

Model-Based Approach as Support for Product Industrialization: Application to an Optical Sensor

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Abstract : In a product industrialization perspective, the end-product shall always be at the peak of technological advancement and developed in the shortest time possible. Thus, the constant growth of complexity and a shorter time-to-market calls for important changes on both the technical and business level. Undeniably, the common understanding of the system is beclouded by its complexity which leads to the communication gap between the engineers and the sale department. This communication link is therefore important to maintain and increase the information exchange between departments to ensure a punctual and flawless delivery to the end customer. This evolution brings engineers to reason with more hindsight and plan ahead. In this sense, they use new viewpoints to represent the data and to express the model deliverables in an understandable way that the different stakeholder may identify their needs and ideas. This article focuses on the usage of Model-Based System Engineering (MBSE) in a perspective of system industrialization and reconnect the engineering with the sales team. The modeling method used and presented in this paper concentrates on displaying as closely as possible the needs of the customer. Firstly, by providing a technical solution to the sales team to help them elaborate commercial offers without omitting technicalities. Secondly, the model simulates between a vast number of possibilities across a wide range of components. It becomes a dynamic tool for powerful analysis and optimizations. Thus, the model is no longer a technical tool for the engineers, but a way to maintain and solidify the communication between departments using different views of the model. The MBSE contribution to cost optimization during New Product Introduction (NPI) activities is made explicit through the illustration of a case study describing the support provided by system models to architectural choices during the industrialization of a novel optical sensor.

Keywords : analytical model, architecture comparison, MBSE, product industrialization, SysML, system thinking

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