

Summary article : semantically aided business process modeling

Here, the article highlights the importance of enhancing business process models with semantic annotations derived from ontologies to optimize service delivery, integration, composition, and management. It emphasizes the need to make business process structures, domains, and criteria accessible for precise semantic annotations within an OWL knowledge base. To elaborate further, it demonstrates how Semantic Web techniques can be effectively used to formalize and automatically verify constraints on Business Process Diagrams (BPDs), integrating both domain knowledge and process structure. Additionally, it presents a tool to improve the automated transformation of annotated BPDs into OWL ontologies, providing significant support for business process management during the modeling phase.

The article also discusses the specification and verification of structural constraints using Semantic Web technology, aiming to increase the automation of business process management while ensuring the correctness of semantically enriched diagrams. It distinguishes between semantic annotations, which specify process meanings, and behavioral properties, which describe process operations. It proposes regularizing structural requirements on annotated BPMN processes, accompanied by a demonstration of how description logic reasoners validate these requirements.

Concrete examples are provided to illustrate the proposed formalism through an online shopping process, while comparing the approach with related work. Furthermore, it extends the Business Process Knowledge Base (BPKB) to integrate constraints that standardize structural requirements, highlighting the crucial importance of constraints in ensuring the correctness of annotated BPDs. Through the explanation of representing semantically annotated processes within the BPKB, the article also describes the functionalities of different modules and enumerates the use of constraints to ensure the correctness of semantic annotations. Additionally, it outlines fusion assumptions and process-specific constraints to impose structural requirements, presenting numerous domain-independent fusion assumptions between BPMN and DOLCE ontology, which according to the article, facilitate creating demonstrations for specific domains.

Finally, the article introduces an ontology-based framework to verify sets of structural constraints involving both domain knowledge and process structure. It concludes by highlighting the significant benefits offered by this framework for specifying and verifying structural constraints in business processes, while suggesting avenues for future work aiming to further simplify these tasks for business experts.