

Controlling Design Variants Modular Product Platforms Hardcover

For the majority of industrial companies, customizing products and services is among the most critical means to deliver true customer value and achieve superior competitive advantage. This book presents an operational procedure for the design of product configuration systems in industrial companies. It is based on the experience gained from more than forty product configuration projects in companies providing customers with tailored products and services.

The delivery of real bottom-line results from manufacturing improvements has proven to be much harder than expected for most companies. TQM, Zero-Defect Manufacturing, and Business Process Re-engineering have dropped off the landscape for taking much too long and failing to deliver the promised results. Lean Six Sigma is now experiencing the same fundamental difficulty. Delineating a quantitative approach, Lean Manufacturing: Business Bottom-Line Based shows you how to revitalize Lean Six Sigma by aligning it with your business' bottom line and thus delivering results that your executives, business leaders, and customers expect. Written by an expert who has transformed product design and manufacturing at companies ranging from Maytag and Visteon to General Electric, the book demonstrates that an awareness of manufacturing business metrics is absolutely essential for every lean manufacturing practitioner. The author has seen first-hand the limitation of traditional lean manufacturing driven by business bottom lines. He outlines case studies linking world events and manufacturing efficiency and presents lean manufacturing strategies and techniques designed to accelerate responses to current and future events on the floors of the world's manufacturing facilities. Typically, advice on lean manufacturing comes in the form of techniques regarding a particular tool or toolbox, yet the factory floor, like everything in the global community, is profoundly driven by business bottom lines. This book presents a systematic approach to improve business bottom lines through identifying and eliminating waste, and adding value and fulfillment by flowing the product at the demand of the customer.

Rapid Modelling and Quick Response presents new research developments in the fields of rapid modelling and quick response linked with performance improvements (based on lead time reduction, etc., as well as financial performance measures). The papers and teaching cases in this book were presented at the second Rapid Modelling Conference: "Quick Response – Intersection of Theory and Practice". The main focus of this collection is the transfer of knowledge from theory to practice, providing the theoretical foundations for successful performance improvement. This conference volume challenges the traditional notions of rapid modelling, and offers valuable contributions to the scientific communities of operations management, production management, supply chain management, industrial engineering and operations research. Rapid Modelling and Quick Response will give the interested reader (researcher, as well as practitioner) a good overview of new developments in this field.

"This book describes original, innovative works on IT systems for mass customization, and provides a multitude of solutions, tools, concepts and successful realizations of IT systems for mass customization. It discusses state-of-the-art mass customization while depicting the importance of IT in making the strategy function efficiently in order to support the business processes required for manufacturing individualized products"--Provided by publisher.

Advances in Production Management Systems: New Challenges, New Approaches

Lean Manufacturing

Concurrent Engineering Approaches for Sustainable Product Development in a Multi-Disciplinary Environment

Advances in Production Management Systems. Sustainable Production and Service Supply Chains

Proceedings of the 19th ISPE International Conference on Concurrent Engineering

Moving Integrated Product Development to Service Clouds in the Global Economy

IFIP WG 5.7 International Conference, APMS 2012, Rhodes, Greece, September 24-26, 2012, Revised Selected Papers, Part I

The CE Conference series is organized annually by the International Society for Productivity Enhancement (ISPE) and constitutes an important forum for international scientific exchange on concurrent and collaborative enterprise engineering. These international conferences attract a significant number of researchers, industrialists and students, as well as government representatives, who are interested in the recent advances in concurrent engineering research and applications. Concurrent Engineering Approaches for Sustainable Product Development in a Multi-Disciplinary Environment: Proceedings of the 19th ISPE International Conference on Concurrent Engineering contains papers accepted, peer reviewed and presented at the annual conference held at the University of Applied Sciences in Trier, Germany, from 3rd-7th of September 2012. This covers a wide range of cutting-edge topics including: Systems Engineering and Innovation Design for Sustainability Knowledge Engineering and Management Managing product variety Product Life-Cycle Management and Service Engineering Value Engineering

The changing manufacturing environment requires more responsive and adaptable manufacturing systems. The theme of the 5th International Conference on Changeable, Agile, Reconfigurable and Virtual production (CARV2013) is "Enabling Manufacturing Competitiveness and Economic Sustainability. Leading edge research and best implementation practices and experiences, which address these important issues and challenges, are presented. The proceedings include advances in manufacturing systems design, planning, evaluation, control and evolving paradigms such as mass customization, personalization, changeability, re-configurability and flexibility. New and important concepts such as the dynamic product families and platforms, co-evolution of products and systems, and methods for enhancing manufacturing systems' economic sustainability and prolonging their life to produce more than one product generation are treated. Enablers of change in manufacturing systems, production volume and capability, scalability and managing the volatility of markets, competition among global enterprises and the increasing complexity of products, manufacturing systems and management strategies are discussed. Industry challenges and future

directions for research and development needed to help both practitioners and academicians are presented. About the Editor Prof. Dr.-Ing. Michael F. Zaeh, born in 1963, has been and is Professor for and Manufacturing Technology since 2002 and, together with Prof. Dr.-Ing. Gunther Reinhart, Head of the Institute for Machine Tools and Industrial Management (iwb) at the Technische Universitaet Muenchen (TUM). After studying general mechanical engineering, he was doctoral candidate under Prof. Dr.-Ing. Joachim Milberg at TUM from 1990 until 1993 and received his doctorate in 1993. From 1994 to 1995, he was department leader under Prof. Dr.-Ing. Gunther Reinhart. From 1996 to 2002, he worked for a machine tool manufacturer in several positions, most recently as a member of the extended management. Prof. Dr.-Ing. Michael F. Zaeh is an associated member of the CIRP and member of acatech, WGP and WLP. His current researches include among others Joining and Cutting Technologies like Laser Cutting and Welding as well as Friction Stir Welding, Structural Behaviour and Energy Efficiency of Machine Tools and Manufacturing Processes like Additive Manufacturing.

Integrated Design of a Product Family and Its Assembly System presents an integrated approach for the design of a product family and its assembly system, whose main principles consider the product family as a fictitious unique product for which the assembly system is to be devised. It imposes assembly and operation constraints as late as possible in the design process to get liberties in the system design, and adapts the product family at each design stage to integrate the new constraints related to the successive design choices. Integrated Design of a Product Family and Its Assembly System is an important, must-have book for researchers and Ph.D. students in Computer-Integrated Manufacturing, Mechanical Engineering, and Manufacturing, as well as practitioners in the Design, Planning and Production departments in the manufacturing industry. Integrated Design of a Product Family and Its Assembly System is also suitable for use as a textbook in courses such as Computer-Aided Design, Concurrent Engineering, Design for Assembly, Process Planning, and Integrated Design.

Dear delegates, friends and members of the growing KES professional community, welcome to the proceedings of the 9th International Conference on Knowledge-Based and Intelligent Information and Engineering Systems hosted by La Trobe University in Melbourne Australia. The KES conference series has been established for almost a decade, and it continues each year to attract participants from all geographical areas of the world, including Europe, the Americas, Australasia and the Pacific Rim. The KES conferences cover a wide range of intelligent systems topics. The broad focus of the conference series is the theory and applications of intelligent systems. From a pure research field, intelligent systems have advanced to the point where their abilities have been incorporated into many business and engineering application areas. KES 2005 provided a valuable mechanism for delegates to obtain an extensive view of the latest research into a range of intelligent-systems algorithms, tools and techniques. The conference also gave delegates the chance to come into contact with those applying intelligent systems in diverse commercial areas. The combination of theory and practice represented a unique opportunity to gain an appreciation of the full spectrum of leading-edge intelligent-systems activity. The papers for KES 2005 were either submitted to invited sessions, chaired and organized by respected experts in their fields, or to a general session, managed by an extensive International Program Committee, or to the Intelligent Information Hiding and Multimedia Signal Processing (IIHMSP) Workshop, managed by an International Workshop Technical Committee.

The Engineering Design of Systems

Proceedings of the 8th World Conference on Mass Customization, Personalization, and Co-Creation (MCPC 2015), Montreal, Canada, October 20th-22th, 2015

Advances in Production Management Systems: Innovative and Knowledge-Based Production Management in a Global-Local World

Twenty Years of Mass Customization - Towards New Frontiers

Integrated Product and Manufacturing System Design

Modular Product Platforms

Proceedings of the 7th World Conference on Mass Customization, Personalization, and Co-Creation (MCPC 2014), Aalborg, Denmark, February 4th - 7th, 2014

Controlling Design Variants Modular Product Platforms Society of Manufacturing Engineers

Covering key topics in the field such as technological innovation, human-centered sustainable engineering and manufacturing, and manufacture at a global scale in a virtual world, this book addresses both advanced techniques and industrial applications of key research in interactive design and manufacturing. Featuring the full papers presented at the 2014 Joint Conference on Mechanical Design Engineering and Advanced Manufacturing, which took place in June 2014 in Toulouse, France, it presents recent research and industrial success stories related to implementing interactive design and manufacturing solutions.

The design and provision of telemedical services which are both, efficient and customer-centric, constitute a huge challenge in the promising field of telemedicine. This dissertation presents an adequate solution. It outlines a systematic approach for the modularization of telemedical services: the SMART method. Following a design science research approach, this method was iteratively designed and evaluated. Thereby, the three overarching research questions could be answered successfully. They address the requirements elicitation, the design, and the evaluation of the method. The application of the SMART method confirms the intended effects, e.g., higher efficiencies due to reuse of service modules, and represents the key practical contribution of this thesis. Thus, service providers from the field of telemedicine are enabled to design and provide their services in an efficient and user-centric fashion. This dissertation contributes to all person-oriented fields that face digital transformations.

The two volumes IFIP AICT 397 and 398 constitute the thoroughly refereed post-conference proceedings of the International IFIP WG 5.7 Conference on Advances in Production Management Systems, APMS 2012, held in Rhodes, Greece, in September 2012. The 182 revised full papers were carefully reviewed and selected for inclusion in the two volumes.

They are organized in 6 parts: sustainability; design, manufacturing and production management; human factors, learning and innovation; ICT and emerging technologies in production management; product and asset lifecycle management; and services, supply chains and operations.

Mass Customization Information Systems in Business

The Science Behind the Practical Methods That Drive New Ideas

Concepts and Management

Transdisciplinary Engineering for Resilience: Responding to System Disruptions

Design, Production, Automation, and Integration

Proceedings of the 4th Machining Innovations Conference, Hannover, September 2013

Structural Complexity Management

Advances in Product Family and Product Platform Design: Methods & Applications highlights recent advances that have been made to support product family and product platform design along with successful applications in industry. This book provides not only motivation for product family and product platform design (i.e., address questions about “why and when should we platform”) but also methods and tools to support the design and development of families of products based on shared platforms (i.e. address the “how” and “what” questions about platforming). It begins with a general overview of product family design to introduce the general reader to the topic and then progress to more advanced topics and design theory to help designers, engineers, and project managers plan, architect, and implement platform-based product development strategies for their company. Finally, successful industry applications provide readers and practitioners with case studies and “talking points” to become platform advocates and leaders within their organization.

The theory of concurrent engineering is based on the concept that the different phases of a product lifecycle should be conducted concurrently and initiated as early as possible within the product creation process. Concurrent engineering is important in many industries, including automotive, aerospace, shipbuilding, consumer goods and environmental engineering, as well as in the development of new services and service support. This book presents the proceedings of the 21st ISPE Inc. International Conference on Concurrent Engineering, held at Beijing Jiaotong University, China, in September 2014. It is the first volume of a new book series: 'Advances in Transdisciplinary Engineering'. The title of the CE2014 conference is: 'Moving Integrated Product Development to Service Clouds in the Global Economy', which reflects the variety of processes and methods which influence modern product creation. After an initial first section presenting the keynote papers, the remainder of the book is divided into 11 further sections with peer-reviewed papers: product lifecycle management (PLM); knowledge-based engineering (KBE); cloud approaches; 3-D printing applications; design methods; educational methods and achievements; simulation of complex systems; systems engineering; services as innovation and science; sustainability; and recent research on open innovation in concurrent engineering. The book will be of interest to CE researchers, practitioners from industry and public bodies, and educators alike.

This contributed volume contains the research results presented at the 4th Machining Innovations Conference, Hannover, September 2013. The topic of the conference are new production technologies in aerospace industry and the focus is on energy efficient machine tools as well as sustainable process planning. The target audience primarily comprises researchers and experts in the field but the book may also be beneficial for graduate students.

Product design is characterized by a steady increase in complexity. The main focus of this book is a structural approach on complexity management. This means, system structures are considered in order to address the challenge of complexity in all aspects of product design. Structures arise from the complex dependencies of system elements. Thus, the identification of system structures provides access to the understanding of system behavior in practical applications. The book presents a methodology that enables the analysis, control and optimization of complex structures, and the applicability of domain-spanning problems. The methodology allows significant improvements on handling system complexity by creating improved system understanding on the one hand and optimizing product design that is robust for system adaptations on the other hand. Developers can thereby enhance project coordination and improve communication between team members and as a result shorten development time. The practical application of the methodology is described by means of two detailed examples.

Advances in Production Management Systems. Competitive Manufacturing for Innovative Products and Services

Mass Customization

International Conference on Manufacturing Automation

Advances in Production Management Systems: Innovative Production Management Towards Sustainable Growth

An Approach for the Field of Product Design

9th International Conference, KES 2005, Melbourne, Australia, September 14-16, 2005, Proceedings, Part III

Intersection of Theory and Practice

The three volumes IFIP AICT 438, 439, and 440 constitute the refereed proceedings of the International IFIP WG 5.7 Conference on Advances in Production Management Systems, APMS 2014, held in Ajaccio, France, in September 2014. The 233 revised full papers were carefully reviewed and selected from 271 submissions. They are organized in 6 parts: knowledge discovery and sharing; knowledge-based planning and scheduling;

knowledge-based sustainability; knowledge-based services; knowledge-based performance improvement, and case studies.

The two volumes IFIP AICT 459 and 460 constitute the refereed proceedings of the International IFIP WG 5.7 Conference on Advances in Production Management Systems, APMS 2015, held in Tokyo, Japan, in September 2015. The 163 revised full papers were carefully reviewed and selected from 185 submissions. They are organized in the following topical sections: collaborative networks; globalization and production management; knowledge based production management; project management, engineering management, and quality management; sustainability and production management; co-creating sustainable business processes and ecosystems; open cloud computing architecture for smart manufacturing and cyber physical production systems; the practitioner's view on "innovative production management towards sustainable growth"; the role of additive manufacturing in value chain reconfiguration and sustainability; operations management in engineer-to-order manufacturing; lean production; sustainable system design for green products; cloud-based manufacturing; ontology-aided production - towards open and knowledge-driven planning and control; product-service lifecycle management: knowledge-driven innovation and social implications; and service engineering.

The present economic and social environment has given rise to new situations within which companies must operate. As a first example, the globalization of the economy and the need for performance has led companies to outsource and then to operate inside networks of enterprises such as supply chains or virtual enterprises. A second instance is related to environmental issues. The statement about the impact of industrial activities on the environment has led companies to revise processes, to save energy, to optimize transportation... A last example relates to knowledge. Knowledge is considered today to be one of the main assets of a company. How to capitalize, to manage, to reuse it for the benefit of the company is an important current issue. The three examples above have no direct links. However, each of them constitutes a challenge that companies have to face today. This book brings together the opinions of several leading researchers from all around the world. Together they try to develop new approaches and find answers to those challenges. Through the individual chapters of this book, the authors present their understanding of the different challenges, the concepts on which they are working, the approaches they are developing and the tools they propose. The book is composed of six parts; each one focuses on a specific theme and is subdivided into subtopics.

The biggest challenge in any marketplace is uncertainty. The major changes taking place in world economies, politics, and demographics has raised market uncertainty to its highest level in the past 50 years. However, with new markets opening up in emerging and developing economies, the opportunities have never been better. To compete in this challenging atmosphere, product design/redesign and manufacturing must be integrated to produce better quality products faster and cheaper. Design Synthesis: Integrated Product and Manufacturing System Design provides a conceptual framework and methodologies to do just that. The book explains how to integrate innovative product design with the design of a batch manufacturing system. It covers the technical and social aspects of integration, presents research and best practices, and embeds integration within a framework of sustainable development. It covers the two methods for achieving design synthesis: integration and harmonisation. Product, manufacturing system, and social system architectures are integrated (united or combined to form a whole that is greater than the sum of the parts). The concurrent processes to design the architectures are harmonised (made compatible or coincident with one another). Wide in scope, the book supplies a multi-disciplinary perspective and an extensive discussion on how to maintain integrity during the design process. The authors present research and practices that are difficult or almost impossible to find. They describe the different types of system lifecycles and include guidelines on how to select the appropriate lifecycle for a specific design situation.

Rapid Modelling and Quick Response

Advanced Design and Manufacturing in Global Competition

Customer Interaction and Customer Integration

Design Synthesis

A Collaborative Approach to Producibility and Reliability, Second Edition,

Enabling Manufacturing Competitiveness and Economic Sustainability

Mass Customization: Concepts - Tools - Realization

The MCPC 2014 is a multi-track conference featuring a combination of high profile keynotes with expert talks, panel discussions, paper sessions, workshops, receptions, and much more. While it is devoted to sharing and discussing the latest research in the field, the MCPC conference has a strong focus on real life applications. Since its beginning, the MCPC conference has had an equal share of participants, practitioners and academics/researchers. This makes the MCPC conference truly unique among many conferences. It strives to connect MCPC thinkers, first movers, entrepreneurs, technology developers, and researchers with people applying these strategies in practice. Twenty years ago Mass Customization was acknowledged as the "New Frontier in Business Competition". Ever since, industry has been applying the concept and researchers have developed the topic into a well-established research area and businesses have formed new strategies. More knowledge, methods and technologies are available now than ever before. Along with general Mass Customization topics, this conference

addresses Mass Customization from a historical perspective, looking at both mass customization in the past 20 years and towards the new frontiers in the 20 years to come. This book presents the latest research from the worldwide MCPC community bringing together the new thoughts and results from various disciplines within the field.

"Introduces the concept of modular design within the product platform approach, intended to increase company efficiency while reducing costs and time to market. Companies can achieve significant advantages by separating parts that should vary to satisfy customer needs from parts that should be kept as common units. The terminology and a five-step method for creating modular product platforms are developed."--Back cover.

This proceedings volume presents the latest research from the worldwide mass customization, personalization and co-creation (MCPC) community bringing together new thoughts and results from various disciplines within the field. The chapters are based on papers from The MCPC 2015 Conference where the emphasis was placed on "managing complexity." MCPC is now beginning to emerge in many industries as a profitable business model. But customization and personalization go far beyond the sheer individualization of products and become an extension of current business models and production styles. This book covers topics such as complexity management of knowledge-based systems in manufacturing design and production, sustainable mass customization, choice navigation, and product modeling. The chapters are contributed by a wide range of specialists, offering cutting-edge research, as well as insightful advances in industrial practice in key areas. The MCPC 2015 Conference had a strong focus on real life MCPC applications, and this proceedings volume reflects this. MCPC strategies aim to profit from the fact that people are different. Their objective is to turn customer heterogeneities into profit opportunities, hence addressing the current trend of long tail business models. Mass customization means to provide goods and services that best serve individual customers' personal needs with near mass production efficiency. This book brings together the latest from MCPC thought leaders, entrepreneurs, technology developers, and researchers that use these strategies in practice.

This book examines seven key combinatorial engineering frameworks (composite schemes consisting of algorithms and/or interactive procedures) for hierarchical modular (composite) systems. These frameworks are based on combinatorial optimization problems (e.g., knapsack problem, multiple choice problem, assignment problem, morphological clique problem), with the author's version of morphological design approach - Hierarchical Morphological Multicriteria Design (HMMD) - providing a conceptual lens with which to elucidate the examples discussed. This approach is based on ordinal estimates of design alternatives for systems parts/components, however, the book also puts forward an original version of HMMD that is based on new interval multiset estimates for the design alternatives with special attention paid to the aggregation of modular solutions (system versions). The second part of 'Modular System Design and Evaluation' provides ten information technology case studies that enriches understanding of the design of system design, detection of system bottlenecks and system improvement, amongst others. The book is intended for researchers and scientists, students, and practitioners in many domains of information technology and engineering. The book is also designed to be used as a text for courses in system design, systems engineering and life cycle engineering at the level of undergraduate level, graduate/PhD levels, and for continuing education. The material and methods contained in this book were used over four years in Moscow Institute of Physics and Technology (State University) in the author's faculty course "System Design".

Variety Induced Complexity in Mass Customization

Manufacturing

Business Bottom-Line Based

Information and Management Systems for Product Customization

Integrated Design of a Product Family and Its Assembly System

Smart Product Engineering

"Outlines best practices and demonstrates how to design in quality for successful development of hardware and software products. Offers systematic applications tailored to particular market environments. Discusses Internet issues, electronic commerce, and supply chain."

In today's competitive environment, manufacturing and service companies are intensifying their customization processes. Customization means companies must meet the challenge of providing individualized products and services, without introducing high costs. Therefore, companies must address both customization and cost factors to gain a competitive advantage. While product customization is the manufacturing of products according to individual customer needs, it does not involve any focus on the cost perspective. Information and Management Systems for Product Customization will concentrate on both product customization and costs' efficiency, which is termed as mass customization. Moreover, mass customization with its multi-dimensions is the new business paradigm challenging today's manufacturing companies.

The development of modular product families holds enormous economic potential for companies, as there are always great opportunities but also risks associated with all life phases of a product. However, these fundamental and far-reaching effects inevitably lead to conflicting objectives when defining modular product structures, which makes decision-making in product development particularly complex. Considering relevant theories from decision theory and product family design, this book presents an innovative method to support decision makers in the development of modular product families. The central element of the method is a novel Modularity Decision Dashboard (MDD), which interactively visualizes all decision-relevant data. The findings presented here confirm that applying the method to real-world decision-making problems leads to a more balanced ratio between internal and external variety, and thus significantly contributes to the efficient economic benefit of modularization.

This book defines the parameters of the emerging business strategy of mass customization, covering the main categories in a systematic

examination of: manufacturing systems and mass customization; supply chain management and mass customization; and information systems and mass customization. The book provides a conceptual framework for mass customization, its tools, its solutions, and real-world examples of successful implementations of the business strategy.

Managing Complexity

Lean Development and Innovation

Modular System Design and Evaluation

Challenges and Solutions

Models and Methods

Design Reuse in Product Development Modeling, Analysis and Optimization

Cooperative Decision-Making in Modular Product Family Design

The collection of papers in this book comprises the proceedings of the 23rd CIRP Design Conference held between March 11th and March 13th 2013 at the Ruhr-Universität Bochum in Germany. The event was organized in cooperation with the German Academic Society for Product Development – WiGeP. The focus of the conference was on »Smart Product Engineering«, covering two major aspects of modern product creation: the development of intelligent (“smart”) products as well as the new (“smart”) approach of engineering, explicitly taking into account consistent systems integration. Throughout the 97 papers contained in these proceedings, a range of topics are covered, amongst them the different facets and aspects of what makes a product or an engineering solution “smart”. In addition, the conference papers investigate new ways of engineering for production planning and collaboration towards Smart Product Engineering. The publications provide a solid insight into the pressing issues of modern digital product creation facing increasing challenges in a rapidly changing industrial environment. They also give implicit advice how a “smart” product or engineering solution (processes, methods and tools) needs to be designed and implemented in order to become successful. It is widely known that innovation is crucial to sustain success in business, government, and engineering. But capturing the effective means of fostering innovation remains elusive. How can organizations actively promote innovation, which arises from a complex combination of cognition and domain expertise? Researchers across an array of fields are studying innovation, with exciting new findings suggesting that science is beginning to understand how it can be cultivated. It is now more important than ever for seemingly distant fields to share conclusions and, in concert, translate them into viable applications. In this unique and exciting collaboration, engineers, cognitive scientists, psychologists, computer scientists, and marketers explore the practical methods that support innovation and creative design, from different ways of thinking and conceptualizing to computer-based tools. The authors present research on processes as well as on the evaluation of existing methods. Their lessons drawn are at the forefront of the interdisciplinary movement to use science to help organizations thrive.

Using Toyota's principles for product and process development, this book focuses the implementation of the Lean system during the past 10 years in dozens of corporations across various industries. The book highlights all steps on the journey from common trouble area to remarkable results. As it is written by a manager for other managers, it contains real work discoveries and insights. The author provides case studies from many different fields of application. The reader gains insight on US and European companies that successfully streamlined their innovation and product-development processes. These companies have overcome difficult periods and major challenges thanks to the ability to innovate with new Lean methodologies and, above all, a new workplace culture and mindset. The goal of this book is to help managers successfully apply Lean principles in the innovation and development area of their company while benefitting from the author's lessons learned during his many years of capitalized experience. This book provides a comprehensive framework that supports, step-by-step, the successful application of Lean principles in the innovation and development areas of the company. Readers learn how to drastically reduce the time required to develop products and discover and eliminate hidden costs and critical waste while increasing value for customers.

New for the third edition, chapters on: Complete Exercise of the SE Process, System Science and Analytics and The Value of Systems Engineering The book takes a model-based approach to key systems engineering design activities and introduces methods and models used in the real world. This book is divided into three major parts: (1) Introduction, Overview and Basic Knowledge, (2) Design

and Integration Topics, (3) Supplemental Topics. The first part provides an introduction to the issues associated with the engineering of a system. The second part covers the critical material required to understand the major elements needed in the engineering design of any system: requirements, architectures (functional, physical, and allocated), interfaces, and qualification. The final part reviews methods for data, process, and behavior modeling, decision analysis, system science and analytics, and the value of systems engineering. Chapter 1 has been rewritten to integrate the new chapters and updates were made throughout the original chapters. Provides an overview of modeling, modeling methods associated with SysML, and IDEF0 Includes a new Chapter 12 that provides a comprehensive review of the topics discussed in Chapters 6 through 11 via a simple system – an automated soda machine Features a new Chapter 15 that reviews General System Theory, systems science, natural systems, cybernetics, systems thinking, quantitative characterization of systems, system dynamics, constraint theory, and Fermi problems and guesstimation Includes a new Chapter 16 on the value of systems engineering with five primary value propositions: systems as a goal-seeking system, systems engineering as a communications interface, systems engineering to avert showstoppers, systems engineering to find and fix errors, and systems engineering as risk mitigation The Engineering Design of Systems: Models and Methods, Third Edition is designed to be an introductory reference for professionals as well as a textbook for senior undergraduate and graduate students in systems engineering. Dennis M. Buede, PhD, has thirty-nine years' experience in both the theoretical development and engineering application of systems engineering and decision-support technologies. Dr. Buede has applied systems engineering methods throughout the federal government. He has been a Professor at George Mason University and Stevens Institute of Technology, and is currently President of Innovative Decisions, Inc. He is a Fellow of the International Council on Systems Engineering (INCOSE). William D. Miller is an Executive Principal Analyst at Innovative Decisions, Inc. and Adjunct Professor at the Stevens Institute of Technology. Mr. Miller has forty-two years' experience as an engineer, manager, consultant, and educator in the conceptualization and engineering application of communications technologies, products and services in commercial and government sectors. He is a 48-year member of the IEEE, the former Technical Director of INCOSE and the current Editor-in-Chief of INSIGHT.

Knowledge-Based Intelligent Information and Engineering Systems

Controlling Design Variants

Product Development and Design for Manufacturing

International IFIP WG 5.7 Conference, APMS 2009, Bordeaux, France, September 21-23, 2009, Revised Selected Papers

Methods & Applications

IFIP WG 5.7 International Conference, APMS 2015, Tokyo, Japan, September 7-9, 2015, Proceedings, Part I

Proceedings of the 5th International Conference on Changeable, Agile, Reconfigurable and Virtual Production (CARV 2013), Munich, Germany, October 6th-9th, 2013

The two volumes IFIP AICT 414 and 415 constitute the refereed proceedings of the International IFIP WG 5.7 Conference on Advances in Production Management Systems, APMS 2013, held in University Park, PA, USA, in September 2013. The 133 revised full papers were carefully reviewed and selected for inclusion in the two volumes. They are organized in 4 parts: sustainable production, sustainable supply chains, sustainable services, and ICT and emerging technologies.

From concept development to final production, this comprehensive text thoroughly examines the design, prototyping, and fabrication of engineering products and emphasizes modern developments in system modeling, analysis, and automatic control. This reference details various management strategies, design methodologies, traditional production techniques, and assembly applications for clear illustration of manufacturing engineering technology in the modern age. Considers a variety of methods for product design including axiomatic design, design for X, group technology, and the Taguchi method, as well as modern production techniques including laser-beam machining, microlithography.

The proceedings of the fourth ICMA in 2004 represent a huge contribution to research in this area. Everyone attending the conference was asked to submit their papers electronically which meant that 100 top quality papers from no less than 10 different countries contributed to the theme of the conference.

Advances in Product Family and Product Platform Design

Modularization of Services

Proceedings of the 21st ISPE Inc. International Conference on Concurrent Engineering, September 8–11, 2014

Research in Interactive Design (Vol. 4)

New Production Technologies in Aerospace Industry

Proceedings of the 23rd CIRP Design Conference, Bochum, Germany, March 11th - 13th, 2013

A Modularization Method for the Field of Telemedicine