

Standards and Ontologies

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Challenge

- Our goal as the Applied Ontology community is the design and deployment of sharable and reusable ontologies.
- How do standards support/inhibit sharability and reusability of ontologies?

Workshop on Implemented Ontologies (1994)

- All papers had to be accompanied with the explicit encoding in an ontology representation language.
- The problem was not the diversity of ontology representation languages per se, but the lack of formal semantics for the languages.
- Ontologies could not be evaluated (consistency/ correctness/ completeness) or compared.

Standards Relevant to Ontologies

The standards that we need are the ones which enable the evaluation and comparison of ontologies.

- Ontology representation languages with formal semantics
 - ▶ Common Logic (ISO 24707)
 - ▶ OWL (W3C)
- Specifications for mappings between ontologies and between logics
 - ▶ DOL (OMG)
- Standardized axiomatizations of ontologies
 - ▶ ISO 18629 (Process Specification Language)
 - ▶ ISO 21838 (Top Level Ontologies)

Downside of Standards

- The problem is with de facto standards – adopting ontologies without sufficient evaluation and analysis
- Risk: using ontologies that contain ontological errors, unintended models, omitted models, or incorporate implicit ontological commitments that prevent reuse.
- Over-emphasis on pseudo-pragmatics:
“It’s good enough for what I’m doing – don’t waste my time with your theory”
- Ontologies are not being designed and evaluated with respect to semantic requirements.
- It is not clear what criteria are being used to adopt an ontology, beyond popularity contests.

What makes a standard ontology?

- The consensus-driven practice of the current standards development process is only the first step.
- The outcome of consensus should be a set of semantic requirements.
- These requirements are subjected to ontological analysis (*ontology validation*).
- The ontology itself is evaluated against the semantic requirements (*ontology verification*).

IAOA Industry and Standards Technical Committee

ISTC has two core purposes:

- To foster the use of applied ontology in standardization initiatives,
- To facilitate the interactions across people in industry and in applied ontology research.
 - ▶ Activities include the dissemination of information about initiatives with the aim to gather experts interested in the development of ontologically sound standards, and the organization of virtual and physical meetings and events where to discuss how to understand and apply ontological approaches and methodologies.