

AN ACTIVITY BASED SIMULATION APPROACH TO FUNCTIONAL PRODUCT DEVELOPMENT

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1 Functional Product Development Challenge Today's Work Practice

This paper discusses the new demands that are placed on tools and methods used in industrial product development due to the transformation of industrial companies from hardware producers to function providers, including some effects on collaborative engineering. Traditionally, manufacturing industry focuses on providing excellent goods, i.e. hardware. Services occur on an aftermarket, as an add-on to the developed hardware. By supplying functions, companies can gain control of the aftermarket. The responsibility and availability of the functions provided by hardware remains with the function provider as well as the responsibility for maintenance and spare parts. This approach, a new business mode, is a response to a necessity for business-to-business collaboration to gain economy-of-scale partnerships in the extended enterprise and ultimately to be able to develop competitive offers [1] [2]. Hence, the shift in view is a move towards providing functions, taking a lifecycle commitment for the hardware as well as optimizing the availability of its function in the customers' system. The redirection from hardware development to a process where development of functions is in focus is hereafter referred to as Functional Product Development.

The challenge when merging the business and technology domains into total offers that are to be developed in the FPD process is that new tools and methods have to emerge that concurrently take care of all the aspects of the lifecycle of the provided function, i.e. adding to the existing complexity of managing all parameters of a provided function. The paper discusses an activity based modeling and simulation approach to the functional product development process where hardware development activities are combined with service activities into a FPD simulation system. The activity based simulation approach is realized in the industry standard simulation environment Matlab. For example, effects of a design change, captured as an activity in a simulation tool, could be displayed in different ways to people with different functions in the design team or its management. In this setting, the challenge in getting a culturally and functionally non uniform distributed team to collaborate effectively over distance lies partly in being able to describe the design processes and identifying what activities that truly are important for, for example, the through put time of the functional product development process. This, in turn, requires partly new collaborative tools and methods for collaborative work.

References

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