NeOn: Lifecycle Support for Networked Ontologies

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Economic and socio-technical background

- The vision of a knowledge-based economy supported by the availability of large scale semantic information
  - Key is the ability to build **open applications** able **to scale up** to large quantities of data and **to evolve**, as heterogeneous data are dynamically generated on the (semantic) web
    - NeOn assumes the existence/availability of large scale web semantics
    - However building the semantic web itself is not an 'official' goal of the project
- Given this vision…..
  - Information selection, assessment, integration and maintenance the key barriers to large-scale development of applications
  - Ontologies have emerged as the key enablers for knowledge sharing and reuse

Economic and socio-technical background

- Opportunity/Need
  - To build semantic systems qualitatively far more complex than the current generation, by building complex applications integrating large semantic resources.
- Problem
  - No adequate ontology engineering infrastructure (at both methodological and tool level) for the whole application development lifecycle of the envisaged applications
  - Specifically, inadequate support for large scale reuse, evolution and maintenance, collaborative development, etc..
  - Software crisis all over again?

The case for NeOn

- The NeOn project
  - major integrative effort aiming at providing a radical ‘leap forward’ by developing the infrastructure needed to make large-scale semantic application development **feasible** and **cost-effective**
  - lowering the entry barrier for organizations needing semantic solutions
- Ambition on the technology level (4 yrs)
  - NeOn as the standard reference infrastructure for large-scale semantic web application development

Key concrete contributions

- System-level contributions
  - an open, scalable, service-centred reference architecture for the lifecycle of networked ontologies, meta-data and contexts
  - the NeOn toolkit for system development with networked ontologies
    - Based on OntoStudio
  - the NeOn methodology for system development with networked ontologies
- Contributions to foundational research
  - methods and tools for managing dynamic, evolving, possibly inconsistent and contextually grounded networked ontologies
  - methods and tools for supporting large-scale collaborative development, taking into account consensus, communal trust and group context
- three truly innovative testbeds in two sectors

Testbeds

- Managing fishery knowledge to support automatic alert mechanisms
  - UN FAO
- E-Invoice management in the pharmaceutical sector
  - PharmaInnova
- Integration and management of information about phrmaceutical products
  - Atos Origin

Research Issues

- Ontology dynamics
  - evolving ontologies & meta-data
  - predicting evolutionary changes
- Collaborative aspects
  - collaborative development, discovery, selection, evaluation & re-use of ontologies
  - community-centred ontology design & ontology design patterns
- Context awareness
  - locally-consistent & context-specific mappings
  - Context-centric integration of semantic and non-semantic resources
- Human-ontology interaction
  - customization, personalization & adaptation of user's interaction with networked ontologies

Partners

- Core
  - KMi/OU (coord), AIFB, UPM, Software AG, iSOCO
- Other RTD
  - ‘Jozef Stefan’, U.Sheffield, INRIA, Koblenz-Landau, Ontoprise, CNR
- Use Cases
  - UN FAO (fisheries/agriculture alerts),
    PharmaInnova
    Atos Origin (pharmaceutical business chain)