

The complex reality of modularization – towards an approach for a business-driven modularization of smart products

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Abstract. The main objective of this article is to structure and clarify the transdisciplinary reality of modularization as a foundation for handling business-driven modularization of smart products. Lately, the complexity has increased in the industry due to global manufacturing, different customer requirements, legal requirements, digitalization, new business models, and the evolvement of smart products. The increasingly complex reality has been acknowledged on an enterprise engineering level where complexity is one part of different grand challenges for enterprises. This complexity needs to be handled both horizontally (in the whole value chain) and vertically (on all management levels). It is therefore essential to clarify the modularization landscape by bringing together the business domain, and the engineering domain to cater for the future of modularization. The main contribution of this paper is to suggest a conceptualization of the modularization domain through a meta-model that covers essential aspects of business-driven modularization of smart products.

Keywords. Modularization, business model, meta-model, value chain, smart products