Abstract:

Today’s development process is mainly geometry driven and executed by a component-based organization of design departments (in automotive development e.g. one department for body design, one for interior design etc.). Yet, design departments developing complex products depend more and more on support from other departments. Therefore, these component-based organizational structures are not fully adequate. The product developed in these departments is – from the customer’s point of view – a set of functions that meet his needs, requiring the incorporation of different compromises from different aspects of design for X. Typically, the individual functions do not have a direct, one-on-one relation with single components or assemblies but overlap with several components and assemblies. Therefore, at least two perspectives coexist in the design of a product and particularly with respect to collaboration between embodiment design engineers and simulation engineers, that of functions and that of components. Hence, a manageable approach is needed to map components and functions. This paper proposes an approach to methodically compose function-oriented teams between embodiment design and simulation.
departments. These are meant to support cross-departmental communication to raise efficiency in the development process. The approach is implemented by interrelating components and functional requirements. To do so, the methodologies of design structure and domain mapping matrices are used. The mapping provides the engineering departments with several opportunities: First of all, it provides transparency of the product’s functions as specified by the requirements and their interrelation with the product’s topology. This offers the embodiment design engineers a possibility to understand the involvement of “their” parts into the total product and the simulation engineer the possibility to find all parts involved in a function to be simulated. Thus it serves as a means to structure communication between the involved engineers. Furthermore, it allows conclusions to compose adequate roles and teams within the design process. Adapting the approach of so-called “communities of practice”, a team structure across design and simulation departments is proposed to form function-driven teams that are able to work together efficiently and target-oriented. This establishes well-defined channels of communication to foster efficient exchange of information among different departments such as embodiment design and simulation department.

Stichworte: CAD-CAE-Integration; requirements; Structure; dependency

Herausgeber: ASME


Kongress / Zusatzinformationen: 4.-7.7.2006

Konferenzort: Turin

Verlag / Institution: ASME

Verlagsort: Turin

Jahr: 2006

Occurences:

· Einrichtungen > Fakultäten > Fakultät für Maschinenwesen > Institut für Mechatronik > Lehrstuhl für Produktentwicklung und Leichtbau (Prof. Zimmermann) > Konferenzbeiträge
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