HELSINKI UNIVERSITY OF TECHNOLOGY **ABSTRACT OF THE MASTER'S THESIS**

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Product configuration is routine adaptation of a product according to customer requirements. It is done on the basis of the knowledge embodied in a predesigned configuration model of the product. The adaptation produces a unique specification of a product, a configuration. A configuration task can be automated by a knowledge based product configurator.

Three products of a case company, a number of general models of product configuration and several product configuration systems were analyzed using the KADS knowledge modeling methodology. The analysis of product configurators was limited to general purpose systems, that is, configurators that can be used to model a range of different products.

A general model of configuration knowledge was developed. The model classifies the knowledge according to the role of the knowledge in configuring the product. These classes include the knowledge that a configuration model defines, the knowledge on a single configuration and the knowledge on how a configuration task can be accomplished. The concepts and relationships necessary to represent configuration knowledge were extracted from the general models and configurators and the case using the proposed model. The model proved useful in analyzing configuration knowledge. The identified concepts and relationships form a generic set of modeling concepts. The representation of the concepts and relationships in the configuration knowledge and the reasoning on the basis of them were briefly analyzed. This analysis forms a framework for comparing product configurators.

The analysis of the concepts and relationships indicates potentially complex representation and reasoning issues. The product configuration task is seen as computationally complex abductive or model generating reasoning, although the precise formulation requires further research.

Keywords:	Product configuration, Knowledge level analysis, Knowledge representation and reasoning, Case study, General model of configuration knowledge