Ontology-Driven Conceptual Modeling with UFO, gUFO, and OntoUML - Abstract

Giancarlo Guizzardi

Semantics, Cybersecurity & Services, University of Twente, Enschede, The Netherlands

Abstract

Conceptual Modeling is about creating concrete artifacts that are meant to represent our conceptualizations of reality for the purpose of communication, domain understanding, problem-solving and meaning negotiation. The artifacts produced by this activity (i.e., conceptual models), thus, serve as an interface between reality and human cognition. For this reason, conceptual modeling languages and conceptual models should be designed by taking very seriously the nature of reality as structured by human cognition, i.e., by systematically employing the-called Descriptive Ontologies. This tutorial revisits a 20-year effort in creating one such Descriptive Ontology, namely, the Unified Foundational Ontology (UFO), as well as a set of conceptual modeling tools based on it. These include the modeling language OntoUML, several patterns and anti-patterns associated with this language, as well as a recent lightweight implementation of UFO termed gUFO (gentle UFO - https://nemo-ufes.github.io/gufo/), which supports the construction of UFO-informed knowledge structuring artifacts (e.g., Knowledge Graphs). The tutorial illustrates these tools in several real-world scenarios.

Keywords

Foundational Ontologies, Conceptual Modeling, UFO, OntoUML, gUFO