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Modeling and Managing Interoperability of Information Systems Using Ontologies and UML

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Abstract

Ensuring interoperability among heterogeneous and external information systems remains a significant challenge for organizations, requiring modeling approaches capable of formalizing and harmonizing concepts from multiple information sources. UML is commonly used to represent system structure and interactions; however, it is insufficient to achieve semantic interoperability. Ontologies enable the formal representation of knowledge and support the sharing of a common semantics across systems [1].

By integrating ontologies with UML, the semantics of concepts can be explicitly formalized, enabling automatic interoperability between heterogeneous information systems. This paper proposes a method for the automatic extraction of UML views from RDF/OWL ontology graphs, based on a detection, encapsulation, and selection process that preserves semantic constraints and data quality.

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References

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