

Ontology-Driven Software Engineering 2010

Sergio de Cesare

Brunel University
United Kingdom

Frederik Gailly

Ghent University
Belgium

Grant Holland

Grant Holland and
Associates
U.S.A.

Mark Lycett

Brunel University
United Kingdom

Chris Partridge

BORO Program
United Kingdom

sergio.decesare@brunel.ac.uk frederik.gailly@ugent.be grant.holland@gmail.com mark.lycett@brunel.ac.uk partridgec@borogroup.co.uk

Abstract

Ontologies (i.e. formalized models of real world domains and systems) are becoming mainstream in the representation and management of data, information and knowledge. In software engineering, however, the adoption of ontology-driven methods and techniques is still at an initial stage of definition and gestation. A series of initiatives by both academic and industrial groups have highlighted the potential benefits that would derive from software development driven by ontologies. These benefits include improved model/code traceability, artifact reusability and increased levels of system interoperability and integration. In general ODISE here refers to the different ways in which ontologies can contribute to improving Software Engineering – its processes and its artifacts. The broad themes of the workshop include: (1) Ontology as a means to inform all phases of the development lifecycle; (2) Ontology as means to increase software traceability; and (3) Methods, techniques and tools for ODISE. The workshop aims to bring together researchers and practitioners with diverse cultural and professional backgrounds in order to discuss and analyze the different perspectives, issues and challenges of Ontology-Driven Software Engineering.

Categories and Subject Descriptors D.2.13 [Software Engineering]: Reusable Software – domain engineering, reusable libraries, reuse models.

General Terms: Algorithms, Management, Measurement, Documentation, Design, Languages, Theory.

Keywords: Ontology; software engineering; semantics; model development and transformation.

1. Theme and Goals

Ontologies (i.e. formalized models of real world domains and systems) are becoming mainstream in the representation and management of data, information and knowledge.

In software engineering, however, the adoption of ontology-driven methods and techniques is still at an initial stage of definition and gestation. A series of initiatives by both academic and industrial groups have highlighted the potential benefits that would derive from software development driven by ontologies. These benefits include:

- Improved understanding of the relation between (system) concepts and the domain.
- Improved ability to automatically reason over aspects of requirements, design and implementation.
- Potential to better cater for differences in requirements/use and/or adapt to context.
- Enhanced communication, trust and consistency.
- Improved interoperability and reusability.

The main theme of this workshop is Ontology-Driven Software Engineering (ODISE: pronounced odyssey). ODISE here refers to the different ways in which ontologies (i.e., formalized conceptual models of real world domains) can contribute to improving Software Engineering – its processes and its artifacts. This use of the term encompasses different and interrelated aspects of Software Engineering as a discipline. For example: (1) ontological principles can be used as the basis of improved development languages; (2) ontologies can help improve the way in which software development projects are organized; and (3) ontological domain models can drive or refine typical development phases, such as requirements, design and implementation.

The motivation for organizing a workshop on ODISE derives from the increased interest that ontologies have generated in recent years within the software community. The relevance of ontologies in Software Engineering is exemplified, for instance, by the successful OOPSLA 2007 workshop on ‘Semantic-Based Systems Development’, various OMG and W3C initiatives, and commercial products based on ‘semantic technologies’. However, regardless of such developments, these efforts still represent pioneering initiatives in the field of Software Engineering. As the state-of-the-art stands, ODISE is still in its infancy. The adoption of theory and technologies developed by the Semantic Web community to enhance Software Engineering appears promising, with many areas that are worth investigating and exploring.

This workshop is the 7th in a series of OOPSLA/SPLASH workshops on the general theme of ontologies in systems development, evolution and integration. More specifically this is the second event titled Ontology-Driven Software Engineering. After a successful first edition, ODiSE 2010 will focus on the specific themes that emerged in 2009. The general areas that the workshop will address are:

- Ontology as a means to inform the process of gathering requirements.
- Ontology as a means to inform architecture development directly from requirements specifications.
- Ontology as a means to inform the software design directly from the architecture specification.
- Ontology as a means to model the software development process and the software product itself.
- Ontologies as run-time artifacts or to inform the design of run-time artifacts.

- The role of ontology reasoning in the software engineering process.
- The role of ontologies in model-driven development.
- Comparison of different ODiSE mechanisms (e.g. domain-specific modeling, profiling, etc.).
- Comparison of the role of core ontologies vs. domain ontologies in ODiSE.
- Ontology driven development of service software.
- Methodological issues for ODiSE.
- Problems of semantic mismatch between traditional software modeling paradigms, approaches, techniques, etc. and ontological modeling.

ODiSE 2010 aims to bring together researchers and practitioners with diverse cultural and professional backgrounds in order to discuss and analyze the different perspectives, issues and challenges of Ontology-Driven Software Engineering.