



COMBINING SEMANTIC WEB AND INDUSTRY 4.0 STANDARDS IN DEVELOPMENT OF RULE-BASED PRODUCT CONFIGURATION TOOLS

Sales in the manufacturing industry today facing fundamental changes. Global mega trends and demands of customers lead to a higher product variety, more individual products and solutions and increasingly complex manufacturing systems in the field of production and the area of business-to-business (B2B). Product configurators can help to digitize sales.

Since 1967, WEISS GmbH has specialized in the development and manufacture of components for automation technology. Today, the company with over 400 employees is one of the world's leading manufacturers of automation solutions - from rotary indexing tables and linear transfer systems to handling systems.

In this thesis WEISS products, mechatronic components and interfaces shall be described in AutomationML, which also delivers taxonomies and formal relationships. Furthermore, the Protégé framework (<https://protege.stanford.edu/>) shall be used to convert AutomationML data into OWL ontologies, as well as to describe configuration rules in SWRL.

After conclusion of the research project, the resulting logic shall be implemented and deployed as a REST microservice in the Heroku execution environment and integrated to ERP and CRM systems. As such, the results of the research work are almost immediately applicable to actual industrial use cases.

GOALS

- Review the touch points between AutomationML, Web Ontology and reasoning systems in the context of product configuration
- Develop an ontology for mechatronic systems configuration which inherits data and facts from AutomationML descriptions
- Define and set up a framework for rules definition and obtain a working reasoning system for product configuration operating on a highly scalable and performant Graph Database.

Supervisor / Coach

Begin immediately. If you are interested, please contact:

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