

Practical Support for Lean Six Sigma Software Process Definition

Select Proceedings of RAM 2021

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This book demonstrates the significance of domain-specific conceptual modeling through new research and development approaches that are manifested in each of the chapters. They include novel modelling methods and tools that emphasize the recent results accomplished and their adequacy to assess specific aspects of a domain. Each chapter offers detailed instructions on how to build models in a particular domain, such as product-service engineering, enterprise engineering, digital business ecosystems, and enterprise modelling and capability management. All chapters are enriched with case studies, related information, and tool implementations. The tools are based on the ADOxx metamodeling platform and are provided free of charge via OMILAB. Furthermore, the book emphasizes possible future developments and potential research directions. The collection of works presented here will benefit experts and practitioners from academia and industry alike, including members of the conceptual modeling community as well as lecturers and students.

The five-volume set IFIP AICT 630, 631, 632, 633, and 634 constitutes the refereed proceedings of the International IPF WG 5.7 Conference on Advances in Production Management Systems, APMS 2021, held in Nantes, France, in September 2021.* The 378 papers presented were carefully reviewed and selected from 529 submissions. They discuss artificial intelligence techniques, decision aid and new and renewed paradigms for sustainable and resilient production systems at four-wall factory and value chain levels. The papers are organized in the following topical sections: Part I: artificial intelligence based optimization techniques for demand-driven manufacturing; hybrid approaches for production planning and scheduling; intelligent systems for manufacturing planning and control in the industry 4.0; learning and robust decision support systems for agile manufacturing environments; low-code and model-driven engineering for production system; meta-heuristics and optimization techniques for energy-oriented manufacturing systems; metaheuristics for production systems; modern analytics and new AI-based smart techniques for replenishment and production planning under uncertainty; system identification for manufacturing control applications; and the future of lean thinking and practice Part II: digital transformation of SME manufacturers; the crucial role of standard; digital transformations towards supply chain resiliency; engineering of smart-product-service-systems of the future; lean and Six Sigma in services healthcare; new trends and challenges in reconfigurable, flexible or agile production system; production management in food supply chains; and sustainability in production planning and lot-sizing Part III: autonomous robots in delivery logistics; digital transformation approaches in production management; finance-driven supply chain; gastronomic service system design; modern scheduling and applications in industry 4.0; recent advances in sustainable manufacturing; regular session: green production and circularity concepts; regular session: improvement models and methods for green and innovative systems; regular session: supply chain and routing management; regular session: robotics and human aspects; regular session: classification and data management methods; smart supply chain and production in society 5.0 era; and supply chain risk management under coronavirus Part IV: AI for resilience in global supply chain networks in the context of pandemic disruptions; blockchain in the operations and supply chain management; data-based services as key enablers for smart products, manufacturing and assembly; data-driven methods for supply chain optimization; digital twins based on systems engineering and semantic modeling; digital twins in companies first developments and future challenges; human-centered artificial intelligence in smart manufacturing for the operator 4.0; operations management in engineer-to-order manufacturing; product and asset life cycle management for smart and sustainable manufacturing systems; robotics technologies for control, smart manufacturing and logistics; serious games analytics: improving games and learning support; smart and sustainable production and supply chains; smart methods and techniques for sustainable supply chain management; the new digital lean manufacturing paradigm; and the role of emerging technologies in disaster relief operations; lessons from COVID-19 Part V: data-driven platforms and applications in production and logistics: digital twins and AI for sustainability; regular session: new approaches for routing problem solving; regular session: improvement of design and operation of manufacturing systems; regular session: crossdock and transportation issues; regular session: maintenance improvement and lifecycle management; regular session: additive manufacturing and mass customization; regular session: frameworks and conceptual modelling for systems and services efficiency; regular session: optimization of production and transportation systems; regular session: optimization of supply chain agility and reconfigurability; regular session: advanced modelling approaches; regular session: simulation and optimization of systems performances; regular session: AI-based approaches for quality and performance improvement of production systems; and regular session: risk and performance management of supply chains *The conference was held online.

Computer aided design (CAD) emerged in the 1960s out of the growing acceptance of the use of the computer as a design tool for complex systems. As computers have become faster and less expensive while handling an increasing amount of information, their use in machine design has spread from large industrial needs to the small designer.

In today's global and highly competitive environment, continuous improvement in the processes and products of any field of engineering is essential for survival. This book gathers together the full range of statistical techniques required by engineers from all fields. It will assist them to gain sensible statistical feedback on how their processes or products are functioning and to give them realistic predictions of how these could be improved. The handbook will be essential reading for all engineers and engineering-connected managers who are serious about keeping their methods and products at the cutting edge of quality and competitiveness.

Springer Handbook of Engineering Statistics

Strategy to Operations

Connecting the Dots

50+ Techniques for Predictable and Sustainable Organic Growth

Engineering Design Process

Six Sigma Software Development, Second Edition

Proceedings of the International Joint Conference on Mechanics, Design Engineering & Advanced Manufacturing, JCM 2020, June 2-4, 2020

Senior level IT managers are responsible for a wide variety of development projects. For the most part, these individual projects are handled by project managers. However, IT managers must be conversant in the field of project management. Additionally, they must understand the dynamics of managing the project manager and be familiar with the skill sets. Leading IT Projects: The IT Manager 's Guide provides a detailed roadmap for project success. The book provides information on the technical aspects of project management and also focuses on the human side of project management—leadership skills, team building, and promoting creativity. Overall, it facilitates an extensive understanding of the planning, monitoring, and control of the people, process, and events that occur as a computer system evolves from preliminary concept to operational implementation. Using ready-to-use forms and templates, this valuable resource enables you to increase productivity and ensures that projects come in on time and within budget.

This open access book gathers contributions presented at the International Joint Conference on Mechanics, Design Engineering and Advanced Manufacturing (JCM 2020), held as a web conference on June 2–4, 2020. It reports on cutting-edge topics in product design and manufacturing, such as industrial methods for integrated product and process design; innovative design; and computer-aided design. Further topics covered include virtual simulation and reverse engineering; additive manufacturing; product manufacturing; engineering methods in medicine and education; representation techniques; and nautical, aeronautics and aerospace design and modeling. The book is organized into four main parts, reflecting the focus and primary themes of the conference. The contributions presented here not only provide researchers, engineers and experts in a range of industrial engineering subfields with extensive information to support their daily work; they are also intended to stimulate new research directions, advanced applications of the methods discussed and future interdisciplinary collaborations.

Robust Optimization is a method to improve robustness using low-cost variations of a single, conceptual design. The benefits of Robust Optimization include faster product development cycles; faster launch cycles; fewer manufacturing problems; fewer field problems; lower-cost, higher performing products and processes; and lower warranty costs. All these benefits can be realized if engineering and product development leadership of automotive and manufacturing organizations leverage the power of using Robust Optimization as a competitive weapon. Written by world renowned authors, Robust Optimization: World 's Best Practices for Developing Winning Vehicles, is a ground breaking book whichintroduces the technical management strategy of Robust Optimization. The authors discuss what the strategy entails, 8 steps for Robust Optimization and Robust Assessment, and how to lead it in a technical organization with an implementation strategy. Robust Optimization is defined and it is demonstrated how the techniques can be applied to manufacturing organizations, especially those with automotive industry applications, so that Robust Optimization creates the flexibility that minimizes product development cost, reduces product time-to-market, and increases overall productivity. Key features: Presents best practices from around the globe on Robust Optimization that can be applied in any manufacturing and automotive organization in the world Includes 19 successfully implemented best case studies from automotive original equipment manufacturers and suppliers Provides manufacturing industries with proven techniques to become more competitive in the global market Provides clarity concerning the common misinterpretations on Robust Optimization Robust Optimization: World 's Best Practices for Developing Winning Vehicles is a must-have book for engineers and managers who are working on design, product, manufacturing, mechanical, electrical, process, quality area; all levels of management especially in product development area, research and development personnel and consultants. It also serves as an excellent reference for students and teachers in engineering.

A comprehensive reference manual to the Certified Six Sigma Black Belt Body of Knowledge and study guide for the CSSBB exam.

Implementing Innovations Successfully

Introduction to Engineering Design

Leading IT Projects