SERVICES AND THE WEB OF DATA

An Engineering Perspective

Carlos Pedrinaci, Maria Maleshkova
(The Open University)

Thursday, 7 July 2011
Acknowledgements

- Dong Liu (OU)
- Ning Li (OU)
- Jacek Kopecky (OU)
- John Domingue (OU)
- SOA4All project
From Linked Data to Smart Applications

- Linked Data Principles
  - Simple, clear, well-established
- Linked Data Applications
  - Based on these simple principles and technologies
  - ... and a bunch of hacks on top
We need reusable Components

The level of complexity and refinement of Linked Data Apps will be proportional to our ability to reuse pre-existing solutions (i.e., components/functionality)
How much functionality are we sharing? And reusing?
...this will be often offered as a Service

For reasons of scale (or control), in the Semantic Web many of these components will have to be offered as services that gather and analyse large quantities of data to provide advanced functionality (or their results) online.
Developing and sharing software

Models for capturing services
Registry for sharing and finding these
Engine for invoking services and providing a linked data interface over these...
SOA4RE

Mashes Linked Data and Web APIs data

Finds and Invokes Linked Services on the Fly

Modularity and Extensibility as a core built-in feature
WHERE ARE ALL THE PROBLEM SOLVERS GONE?

• Applications require both *static* and *dynamic* knowledge

• “To build systems that solve real-world tasks, however, we must not only specify our conceptualizations, but also clarify how problem solving ideally will occur.”

  M. A. Musen
A pillar of semantic technologies is genericity. Let’s exploit it!

This requires decoupling problem-solving knowledge from the domain

Problem-Solving Methods research focused precisely on this
Applying PSMs over domain specific data

Engines based on problem-specific vocabularies
Used by feeding them with domain-specific data at invocation time
Suggestion

- We need to support the systematic and effective reuse of functionality
- We have devised some initial infrastructure to support this process
- Decoupling problem-solving knowledge from the domain is essential for further reuse
- PSMs research showed us how to do it
Challenges

• Keep the overhead low
• Exploit the cloud and other people’s work/services
• Performance vs genericity
• Full complexity of PSMs needs to be avoided but is also not necessary
• Surrounding solid tooling is necessary
Share your data
... AND YOUR COMPONENTS!
“... THIS CAN’T WORK ...”
Bringing the Big Think to the Small Screen

Web Services and APIs in the Cloud

Domain & Task Models

Intelligence at the Interface

Slide by Tom Gruber, Siri

Thursday, 7 July 2011