Foreword

When Henry Ford announced the introduction of the "Model T" in 1908, he remarked that "any customer can have a car painted any color that he wants, as long as it is black" and still had the vision of a cheaper product fulfilling quality and user requirements in his mind. As an outcome, the moving assembly belts were introduced in Ford's plants in 1913, which led to an increase in production and a cheaper product. Ford's invention of producing standardized products on production lines makes mass production work and is now in use at almost every production plant over the world. However, the mass production, in most cases, is inflexible because of the fixed production line after the processes and designs are finished. Moreover, the obtained products are identical or very similar and difficult to adapt to satisfy the user's needs.

Although, the flexibility of production lines have been increased due to the use of more flexible hardware, for example, programmable devices and software, there is still space for improvement where mass customization comes in. The objective of mass customization is to provide goods and products that are adapted according to the users' needs and requirements but can be produced almost as cheaply as mass products. Hence, mass customization can be the next step in production which combines specialized orders and mass production. The idea behind mass customization would be impossible without computers and information systems which help to design and configure products and production processes from user requirements. Moreover, modern recommender systems support the user in selecting appropriate requirements and constraints which represent the customer's wishes in order to maximize their satisfaction. Information and communication technology is the driver for mass customization. It reduces the customizing costs during the product modeling process and provides tools for supporting the required user interaction.

This book provides the latest research in mass customization research and has been written not only for researchers or graduate students but also for practitioners interested in mass customization and its practical implementation. In particular, the book provides insights in product configuration and modeling for mass customization as well as frameworks for mass customization and a discussion of new approaches. The second part of the book is devoted especially to practical applications. In this part, recommender systems are presented as well as agent-based systems which allow for integrate mass customization systems into the companies' existing IT infrastructure. Moreover, knowledge-based configuration systems are introduced and discussed in the last part of the book. Such configuration systems are flexible and provide a solid foundation for successful applications in mass customization. There is also a growing interest in industry to use such configuration systems in order to reduce costs, manage complexity of designs, and improve sales support.

The content of the book comes from several renowned international authors actively working in the area of mass customization. The book provides both an overview of the research area as well as details about the methodologies and techniques. This book is a must for everyone who is interested in the latest developments of information systems for mass customization and its application.

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Franz Wotawa received an MSc in computer science in 1994, and a PhD in 1996, both from the Vienna University of Technology. He is currently a professor of software engineering and head of the Institute for Software Technology (IST) at the Graz University of Technology. His research interests include model-based and qualitative reasoning, configuration, planning, theorem proving, intelligent agents, mobile robots, verification and validation, and software engineering. Currently, Franz Wotawa works on applying model-based diagnosis to software debugging. He has written many papers for journals, conferences, and workshops, and has been a member of the program committees for several workshops and conferences. He has organized workshops and special issues on model-based reasoning for the journal, *AI Communications*. He is a member of the IEEE Computer Society, ACM, AAAI, the Austrian Computer Society (OCG), and the Austrian Society for Artificial Intelligence.