Ontologies and Software Modeling: Potentials, Experience and Challenges

Dragan Gasevic[1]

School of Computing and Information Systems, Athabasca University,
1 University Drive, Athabasca, AB T9S 3A3, Canada
dgasevic@acm.org

Abstract. Model Driven Engineering (MDE) and the Ontologies represent two key areas with a far-reaching vision for the future of software engineering. The main promise of MDE is to raise the level of abstraction from technology-platform-specific concepts to the higher levels of software modeling. Ontologies, on the other hand, are introduced to provide formal and explicit definitions of shared conceptualizations different domains. Besides software engineering, ontologies play the main role other areas such as the Semantic Web and information systems.
Although ontologies and MDE have been developed by two different communities, they share a number of principles and goals, and there are important synergies that can be achieved by combining them with each other. The Ontology Definition Metamodel (ODM) standard by the OMG can be viewed as a first step towards their happy marriage. While this is certainly a big success of the community, there are many open research challenges such as the levels of abstraction where ontologies and modeling languages can be integrated; tasks in which ontologies and software models can be optimally used together; and software processes that can fully leverage the potential of this happy marriage.
In this talk, we will start from the main principles of MDE and ontologies, and discuss present achievements and experience gained in various projects and domains. Looking to the future, we will then tackle some of the key research challenges and discuss some on-going initiatives such as the use of ontologies in the development of service-oriented architectures and staged configuration of software product lines.