Design Thinking in Product Configuration Projects

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Abstract

Developers of product configuration systems (PCS) act as designers, albeit often not recognizing they are performing in a design process. These developers face challenges in developing and implementing PCS as the main enabler of mass customization. Main difficulties occur in knowledge management (KM) stage for domain experts and the configuration team as the internal stakeholders or users. Design Thinking (DT) is a human-centered approach that includes a wide perspective of stakeholders and aims at enhancing human experience and solving complicated problems. Therefore, it can be used to solve this challenge of KM in configuration projects which is mainly related to communication within the organization by following a systematic, iterative design approach. The aim of this paper is twofold. Firstly, to review the literature of DT to gain deeper understanding of its characteristics, processes and components. Secondly, to apply the findings from literature regarding DT to the KM stage in PCS. The authors' ultimate goal is to outline what the contribution of DT to PCS can be and discuss its importance in promoting the collaboration and communication of knowledge within the organization.

Keywords
Product Configuration System; Design Thinking; Knowledge Management; Internal Stakeholders.

Biographies

Sara Shafiee is a postdoctoral research fellow at the Technical University of Denmark, Department of Mechanical Engineering. She has the experience of working in Engineer-To-Order companies as IT Project Manager and Senior Business Consultant and developing and maintaining more than 10 Product Configuration Systems. Her research is focused on Product Configuration systems challenges for complicated highly engineered products. She has a series of papers about product configuration projects scoping, documentation and modeling, knowledge management, IT tools integrations in international conferences and journals. Sara earned two awards as the best PhD thesis in Denmark.

Saeedeh Shafiee Nahrkhalaji is a student of Executive MBA, Master in Management of Technology, at DTU. She formerly was an Assistant Professor in Applied Linguistics. She completed a Ph.D. thesis focusing on psycholinguistic aspects of spoken word analysis in bilinguals. Saeedeh also holds a Master of Applied Linguistics. Her current research interests include social innovation, change management, marketing and Design Thinking.

Lars Hvam is Professor at the Technical University of Denmark. He has been working on product configuration for more than 15 years as a teacher, a researcher and as consultant for more than 15 configuration projects in large industrial companies. He has supervised eight Ph.D. projects on the construction and application of configuration systems and has been the project leader for four large research projects on product configuration. Lars Hvam is also the founder and current chairman of the Product Modelling Association (www.productmodels.org), whose aim is to disseminate knowledge of the possibilities offered by product configuration.

Niels Henrik Mortensen holds a PhD and an MSc in Mechanical Engineering and is employed as a Professor at the Technical University of Denmark. He is head of the section of Engineering Design and Product Development at DTU Mechanical Engineering. His main research focus is procedures and methods supporting development of Product Families based on Architectures and Platforms. Currently there are nine researchers within the field of architecture based product development.