

COLLABORATIVE MANUFACTURING: USING REAL-TIME INFORMATION TO SUPPORT THE SUPPLY CHAIN

The following overview of the book will provide a brief explanation of each chapter.

Chapter One: Introduction

Chapter one is an introduction to the general idea of collaboration as used in manufacturing companies. It describes how working together with shared objectives in a non-adversarial environment can have positive impact. A general explanation of enterprise resource planning systems, supply chain management, and real-time information from production and logistics processes shows their role in the extended enterprise and their fit in a collaborative environment.

Chapter Two: Collaboration Strategies

Chapter two defines four collaboration strategies including product lifecycle management; collaborative planning, forecasting, and replenishment (CPFR)[®]; synchronized inventory management; and manufacturing enterprise collaboration. There is a list of considerations applicable to collaboration and a discussion regarding the value of truth as a crucial element in non- adversarial business relationships

Chapter Three: Collaborative Planning, Forecasting and Replenishment

Chapter three provides details on CPFR[®], the version of collaboration that has been developed to serve the manufacturer to retailer environment. Through the efforts of the Volunteer Interindustry Commerce Association, an association of major retailers and consumer goods producers, standards have been developed to guide companies in their efforts to more effectively serve the retailing industry.

Chapter Four: Synchronized Production and Inventories

Chapter four describes the bullwhip effect of demand distortion within supply chains and provides some answers to alleviate the consequences. This chapter addresses the idea of synchronized inventories and the issues of inventory management in the era of mass customization or lot sizes of one. The early government sponsored DAMA collaborative manufacturing study project in the textile industry is outlined along with a presentation of their process for multi-tier collaboration.

Chapter Five: Manufacturing Enterprise Collaboration

Chapter five provides an outline of why and where to apply collaborative strategies across the extended enterprise including internal and external supply chain network partners. The idea is to better support your existing business processes with people-centric applications of technology and to tie disparate silos of information into more effective business process support mechanisms using real-time information.

Chapter Six: Product Lifecycle Management

Chapter six provides in-depth information on how to use collaboration tools to improve product design processes. It also explains product lifecycle management and what can be done collaboratively to reduce new product introduction time and to track a product throughout its lifetime. A primary objective is to keep every part of the supply chain network current and aware of product issues including engineering change orders and critical supply items.

Chapter Seven: Enterprise Resource Planning Systems (ERP)

Chapter seven offers an overview of the role of enterprise resource planning systems and their evolution from the early finance oriented material requirements planning systems to the modern business tool of today. A brief description of the major functional areas including customer relationship management and supply chain management roles is provided.

Chapter Eight: Supply Chain Management

Chapter eight discusses the significant role of the supply chain and supply chain management. It shows how the supply chain has evolved to become a solid competing entity of its own with supply chains competing against each other based on a collective competitive advantage.

Chapter Nine: On-line Real-time Data Sources

Chapter nine details the idea of real-time on-line information that exists across entities within the supply chain network or extended enterprise. A full list of information sources and some ideas regarding accessibility are shown. The general theme is that collaboration is built on trust and only current actual information from production and logistics processes can provide confirmation of the events that are anticipated by collaboration partners.

Chapter Ten: Industries and Data Standards

Chapter ten outlines industries that are candidates for collaborative efforts. There is an extensive discussion on various industry association standards development efforts, each seemingly aimed at the long-term goal of business process information exchange.

Chapter Eleven: Collaboration and Lean Manufacturing

Chapter eleven looks at some earlier manufacturing management ideas and how the continuous evolution of management practices has led to the current age of information and collaboration. Early collaboration comes with much history from the Toyota manufacturing processes that have been transferred and copied internationally as lean manufacturing.

Chapter Twelve: Collaboration From the Academic View

Chapter twelve provides the academic view of collaboration and other cooperative forms of business relationships. Alliances, joint ventures, and collaboration are all about working together for the greater value of the cooperation effort. The role of culture and honesty are discussed as part of winning relationships and alliances.

Chapter Thirteen: Automotive Industry Collaboration

Chapter thirteen provides an overview of how collaboration is being applied in the automotive industry and what is driving the industry toward closer relationships with suppliers and their customers to reduce the billions of dollars in the supply chain inventory.

Chapter Fourteen: Life Science Industry Collaboration

Chapter fourteen shows how collaboration is impacting the regulated industries including medical device and pharmaceutical manufacturing. Business drivers include mass customization and improved inventory management in a collaborative environment.

Chapter Fifteen: Electronics Industry Collaboration

Chapter fifteen examines how collaborative processes are being used in the electronics industry where so much of the manufacturing is done by third party suppliers and product lifecycles can be measured in weeks. This global industry works with up-to-the-minute information from production facilities anywhere in the world and engineering change orders that can obsolete millions of dollars in inventory in hours.

Chapter Sixteen: Process Industry Collaboration

Chapter sixteen discusses how collaboration is being applied in the world of process manufacturing. This is where real-time information runs the production environment and actual results become ever more critical.

Chapter Seventeen: Summary

Chapter seventeen is a summary of the collaboration ideas and their uses in the general area of manufacturing. Some suggestions for getting your collaborative initiative underway are provided.

Appendix A

PeopleSoft Enterprise Resource Planning System Functions

Appendix B

Supply Chain Software System Applications

About the Author

Michael McClellan has over 30 years of experience serving and managing manufacturing enterprises. He has held a number of positions in general management, marketing and engineering, including President and CEO for companies supplying capital equipment and material management systems to nearly every type of manufacturer. In 1984 he and a group of associates founded Integrated Production Systems, a company that pioneered the use of computer systems to manage and track production events on the plant floor. These systems are generally referred to as manufacturing execution systems and have found extensive use in varying forms in production facilities. His book, *Applying Manufacturing Execution Systems*, defines manufacturing execution systems and explains the reasoning and history behind them. He is a frequent speaker at companies and manufacturing conferences, has presented a number of papers on plant information systems, and holds one patent.

Mr. McClellan has long participated in and supported systems that improve manufacturing effectiveness. In his view, applying collaborative manufacturing concepts is of utmost importance in shaping and responding to supply chain effectiveness opportunities. He strongly believes that such application must be based on the accurate and current information that exists or is generated within the production infrastructure by partners across the supply chain.

He currently lives in Washington State and is President of MES Solutions Inc. an advisory company providing consulting services in the area of plant floor information systems, manufacturing execution systems, and collaborative manufacturing system development and implementation. His interest spans all types of manufacturing environments and locations. Your comments, including experiences, ideas, challenges, and contributions are appreciated and of great interest.

Collaborative manufacturing is relatively new as a management strategy and there is strong enthusiasm for its broad implementation across the extended enterprise. This early book will soon fade from the leading edge as the technology progresses. If you will provide your name and email address, he will endeavor to maintain contact with regular updates regarding collaboration application information. Please use this web site to contact the author and/or to register for updates: www.cosyninc.com. The website will provide a short executive overview of this book available for download.