

The Role of Formal Ontologies in defining Real-World semantics for UML meta-modeling

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UML class diagrams can be used as a language for expressing a conceptual model of a domain. We use the General Ontological Language (GOL) and its underlying upper level ontology to evaluate the ontological correctness of a conceptual UML class model and to develop guidelines for how the constructs of the UML should be used in conceptual modeling. In particular, we discuss the UML metaconcepts of classes and objects, datatypes, abstract class, powertype, attribute, association and aggregation/composition from an ontological point of view. We make some proposals of how to extend version 1.4 of the UML in order to obtain more satisfactory modeling primitives that represent subtle distinctions in characteristics of the aforementioned meta-concepts.