International Workshop on Semantic Web And Reasoning for Cultural Heritage and Digital Libraries (SWARCH-DL)

in conjunction with the

4th IEEE International Conference on Semantic Computing

September 22-24, 2010
Carnegie Mellon University, Pittsburgh, PA, USA
Welcome to Pittsburgh!
Organization Committee

**Workshop Chair**

*Dimitrios A. Koutsomitropoulos*

**Co-Chairs**

*Georgia D. Solomou*

*Theodore S. Papatheodorou*

*High Performance Information Systems Lab. (HPCLab)*

*Computer Engineering and Informatics Dpt.*

*University of Patras, Greece*

[http://www.hpclab.ceid.upatras.gr](http://www.hpclab.ceid.upatras.gr)
Workshop’s Aims and Scope

- How Semantic Web techniques apply to cultural heritage collections and digital libraries?

**Need to:**
- improve *access, management* and *dissemination* of world’s cultural assets!
- tackle with the *semantics* of web knowledge-intensive systems and cultural applications
- provide *knowledge-based* management of information in digital libraries
- deploy “*intelligent*” search and navigation mechanisms
- produce knowledge through automated *reasoning*
Areas of Interest

- Use of *semantically enriched metadata* schemes
- The role of *ontologies*
- *Semantic-enabled* search and browsing services in cultural heritage collections and digital libraries
- Data integration and processing
  - Interoperability issues
- *Reasoning* over cultural heritage information
- Techniques for *knowledge acquisition*
Areas of Interest

What else?

- **Evaluation, scalability** and **performance** issues
- Usability and interfaces
- Applications involving **Linked Data**
- **Semantic** and **mental maps** of interlinked cultural information
- **Experience reports** from relevant projects, use-cases, examples, ....
The problem
In facts...

- In Europe alone, **tens millions** of Euros invested in projects related to cultural heritage and digitization.
- **Hundreds** of **institutions** (museums, archives, libraries, ...) participating in them.
- **Millions** of **digital objects** already available through digital library infrastructures.
  - **Millions of online visitors worldwide!**
Digitization

- Huge amount of digital information
- Available through multiple channels
  - The Web
  - e-media
- However...
  - Fragmentation!
  - Missing *links*
  - What about *semantics*?
Projects for Cultural Heritage

- **eCHASE** – electronic *Cultural Heritage made Accessible for Sustainable Exploitation*
  - ...a follow up from **SCULPTEUR** *(Semantic and Content-based multimedia exploitation for EURopean benefit)*

- **AMA** - Archive Mapper for Archaeology

- **Multimedia N9C Eculture**

- **MultiMatch** - Multilingual/Multimedia Access To Cultural Heritage

- **STAR** – Semantic Technologies for Archeological Resources

- **Smartmuseum**
Projects for Cultural Heritage

- **CultureSampo** (a follow up from *MuseumFinland*)
- **STITCH - SemanTic, Interoperability To access Cultural Heritage**
- **Europeana** (~ 10M € from 2009-2011)
  - A multi-lingual online collection of millions of digitized objects from European museums, libraries and archives
  - *aims at 10 million records by the end of 2010!*
- **CARARE**
  - Special focus on 3D and virtual reality content
- **ATHENA** (~ 5,2M € in 3 years)
  - Provides tools and standards for Europeana
Digital Library Projects

- **DSpace**
  - A widely adopted digital repository system

- **SIMILE** - Semantic Interoperability of Metadata and Information in unLike Environments
  - **Longwell**
    - A web-based, configurable faceted browser for RDF data
  - **Dwell**
    - The DSpace version of Longwell

- **JeromeDL** – Social Semantic Digital Library

- The Library of Congress National Digital Library Program

- ... and **Fedora, DELOS, BRICKS, ...**
Semantic Search in Europeana

Searching with keyword “Raphael”
CultureSampo - Finnish Culture on the Semantic Web

The thickness of arrows express the confidence for a relation.

By selecting different locations a user can examine its cultural heritage relations to other locations.
Linked Data service by the Library of Congress

Semantic Web

From Library of Congress Subject Headings

Details Visualization Suggest Terminology

Semantic Web

URI
<http://id.loc.gov/authorities/sh2002000569#concept>

Type
Topical Term

Broader Terms
Semantic Integration (Computer systems)
Semantic networks (Information theory)
World Wide Web

Related Terms
Microformats

Sources
Engr. index online, May 6, 2002 (identifier: Semantic Web)
ASTI on FirstSearch, May 6, 2002: in titles (semantic Web)

LC Classification
TK5105.88315

Created
2004-04-07

Modified
2009-12-15 13:59:47

Instance Of
SKOS Concept
Why useful to have CRM ontology is a more expressive language (e.g., OWL)?

- Enables reasoning on and discovery of cultural heritage information over distributed knowledge resources
CIDOC-CRM in OWL – An example

Using the CRM ontology: Disambiguation of the term “Parnassus” in an example about the poet Kostis Palamas

E21 Person
Kostis Palamas

P107 is current or former member of
E74 Group

P62 is depicted by

E22 Man-Made Object

owl:Restriction
P107 is current or former member of AllValuesFrom E74 Group

rdfs:subClassOf

E74 Group

owl:Class

Parnassus

owl:Thing

P62 depicts

Thing

owl:Class

E22 Man-Made Object

owl:Restriction

P62 is depicted by

E74 Group

owl:Class

Kostis Palamas

P107 is current or former member of
JeromeDL - Semantic Search Service

Results of search for the resources with RDF and NL interface

```
SELECT DISTINCT r FROM {r} marcont:hasCreator {c}, {c foaf:name {fname}} WHERE fname LIKE "%Kruk%" USING NAMESPACE marcont = <http://www.marcont.org/ontology#>, foaf = <http://xmlns.com/foaf/0.1/>
```

Query Language: SPARQL  RDF Query: 

Search results:

1. Hee-Chul Choi, Sebastian Ryszard Kruk, Slawomir Grzonkowski, Stankiewicz Katarzyna
2. Brian Davis, John G. Breslin: *Trust Models for Community-Aware Identity Management*
3. Vit Novacek, Siegfried Handschuh, Diana Maynard, Loredana Laera, Sebastian Ryszard Kruk, Max Völkel, Tudor Groza, Valentina Tamma: *D2.3 Vf Report and Prototype of Dynamics in the Ontology Lifecycle*
SIMILE

SIMILE’S Longwell - A web-based RDF faceted browser
Semantic Search for DSpace

An advanced “semantic” search facility implemented for the DSpace digital repository system

https://wiki.duraspace.org/display/DSPACE/Kotsomit

- Semantics for DSpace metadata
  - Knowledge discovery (high, OWL 2 expressivity)
  - Automatic model population
    - Alleviate the “bootstrapping” problem

- Novel Semantic Services
  - Augment traditional search and navigation
  - Intelligent retrieval and discovery
  - “Plug-in” philosophy

- Interoperable design
  - Easy to integrate in any digital repository (OAI-PMH)
  - Straightforward integration with other schemata (e.g. IEEE-LOM)
  - Semantic interoperability
Workshop Presentations

- Part I: *Cultural Heritage Ontologies and Applications*
  - Semantic collection management on the Web
  - Intelligent mash-ups
  - Applications of the CIDOC-CRM reference model
Workshop Presentations

- Part II: *Web-based Collections and Digital Libraries*
  - Semantic metadata manipulation of bibliographic resources
  - Data integration using well-recognized standards (RDF, SKOS, ...)
  - Efficient data management and cataloguing
  - Personalization techniques
# Workshop Program

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<tr>
<th>Time</th>
<th>Session I: Cultural Heritage Ontologies and Applications</th>
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<td>10:30-10:50</td>
<td>Welcome and Workshop Opening</td>
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Dimitrios A. Koutsomitropoulos |
Aikaterini Kalou, Tzanetos Pomonis, Dimitrios Koutsomitropoulos, Theodore S. Papatheodorou |
| 11:15-11:40 | Museum of London - Collections Information Integration Module  
Alex Bromley, Rob Tice |
| 11:40-12:05 | Toward a Novel Application of CIDOC CRM to Underwater Archaeological Surveys  
Olivier Curé, Mariette Sérayet, Odile Papini, Pierre Drap |
| 12:05-12:30 | Detecting Shape Similarities in 3D Pottery Repositories  
Anestis Koutsoudis, George Pavlidis, Christodoulos Chamzas |
| 12:30-13:45 | Lunch |

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<thead>
<tr>
<th>Time</th>
<th>Session II: Web-based Collections and Digital Libraries</th>
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</table>
| 13:45-14:10 | A Bi-directional Semantic Framework for Bibliographic Metadata  
John Del Corral, Benno Blumenthal |
| 14:10-14:35 | The Use of SKOS Vocabularies in Digital Repositories: The DSpace Case  
Georgia Solomou, Theodore S. Papatheodorou |
| 14:35-15:00 | Proposal of a Goal-Oriented Shared Catalog Model  
Alicia Sellès Carot, Enrique Orduna-Malea, Jorge Serrano-Cobos, Nuria Lloret Romero |
| 15:00-15:25 | A Semantic Web Personalizing Technique: The Case of Bursts in Web Visits  
Dimitris Antoniou, Mersini Paschou, Efrosini Sourla, Athanasios Tsakalidis |
| 15:25-15:45 | Discussion - Closing |
Program Committee

• Andreas Andreou, *Cyprus University of Technology, Cyprus*
• Panayiotis Bozanis, *University of Thessaly, Greece*
• Christodoulos Chamzas, *Democritus University of Thrace, Greece*
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• Ioannis Venetis, *Technological Education Institution of Piraeus, Greece*
• Axel Vitzthum, *Digicult SH, Germany*
Semantic Web Journal Special Issue

- **SWJ Special Issue on SWARCH-DL** (IOS Press)
  - [http://www.semantic-web-journal.net/](http://www.semantic-web-journal.net/)
- Call out in **October 2010**
- Editors:
  - *Dimitrios Koutsomitropoulos*, Univ. Patras
  - *Eero Hyvönen*, Aalto University
  - *Theodore Papatheodorou*, Univ. Patras
- **Open** review process
- Submissions until **end Jan. 2011**
  - 15-25 pages
Thank you for your participation to SWARCH-DL 2010!

Your feedback is welcome!

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