

Using UFO as a Reference Ontology in the (Re)Design of Enterprise Modelling Languages

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Abstract. Conceptual modeling has been considered a key activity in enterprise architecture and information systems engineering, and comprises the use of diagrammatic languages for communication, understanding and problem solving regarding a universe of discourse. The effectiveness of a modeling language for the aforementioned tasks is strongly related to the language's domain appropriateness, i.e., to the language's ability to express the relevant characteristics of the domain at hand. A language designer must, therefore, understand the phenomena (or domain) that should be covered by the language and propose symbolic structures that will empower prospective language users to efficiently carry out certain tasks concerning the represented phenomena. This requires the design of a language with some form of correspondence between its constructs and things in the external world, which we call real-world semantics.

Although essential to language design and semantic interoperability tasks, the real-world semantics of conceptual modeling languages for the enterprise is often defined only informally with no rigor or methodological support for the language designer. As a consequence, a number of language issues may arise, including lack of semantic clarity and expressiveness, which ultimately affect the language's ability to serve as a basis for communication, analysis and transformation.

In this tutorial, we will discuss advances in the last decade concerning the application of reference ontologies to address these issues. We will show how well-founded reference ontologies can serve to inform the design and revision of enterprise modeling languages. In order to provide a solid basis for reference ontologies, we will discuss the role of a foundational ontology in this process (the Unified Foundational Ontology, UFO). A number of concrete cases of language revision will be discussed involving ArchiMate and other languages, encompassing different enterprise architectural domains (such as services, capabilities, goals, organizational structure, etc.).

Short Bio. João Paulo Andrade Almeida is associate professor at the Computer Science Department of the Federal University of Espírito Santo, Brazil.

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He joined the Centre for Telematics and Information Technology at the University of Twente in September 2001, and received his Ph.D. from that university in 2006, with the Ph.D. thesis entitled Model-Driven Design of Distributed Applications. During 2006, he worked as a Scientific Researcher for the Telematica Instituut on the application of model-driven approaches to the design of services and service-oriented architectures. He has participated in the European SPICE IST and MODA-TEL IST projects, in the Dutch Freeband WASP project and in the AMIDST project. Since 2007, he has been working on the application of ontologies in enterprise architecture and enterprise modeling. He has served as principal researcher in a CNPq/FAPES PRONEX project, as well as Dean of the Graduate School in Computer Science at the Federal University of Esp rito Santo (2011-2013).