

Summary

In the past years the evolution of modern automobiles has been dominated by the increasing usage of electric/electronic-systems. In order to manage the accompanying complexity, there is an ongoing paradigm shift towards the functions of a product. Here, a function-oriented representation is a helpful means. The additional benefit of a function-oriented representation beyond the development phase has not been addressed systematically so far. Moreover, current approaches have not analyzed the benefit arising from the usage of a function-oriented representation in relation to the effort connected with modeling and updating this information.

Within this thesis an approach for a definition of a function-oriented representation with consideration of the accompanying benefit and effort has been defined. The first part of the approach consists of a function-oriented representation which documents the functional aspects of electric/electronic-systems. It comprises a user level, a logical level and a technical level. The function-oriented representation is the basis for the second part of the approach: a method for the definition of a needs-driven representation. This method describes how to derive a needs-driven representation from the function-oriented representation in consideration of the corresponding benefit and effort.

A concrete needs-driven representation is defined for an automotive manufacturer by applying the method. This is achieved by executing each step of the method within an existing company.