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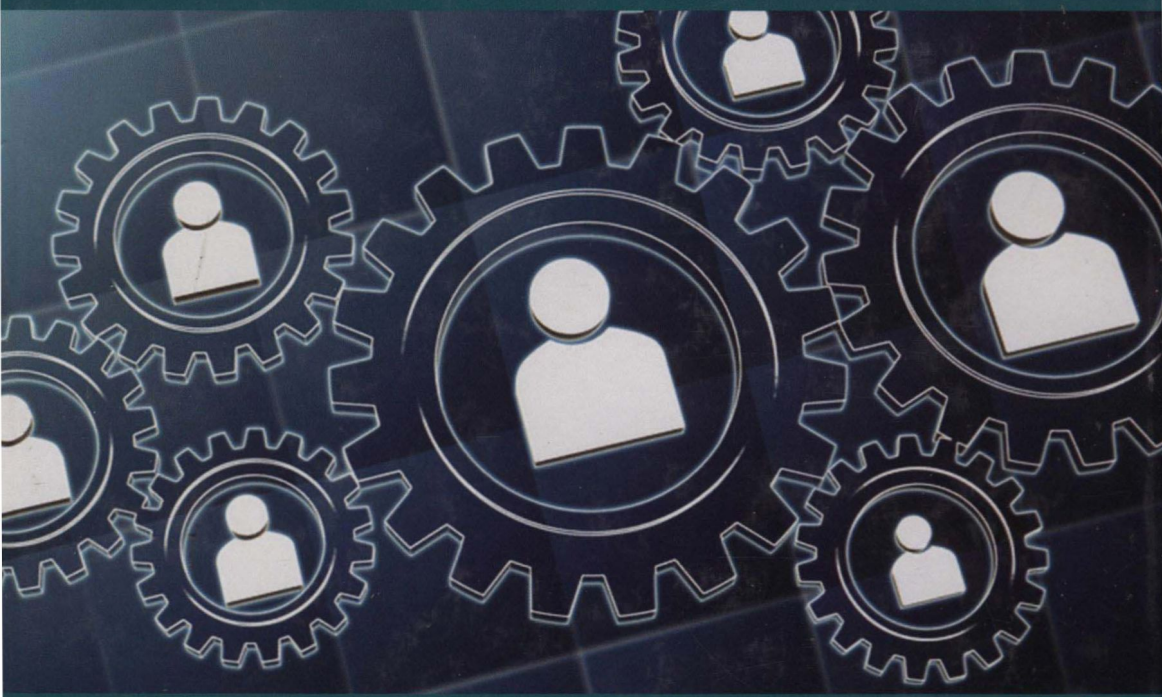
Intelligent Non-hierarchical Manufacturing Networks



Edited by Raúl Poler
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Intelligent Non-hierarchical Manufacturing Networks

Preface

In the new global market, competitiveness and growth of industry highly rely on the move toward innovative high-performance industrial systems and agile networked enterprises through the creation and consolidation of non-hierarchical manufacturing networks of multinational small- and medium-sized enterprises (SMEs), faced with networks based on powerful large-scale companies. The network performance can be significantly improved through more harmonious and equitable peer-to-peer inter-enterprise relationships, conforming decentralized and collaborative decision-making models.

The traditional hierarchical manufacturing networks are based on centralized models, where some of the involved actors must adapt themselves to the constraints defined by the dominant ones. Real-world experiences of such models have revealed some major problems due to the centralized vision of the supply chain and the sub-optimal performance of the centralized decision-making. For current highly dynamic markets, this generates major inefficiencies in the operation of the whole supply chain.

This book collects the latest research about non-hierarchical manufacturing networks and provides enterprises with valuable models, methods and guidelines to improve its competitiveness. It presents a framework for collaboration in non-hierarchical manufacturing networks context at three decision levels: strategic (network design and network development), tactical (partners qualification and selection and performance management) and operational (support decision-making and performance measurement).

We are confident that the contents of this book will help enterprises to achieve major benefits in terms of enhanced overall competitiveness, innovation and adaptability in today's and tomorrow's enterprise partnership scenarios; cross-country and inter-enterprise interchanges, building networked enterprises that are

supported by stable relationship schemas and modern cooperation and coordination business paradigms; cost reduction, through overall optimization and elimination of inefficiencies of processes, stocks, flows, plans, etc.; optimization of materials, wastes and energy consumption based on more rational and homogeneous production and supply plans, stocks and workforce balance.

This book is the main result of the IMS (www.ims.org) MTP initiative "Intelligent Non-Hierarchical Manufacturing Networks" (iNet-IMS) (www.inet-ims.net) that has combined the main results of five FP7 Research Projects (REMPLANET, CONVERGE, Net-Challenge, inTime and SMCS) recently finalized. The first four projects are the only ones that were funded under the Call "FP7-NMP-2008-SMALL-2" activity code "NMP-2008-3.3-1: Supply chain integration and real-time decision-making in non-hierarchical manufacturing networks"; therefore its combined results are highly valuable since it covers all the research performed in such areas in Europe during the past three years.

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