

## Chapter 5

# **CUSTOMER ORIENTED INTERACTION SYSTEMS**

Product configuration systems are considered to be the most important enablers of the mass customization strategy. They are information systems which support the acquisition of the customers' requirements while automating the order taking process. They allow customers to configure their products by specifying their technical requirements. Product configuration systems have an additional relevance because they are one of the few information systems with which customers can directly interact (Bramham/MacCarthy 2003, p. 2).

Up to now, the product configuration process is very technical oriented and necessitates product expertise of the customer. During this process, the objective customers' needs are not taken into account. That is why it is necessary to enhance product configuration systems in order to help customers meet an optimal choice.

In this chapter, we explain the state of the art product configuration systems and classify them in a morphological box. We also outline the shortcomings of the existing systems in the context of mass customization. Subsequently, we introduce the notion of advisory systems which extend the product configuration systems with the main objective to tackle the identified problems that arise when we make the distinction between the objective and subjective customers' needs. After the description of advisory quality and an overview of existing techniques for customer advisory, we depict the requirements for a customer advisory system for mass customization. Then, we describe the technical implementation of a basic advisory system. However, this has to be extended in order to optimally elicit the customers' objective needs. For this reason, suitable levers and

technologies are identified in order to provide a conceptual extension of the basic advisory system.

## **1. CONFIGURATION SYSTEMS: STATE OF THE ART**

Product configuration systems or configurators are important enablers of the mass customization paradigm. They are considered to be among the most successful applications of artificial intelligence technology (Felfernig et al. 2002, p. 3). Configurators are information tools that can allow the automation of the order taking process by capturing customers' requirements without involving human intermediaries.

In general, a configurator is implemented at the interface between a supplier and its customers over the Internet. Its principle task is to support customers in the self-configuration of their products according to particular individual requirements. For example, customers can be provided with the possibility to alter a basic product and also to graphically visualize the effects of these changes.

Configurators support the configuration process that requires one to accurately understand the customer's needs in order to create a complete description of a product variant that suits his or her individual requirements. Given a set of customer requirements and a product family description, the task of configuration is to find a valid and completely specified product instance among all of the alternatives that the generic structure describes (Sabin/Weigel 1998, p. 43).

### **1.1 Different Conceptualizations of Product Configurators**

Product configurators have been employed in one form or another for many years. Freuder (1998, p. 29) notes that Lucent technologies has used product configurators for more than 20 years. The main role of configurators is to support the configuration task which is the process of designing a product using a set of predefined components while taking into account a set of restrictions on how the components can be combined (Soininen et al. 1998, p. 357).

In the technical literature, there are many definitions of product configurators. The artificial intelligence community generally addresses a software tool when speaking about configurators. For example, Bourke (2000, p. 2) defines a product configurator as a "...software with logic