Method for creating and visualizing product architectures

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Over the past few decades, the notion of product architectures in development has obtained increasing interest from many corporations conducting product development. Modular architectures and product platforms are often reported to have great potential to reduce internal complexity and total cost drivers within a company while increasing the product variety from a commercial standpoint. Modular product architectures have three interesting properties. The first is that the use of modular product architectures enables the company to split its execution and preparation of engineering tasks. The second is that several products can be developed from the same basis so that the company can base product families on the same basic set of design principles and technologies. The third is that modularization may support an alignment of market, product and production/supply chain aspects. This paper presents a new method for synthesis and visualization of product architecture concepts. The visualization represents the concept from a market, product assortment and production/supply chain point of view in order to support the complex process of making the right decisions. The work is based on the assumption that a graphical overview of a given solution space and relations between market demands, product architecture and manufacturing layout can support decision-making and constitute a very powerful interaction between stakeholders in product development. The key feature of the method is two jigsaw puzzles that are used for concurrent modelling of product and production layout concepts, by combining sub-solutions into total concepts.

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