Introduction to the SEALS Platform

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• SEALS Platform
• SEALS Evaluation Services
• SEALS Evaluation Campaigns
• SEALS Community
• Conclusions
The SEALS Project

http://www.seals-project.eu/

Project Coordinator:
Asunción Gómez Pérez
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EC contribution:
3,500,000 €

Duration:
June 2009-May 2012

Universidad Politécnica de Madrid, Spain (Coordinator)
University of Sheffield, UK
Forschungszentrum Informatik, Germany
University of Innsbruck, Austria
Institut National de Recherche en Informatique et en Automatique, France
University of Mannheim, Germany
University of Zurich, Switzerland
STI International, Austria
Open University, UK
Oxford University, UK

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SEALS Outlook on Semantic Technology Evaluation

SEALS Platform

SEALS Evaluation Campaigns

SEALS Community

SEALS Evaluation Services
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The SEALS entities

- Test Data
- Evaluations
- Tools
- Results

Tools:
- Ontology engineering
- Storage and reasoning
- Ontology matching
- Semantic search
- Semantic web service

Results:
- Raw Results
- Interpretations

Test Data:
- Persistent
- External
- Test Data Generator

Ontology engineering
Storage and reasoning
Ontology matching
Semantic search
Semantic web service
The SEALS ontologies

- Describe all the information needed to evaluate semantic technologies
- Reuse existing ontologies (e.g., Dublin Core, FOAF, VCard)

http://www.seals-project.eu/ontologies/

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SEALS Logical Architecture

SEALS Repositories
- Test Data Repository Service
- Tools Repository Service
- Results Repository Service
- Evaluation Descriptions Repository Service

Software agents

Evaluation Organisers

Technology Providers

Technology Adopters

Runtime Evaluation Service

SEALS Service Manager

SEALS Portal
SEALS Technical Infrastructure

- 2 servers IBM x3550 M3
  - 2 Intel Quad Core E5506 2,13Ghz
  - 16GB RAM
  - 3 HDD SAS Hot Swap 600GB 10k

- 2 servers IBM x3550 M3
  - 2 Intel Quad Core E5506 2,13Ghz
  - 32GB RAM
  - 3 HDD SAS Hot Swap de 300GB 10k

- 2 servers
  - 2 Intel Quad Core E5506 2,13Ghz
  - 16GB RAM
  - 3 HDD SAS Hot Swap 300GB 10k

- 1 server
  - 2 Intel Xeon E5506 2,13GHz
  - 32GB RAM
  - 3 HDD SAS How Swap 1TB 7,2k

- IBM System Storage DS3400 Dual Controller
  - 10 HDD SAS IBM 600GB SL HS 15K
  - 5 HDD SAS 2TB Near Line 7,2k
Methodology and Infrastructure in SEALS development

- Open source
- Agile development
- Continuous integration process
- Sustainability
- Releases planned every six months
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# SEALS Evaluation Services

## Evaluations

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<tr>
<th>Ontology engineering</th>
<th>Ontology reasoning</th>
<th>Ontology matching</th>
<th>Semantic search</th>
<th>Semantic web service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conformance</td>
<td>Classification</td>
<td>Matching accuracy</td>
<td>Search accuracy, efficiency (automated)</td>
<td>SWS Discovery</td>
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<tr>
<td>Interoperability</td>
<td>Class satisfiability</td>
<td></td>
<td>Usability, satisfaction (user-in-the-loop)</td>
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<tr>
<td>Scalability</td>
<td>Ontology satisfiability</td>
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<tr>
<td></td>
<td>Entailment</td>
<td></td>
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<tr>
<td></td>
<td>Non-entailment</td>
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</table>

## Test Data

- **Conformance & interoperability:**
  - RDF(S)
  - OWL Lite, DL and Full
  - Scalability:
    - Real-world
    - LUBM

- **Gardiner test suite**
- **Wang et al. repository**
- **Versions of GALEN**
- **Ontologies from EU projects**

- **Benchmark test data**
- **Anatomy test data**
- **Conference test data**

- **EvoOnt test data (automated)**
- **Mooney test data (user-in-the-loop)**
- **OWLS-TC 4.0 test data**

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Using the SEALS Evaluation Services

• Currently requires a local deployment of the SEALS Platform

• In the future, these services will be available:
  – For community members through the SEALS Portal
  – For software agents through APIs
Inserting an evaluation

1. Implement:
   - Evaluation workflow
   - Tool plugins
   - Custom services

2. Describe:
   - Evaluation
   - Tools
   - Test Data
   - Raw Results
   - Interpretations

3. Package:
   - Evaluation
   - Tools
   - Test Data
   - Raw Results
   - Interpretations
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Evaluation Campaign Process

INITIATION
- Evaluation Campaign Organizers Committee
- Evaluation Campaign Execution Committee

INVolvEMENT
- Evaluation Scenarios:
  - Evaluation description
  - Test data
- Campaign Schedule

preparation & execution
- Evaluation Campaign Announcement
- Registration mechanisms
- Participant list

Finalization
- Feedback
- Results published

Final report (with improvement recommendations)
- Evaluation resources published
1\textsuperscript{st} Evaluation Campaign

<table>
<thead>
<tr>
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<tr>
<td><strong>OET Conformance 2010</strong></td>
<td>DLBS Classification 2010</td>
<td>MT Benchmark 2010</td>
<td>SST Automated 2010</td>
<td>SWS Tool Discovery</td>
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<tr>
<td><strong>OET Interoperability 2010</strong></td>
<td>DLBS Class satisfiability 2010</td>
<td>MT Conformance, interoperability</td>
<td>Search quality, performance, query expressiveness</td>
<td>Evaluation 2010 Retrieval performance</td>
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<td><strong>OET Scalability 2010</strong></td>
<td>DLBS Ontology satisfiability 2010</td>
<td>MT Anatomy 2010</td>
<td>SST User Usability 2010</td>
<td>Affiliated campaigns:</td>
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<tr>
<td>Efficiency, scalability</td>
<td>DLBS Logical entailment 2010</td>
<td>MT Conference 2010</td>
<td>Usability, query expressiveness</td>
<td>SWS Challenge 2010</td>
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</table>

- **6 Participants**
- **3 Participants**
- **13 Participants**
- **5 Participants**
- **4 Participants**
## 29 Participating tools

<table>
<thead>
<tr>
<th>Campaign</th>
<th>Tool</th>
<th>Provider</th>
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<td>University of Manchester</td>
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<td>Gerome*</td>
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<td>Nanyang Tec. University</td>
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<td>Semantic search</td>
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<td>K-Now Ltd</td>
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<td>Ginseng</td>
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<td>Jena Arq</td>
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<tr>
<td>Semantic web service</td>
<td>4 OWLS-MX variants</td>
<td>DFKI</td>
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</table>

8 countries
1st Evaluation Campaign Results

• Overview:
  – The state of semantic technology today
  – Overview of the First SEALS Evaluation Campaigns

• Details:
  – SEALS D10.3 (ontology engineering)
  – SEALS D11.3 (reasoning)
  – SEALS D12.3 (ontology matching)
  – SEALS D13.3 (semantic search)
  – SEALS D14.3 (semantic web service)
2nd Evaluation Campaign

- **June 2011**
  - Provide requirements
  - Announcement at ESWC 2011

- **Sept 2011**
  - Definition of evaluations and test data
  - Launch of 2nd Campaign

- **Jan 2012**
  - Join the Evaluation Campaign!
  - Run your own evaluations

- **April 2012**
  - Results of 2nd Campaign

- **June 2012**
  - Results presented at ESWC 2012

**Time Frame**
- June 2011 to June 2012

**Events**
- Announcement at ESWC 2011
- Launch of 2nd Campaign
- Join the Evaluation Campaign!
- Run your own evaluations
- Results presented at ESWC 2012
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Community services

http://www.seals-project.eu/

- Portal
- Blog
- Twitter
- Mailing lists

- Public wiki
- Forums
- Private wiki
- Private mailing lists

- Whitepaper
- Deliverables
- Papers
- Tutorial

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SEALS
Semantic Evaluation at Large Scale
Evaluation services

Execute evaluations

Update them

Or define your own

06.06.2011

Semantic Evaluation at Large Scale
## Participation in SEALS

<table>
<thead>
<tr>
<th></th>
<th>Everyone</th>
<th>Community member</th>
<th>Campaign participant</th>
<th>Associated partner</th>
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<td>Community materials</td>
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<td>Private collaboration</td>
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<td>services</td>
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<tr>
<td># Members</td>
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<td>+250</td>
<td>29</td>
<td>1 U. Simón Bolívar (VE)</td>
</tr>
</tbody>
</table>

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Conclusions

• The SEALS Platform facilitates:
  – Comparing tools under common settings
  – Reproducibility of evaluations
  – Reusing evaluation resources, completely or partially
  – Or defining new ones
  – Managing evaluation resources using platform services
  – Computational resources for demanding evaluations

• Don’t start your evaluation from scratch!
Join the SEALS Community!

http://www.seals-project.eu/join-the-community

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