

# TOWARDS AN INTEGRATION OF BUILD -TO-ORDER AND CUSTOMIZE -TO-ORDER IN AUTOMOTIVE INDUSTRIES

**Wilhelm Dangelmaier<sup>1</sup>, Andre Döring<sup>1</sup>, Joachim Lentes<sup>2</sup>, Thorsten Timm<sup>1</sup>**

<sup>1</sup> *Heinz Nixdorf Institute, University of Paderborn*

<sup>2</sup> *Fraunhofer-Institute for Industrial Engineering (IAO)*

The environment of companies in automotive industries can be characterised by an increasing degree of dynamics, uncertainty and competitiveness. To cope with the rising demands, companies have to reduce their work-in-progress and especially their stock of finished products as well as to shorten order lead times. A promising approach to achieve these challenges is to question the production approach used and to improve it by implementing new strategies. A well-known strategy for the required optimisation is Build-to-Order (BtO), which is currently used by major companies of the automotive industries. On the other hand, in other progressive industries like computer industries, the configuration of customised products by the assembly of standardised components is an approach, that is successfully used to reduce stocks and order lead times. In our paper we present a novel approach, Customize-to-Order (CtO), that is based on the postponement of the customer order decoupling point, that results in the customisation of a standard component into a customer-specific one, towards the latest possible point – in final assembly or even at the car dealer, leading to a rapprochement towards the usage of configure-to-order in automotive industries. This postponement is based on the enrichment of classical mechanical components with electronics and software, resulting in mechatronic components. The resulting mechatronic components, for example next generation chassis, are solely customized by software and parameterisation. Obviously, such a software-based approach is not suitable for all parts and components of a car. But it is able to supplement existing strategies towards a highly competitive overall production approach, which is a combination of several strategies for specific parts and components of motor vehicles.

The proposed paper will be structured as follows: First we introduce and compare both approaches, BtO and CtO by means of their main features in detail. Based on their features a classification for parts and components in accordance to their suitability for the respective strategies is developed. The classification for parts and components enables the introduction of an approach that integrates the different strategies – thereby exploiting the advantages of the different strategies. Finally, we give a conclusion and an outlook to further work.

The work presented in the proposed paper is funded by the European Commission in the project AC-DC: Automotive Chassis Development for 5-Days-Cars (contract number FP6-SST-031520).