Preface

After all that I was able to observe in the last years, IT-based supply chain management on the one hand still focuses on planning and scheduling issues while on the other hand an increasing awareness for negative effects of disruptive events is observable. Such events often render schedules in production, transportation and even in warehousing processes obsolete and ripple effects in following processes are encountered. This second focus in application-oriented supply chain management is often referred to as *Supply Chain Event Management (SCEM)* and an increasing number of IT-systems promise to cure the underlying fulfillment problems. However, in my opinion many such solutions lack conceptual precision and currently available client-server SCEM systems are ill-suited for complex supply networks in today's business environment: True integration of event management solutions among different enterprises is currently only achievable with centralized server architectures which contradict the autonomy of partners in a supply network. This is the main motivation why in this book I present a concept for distributed, decentralized event management. The concept permits network partners to implement individual strategies for event management and to hide information from network partners, if they wish to (e.g. for strategic reasons). Besides, this concept builds upon existing data sources and provides mechanisms to integrate information from different levels of a supply network while it prevents information overflow due to unconstrained monitoring activities.

Agent technology is selected since it provides the flexibility and individualized control required in a distributed event management environment. Agent interaction based on communicative acts is a means to facilitate the inter-organizational integration of event management activities. In essence, a complex system of agent societies at different enterprises in a supply network evolves. These societies interact and an inter-organizational event management based on order monitoring activities emerges. This concept promises benefits not realized by today's SCEM solutions due to its loosely coupled integration of event management agent societies.

It was my objective in this book to provide a thorough analysis of the event management problem domain from which to develop a generic agent-based approach to *Supply Network Event Management*. The main focus lies on practical issues of event management (e.g. semantic interoperability) and economic benefits to be achieved with agent technology in this state-of-the-art problem domain.

This book is the result of my PhD studies undertaken in recent years at the Department of Information Systems in Nuremberg. I would especially like to thank Prof. Dr. Freimut

Nuremberg, November 2005 *Roland Zimmermann*