state of the art in Web Mining, and on the other hand, meet today, and sketches way:
Annotation by Authoring

Create Text and if possible Links out of a Class Instance

Attribute Instance

Relationship Instance generates simple text
Use of Objects

Towards Semantic Web Mining
Use of Object Attributes

Towards Semantic Web Mining

<table>
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</table>

written in 2002
Use of Objectrelationships

Towards Semantic Web Mining

Towards Semantic Web Mining has author Gerd Stumme

Namespaces: http://annotation.semanticweb.org/swf/Towards_Semantic_Web_Mining.html#
1st Semantic Web conference
OntoWeb (IST-2000-25056) is an EU-funded network of excellence

Currently over **100 partners**
- Academia and industry
- Mostly European partners

Subtitle: Ontology-based information exchange for knowledge management and electronic commerce
The OntoWeb Portal

Access Information
- Navigation
- Semantic Querying

Provide Information
- *Outside the Portal:*
  Collection of metadata located on external pages
- *Inside the Portal:*
  Provision of *selected* information using templates generated from ontology

© Steffen Staab & York Sure 2002

Cooperation with Free University Brussels
The OntoWeb Portal

http://www.ontoweb.org

OntoWeb Community

Participating Site

Generated Content Objects

Annotated Web Pages

Ontology Browser & Query Front End

Content Syndication Service

Participating Site

Participating Site

Participating Site
Portal must allow **centralized access** to distributed information

Participants can **enrich resources** located outside of the portal with **metadata**

Metadata aligns this information towards the **ontology**

OntoWeb is **syndicating** information from participants by replicating their metadata
Content Syndication

Generated Web Templates
Annotated Web Pages
Ontology Browse & Query Front End

KAON

OnoWeb Community

ZODB
Zope Object Database

Ontology Table
Instance Table
Query Engine

StarLAB
DOGMA Server

Participating Site1
Participating Site2
Participating Site_n

www.ontoweb.org

KAON Syndicator

...
Content Objects

- Portal supports the **direct provisioning** of semantic facts
- **Uniform look** for core information
e.g. information about a SIG
- Users can edit and view (new) facts using templates
- Facts are stored in **content objects**
- Edit/View interface & content objects are generated from ontology
Content Objects

OntoWeb
Ontology-based information exchange for knowledge management and electronic commerce

KAON Portal

ZODB
Ontology Table
Instance Table
Query Engine

Generated Content Objects
www.ontoweb.org

WWW11
The Eleventh International World Wide Web Conference
For more information, visit http://www.ww11.org/

Event details

Contact details

KAON

Zope Object Database

www.ontoweb.org
**Goal:**
- **Reduce overhead** as far as possible
- Guarantee **quality** of portal contents

**Idea:**
- Portal Members can have a **reviewer role**
- Members have **private content** on their web space
- To make this information **public**
  content has to be reviewed by reviewers
Publishing Workflow

OntoWeb
Ontology-based information exchange for knowledge management and electronic commerce

Submit for review

Status: visible
Pending review (1)

Status: pending

Status: published

Reviewer

Publish
Content integration @ work

SEAL (SEmantic portALs) like OntoWeb require:

- **Web information integration:**
  - Support semantic integration of heterogeneous sources
  - Support content providing by large collection of portal users

- **Web site management:**
  - Semantic querying and navigational views
  - Input views
  - Agent access to portal content
Conclusion

- Join the OntoWeb Community:

  http://ontoweb.aifb.uni-karlsruhe.de

  We will move the portal in September/October to:
  http://www.ontoweb.org

- Interesting Events:

  2nd Conference on Professional Knowledge Management
  (2. Konferenz Professionelles Wissensmanagement – Erfahrungen
  und Visionen), 2.-4. April 2003, Luzern, Switzerland
  http://wm2003.aifb.uni-karlsruhe.de/


Thank you!