

This article, titled "Semantic Technology in Business Process Modeling and Analysis. Part 1: Matching, Modeling Support, Correctness and Compliance," is a research conducted by Michael Fellmann, Patrick Delfmann, Agnes Koschmider, Ralf Laue, Henrik Leopold, Andreas Schoknecht, a working group on semantic technologies in business process modeling and analysis. They have examined various aspects of modeling support systems, such as model matching, modeling support, correctness verification, and compliance. They also discussed application areas and categories of tools related to semantic technologies. The working group aims to promote collaboration among researchers working on these technologies and to promote their results.

Firstly, they explain that semantic technologies have been developed and researched for over 25 years, and it is a concept that doesn't have a precise definition as we can find diverse types such as "the value proposition of semantic technology is to enable applications and the Web to expose more intelligent behavior" or the most "common pattern of defining semantic technologies is to describe concrete standards, algorithms or IT artifacts associated with them." However, another way of approaching a description of semantic technologies is also by enumerating application areas or presenting tool categories. For them, business process modeling involves integrating semantic technologies to interpret and process business process models using formal, natural language-based, and domain-specific knowledge. Its interest lies in the possibility of offering new ways of modeling and analyzing processes, improving the automatic interpretation of models, and helping users in their modeling and analysis tasks.

Then, they present the different model matching techniques used in business process modeling include semantic analysis of model labels, transformation of models into graphical structures annotated with ontology concepts, use of the OWL ontology to represent patterns, as well as the application of lexical, syntactic, and structural similarity measures

And the following part of the files, they explain semantic technologies can be used to check the correctness and compliance of business process models by integrating compliance rules based on aspects such as timing, resource usage, data flow, security, or legislation. Process models are validated against a set of rules from laws, standards, commercial contracts, or process specifications. These rules are defined using formalisms based on temporal logic or algorithmic graph theory. They focused on approaches making use of semantic technologies around model similarity and matching, modeling support as well as on correctness and compliance checking. What they see in these areas is that a wide range of semantic technologies and techniques is in use. Although specialized approaches are developed inside the BPM research community, many approaches leverage technologies that originate from other research communities for example database technology.

This part of this research is mostly focused on the Business modeling part, and the second part might have more information about how the semantic work in the business Process analysis, which we can presume is mostly in the concept of the tools uses for the operational part.