Scientific Summary

Dissertation Thomas Haskamp

Title: Products Design Organizations: How Industrial-Aged Companies Accomplish Digital Product Innovation

Achieving digital product innovation in industrial-aged organizations demands the integration of digital and physical elements to create novel products. Exemplified by the automotive industry, the emergence of connected, autonomous, shared, and electric trends introduces new players that threaten established companies. This requires industrial-aged organizations to blend contrasting product architectures and organizational principles in the digital and physical domains.

This dissertation, based on an in-depth case study of a car manufacturer's digital product innovation initiative around the integration of Over-the-Air technology for software updates, reveals key insights. Firstly, organizations must reconcile different product architecture principles requiring them to engage in product architecture enablement. Secondly, adapting existing product development routines and establishing new ones is crucial to aligning development processes for different product architecture layers. Thirdly, expanding the organizational structure to mirror product layers is vital. Lastly, redesigning resource allocation practices and adopting concurrent routines is necessary.

Drawing from these findings and including literature from information systems and management, a process model is proposed. This process model explains how industrial-aged organizations achieve digital product innovation. External market pressures and existing architectural frames trigger this process. Reciprocal mechanisms such as product architecture enablement, organizational expansion, alignment of product development routines, and resource allocation redesign explain how companies pursue digital product innovation. A form of nested layered modular architecture, an organizational superstructure, and a set of concurrent routines is presented as the outcome.

The process model contributes to the digital product innovation literature as it shifts the research focus to product architecture questions linked through the mirroring hypothesis with questions of organizational practices. For practice, it offers four levers that practitioners can use to strengthen their digital product innovation capabilities.