



Product architectures based on technologies

Challenge

Environmental issues are of increasing importance across most regions, and high political ambitions exist for improving the efficiency of all energy consuming products. This includes systems and solutions in which the case company's products are used. An important part of improving efficiency in applications is the ability to monitor and instantaneously adjust systems according to their present state. Within the last decade the case company has developed a new sensing technology that improves the monitoring of key parameters through a new method of exposing the sensor to the media. Sensor products derived from this technology has partly been driven by OEM customers ordering different batch sizes of the sensor products customized for their individual needs. This has led to a rather complex product program with many sensor solutions that are dedicated to the needs of OEM customers.

The case company has recently started integrating sensors in some of their main product solutions. This provides a more stable customer base for the sensor department, more focused sensor design and more resources for sensor technology development. As a result, the case company has initiated development of the next generation of sensors including the development of the core technology necessary to provide more accurate and stable output signals with fewer and cheaper components on the sensor PCB.

This next generation of sensors provides the case company with a number of different ways to realize an architecture for the implementation of the new technology. To help focus the development of the architecture, CPC was employed by the case company to identify, qualify and quantify market needs and compare these with technical possibilities. This comparison constituted the basis for defining a strategic way to materialize this open technology into a feasible and functional architecture able to serve the already installed base and address the challenges of future large scale customers including the case company's own high runner products.

Approach

An extensive round of interviews was executed with all relevant market and product representatives at the case company giving their valuable insight on required sensor performance in their respective markets and applications. The information was grouped, evaluated and prioritized using the CPC tool, the Customer View, showing the totality of customer requirements. Further, a breakdown of principal sensing methods enabled by the next generation of sensors was created.

The case company

The case company is a leading global supplier of products for industrial and commercial applications across a multitude of industries, ranging from infrastructure for cities and agriculture to buildings and production facilities. The company has development and production facilities worldwide serving markets in all major regions.



By comparing the weighted market requirements with the technical capabilities of the new sensing technology, two main sensor product archetypes appeared to be sufficient for fulfilling the needs of existing - as well as future sensor customers. One product archetype is an accurate and robust basic sensor unit designed for integration in the case company's own products, while the other is an extended version with more processing power intended to serve the external customers' need for desired sensor outputs. These two main product archetypes were also detailed from a product perspective, specifying needed component variance in order to cover the variety of specific application needs. Further, variance creation throughout production lines was evaluated and a proposal for production re-design was specified. Finally, all initiatives were prioritized in a roadmap visualizing the suggested planning of all activities needed to realize the new generation of sensors.

Results

By comparing the weighted market requirements with identified possibilities within the new sensing technology, CPC enabled the specification of a product architecture and two main commercial product archetypes. On this basis it was estimated that the number of product variants to be handled in production could be reduced by 90% without any compromise on market requirements.

Ultimately, the project provided the case company with a feasible architecture strategy for creating the next generation of sensors to serve a maximum number of customers with a minimum number of physical product variants.

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