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Title of the contribution: Utilization of graph constellations for the development of customizable product spectra

Abstract: Difficulties of assigning mass customization approaches to mechatronical products can be found in the high complexity concerning the structural assembly of product elements. Here we present an approach for a tool, which assists the product designer in identifying specific ranges in product model networks. These networks are highly cross-linked due to the representation of increasing variability. In consequence we introduce an appropriate interface between product designer and product model, which permits the handling of extensive interdependency chains resulting from the mapping of variability. The implementation of the tool comprises eight modules, whereas the most important ones are the parallel graph and matrix visualization. In a user defined number of frames these possibilities of network description allow simultaneous execution of control, creation, and adaptation of interdependencies. The handling of complexity is supported by filter and analysis modules. The presented proceeding consists of two steps to reach manageable partial graphs of specific characteristics. Starting from an arbitrary product definition the general characteristics (colourability, function of distance, etc.) are determined. After this specific partial graphs, such as minimal frames or path
sets are extracted from the graph in question. The approach will be extended in the future by integrating a methodical support for the interpretation of specific substructures.

Stichworte: Individualisierte Produkte; Eigenschaftsfrüherkennung; Konzeptentwicklung

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