Semantic-Based Systems Development

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Abstract

Software systems are intrinsically complex from a number of perspectives. The level of complexity is increasing due to the growing need to integrate different and diverse systems in order to achieve organizational goals (evolving toward eco-systems as an ideal). Effective integration may be argued as important as, from a knowledge-based perspective of organizations, the effectiveness of services rendered by resources depends upon how they are combined and applied. Consequently, systems development and re-engineering must focus on ways of dealing with the complexity of modern software systems in an effective manner. Since software systems, in essence, model real world phenomena, it is necessary to adopt modeling and development techniques founded on semantics. Broadly speaking, semantics enable the precise mapping between complex real world phenomena and their modeled counterparts and/or enable the (dynamic) mapping/integration between different representations (and understandings) of real world phenomena.

In recent years, ontologies have emerged as the prime focus of semantic modeling, with the main focus on the development of representation languages and the resulting ontologies. Limited work has been carried out within the software engineering community in relation to the development of semantic-based systems – though research into the modeling, alignment and evolution of ontologies has progressed significantly among the Semantic Web community. It would seem plausible that languages, tools and techniques developed to achieve the objectives of the Semantic Web could be integrated within the software development process as a means to produce more flexible and adaptive systems. Numerous challenges exist however, as the development of semantic-based systems will have to manage things that exist (ontology), specific organizational knowledge of what exists (epistemology) and the required organizational action (prag-matics). With that in mind, this 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 Semantic-Based Systems Development. Researchers and practitioners are invited to provide contributions in the form of research, case study or position papers related to the workshop theme. Topics include, but are not limited to the following:

- Ontological modeling paradigms
- Development approaches for semantic-based systems (e.g., methods, process and tool support)
- Resolution of semantic mismatches
- Persisting semantic models
- Automated ontology generation and management
- Ontology languages (e.g., RDF, OWL and UML)
- Semantic Web services
- Mapping of semantic models with system models
- Extracting (business) semantics from legacy systems.

During the workshop the discussion will be particularly aimed at:

- Identifying key obstacles in relation to Semantic-Based Software Development;
- Contributing toward the improvement of the State-of-the-Art in Semantic-Based Software Development;
- Instigating collaborative research efforts among the participants.