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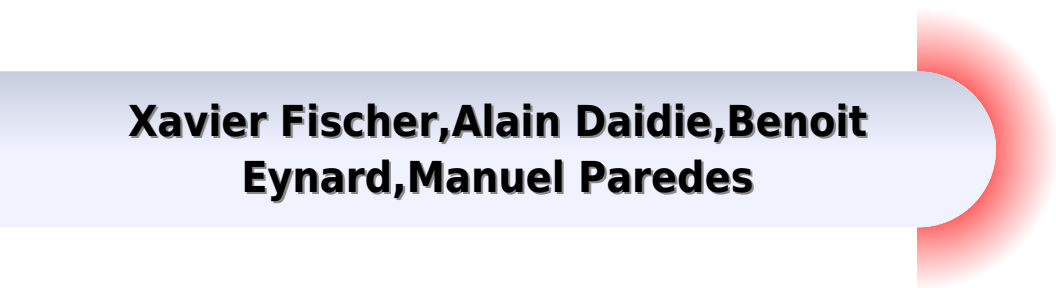
Advances in Product Family and Product Platform Design

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Advances In Product Family And Product Platform Design Methods Applications

**Xavier Fischer, Alain Daidie, Benoit
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Advances in Product Family and Product Platform Design Timothy W. Simpson, Jianxin (Roger) Jiao, Zahed Siddique, Katja Hölttä-Otto, 2013-09-13 *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 **Product Platform and Product**

Family Design Timothy W. Simpson, Zahed Siddique, Roger Jianxin Jiao, 2006-03-20 Designing products and product families so they may be customized for the global marketplace and achieving these goals in abbreviated time period while maintaining production efficiencies are the keys to successful manufacturing operations The research on these areas has matured rapidly over the last decade Today s highly competitive and volatile marketplace is reshaping the way many companies do business as rapid innovation and mass customization offer a new form of competitive advantage In response companies like Sony Black and Decker and Kodak have successfully implemented strategies to design and develop an entire family of products to satisfy a wide variety of customer requirements *Product Platform and Product Family Design Methods and Applications* discusses how product platform and product family design can be used successfully to increase variety within a product line shorten manufacturing lead times reduce overall costs within a product line The material available here will serve as both a reference and a hands on guide for practitioners involved in the design planning and production of products Included are real life case studies that explain the benefits of platform based product development

Transdisciplinary Engineering Methods for Social Innovation of Industry 4.0 M. Peruzzini, M. Pellicciari, C. Bil, 2018-09-14 The concept of concurrent engineering CE was first developed in the 1980s Now often referred to as transdisciplinary engineering it is based on the idea that different phases of a product life cycle should be conducted concurrently and initiated as early as possible within the Product Creation Process PCP The main goal of CE is to increase the efficiency and effectiveness of the PCP and reduce errors in later phases as well as incorporating considerations including environmental implications for the full lifecycle of the product It has become a substantive methodology in many industries and has also been adopted in the development of new services and service support This book presents the proceedings of the 25th ISPE Inc International Conference on Transdisciplinary Engineering held in Modena Italy in July

2018 This international conference attracts researchers industry experts students and government representatives interested in recent transdisciplinary engineering research advancements and applications The book contains 120 peer reviewed papers selected from 259 submissions from all continents of the world ranging from the theoretical and conceptual to papers addressing industrial best practice and is divided into 11 sections reflecting the themes addressed in the conference program and addressing topics as diverse as industry 4 0 and smart manufacturing human centered design modeling simulation and virtual design and knowledge and data management among others With an overview of the latest research results product creation processes and related methodologies this book will be of interest to researchers design practitioners and educators alike

Advances in Sustainable and Competitive Manufacturing Systems Américo Azevedo,2013-06-25 The proceedings includes the set of revised papers from the 23rd International Conference on Flexible Automation and Intelligent Manufacturing FAIM 2013 This conference aims to provide an international forum for the exchange of leading edge scientific knowledge and industrial experience regarding the development and integration of the various aspects of Flexible Automation and Intelligent Manufacturing Systems covering the complete life cycle of a company s Products and Processes Contents will include topics such as Product Process and Factory Integrated Design Manufacturing Technology and Intelligent Systems Manufacturing Operations Management and Optimization and Manufacturing Networks and MicroFactories

7th International Munich Chassis Symposium 2016 Prof. Dr. Peter E. Pfeffer,2016-08-15 In chassis development the three aspects of safety vehicle dynamics and ride comfort are at the top of the list of challenges to be faced Addressing this triad of challenges becomes even more complex when the chassis is required to interact with assistance systems and other systems for fully automated driving What is more new demands are created by the introduction of modern electric and electronic architectures All these requirements must be met by the chassis together with its subsystems the steering brakes tires and wheels At the same time all physical relationships and interactions have to be taken into account

Proceedings of the 27th International Symposium on Advancement of Construction Management and Real Estate Jing Li,Weisheng Lu,Yi Peng,Hongping Yuan,Daikun Wang,2023-08-07 This book presents the proceedings of CRIOCM 2022 27th International Conference on Advancement of Construction Management and Real Estate sharing the latest developments in real estate and construction management around the globe The conference was organized by the Chinese Research Institute of Construction Management CRIOCM working in close collaboration with The Chinese University of Hong Kong Written by international academics and professionals the book discusses the latest achievements research findings and advances in frontier disciplines in the field of construction management and real estate Covering a wide range of topics including spatial planning and land use innovation integration and application of BIM and GIS low carbon built environment post pandemic resilient cities development housing and social governance real estate market and urban policy real estate finance and economics intelligent construction and smart city built environment for healthy living and

construction management in the post COVID 19 era the discussions provide valuable insights into the implementation of advanced construction project management and real estate market in China and abroad The book offers an outstanding resource for academics and professionals

Modular System Design and Evaluation Mark Sh. Levin, 2014-09-06 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

Transdisciplinary Perspectives on Complex Systems Franz-Josef Kahlen, Shannon Flumerfelt, Anabela Alves, 2016-08-16 This book presents an internationally comprehensive perspective into the field of complex systems It explores the challenges of and approaches to complexity from a broad range of disciplines including big data health care medicine mathematics mechanical and systems engineering air traffic control and finance The book s interdisciplinary character allows readers to identify transferable and mutually exclusive lessons learned among these disciplines and beyond As such it is well suited to the transfer of applications and methodologies between ostensibly incompatible disciplines This book provides fresh perspectives on comparable issues of complexity from the top minds on systems thinking

Architecting Networked Engineered Systems Jelena Milisavljevic-Syed, Janet K. Allen, Sesh Commuri, Farrokh Mistree, 2020-02-25 In this monograph the authors demonstrate how the integration of adaptability operability and re configurability in the design of complex systems is indispensable for the further digitization of engineering systems in smart manufacturing Globalization of the customer base has resulted in distributed and networked manufacturing systems However current design methods are not suitable to address variations in product design changes in production scale or variations in product quality necessitated by dynamic changes in the market Adaptability operability and re configurability are key characteristics that are necessary to address the limitations of the

current methods used to design networked manufacturing systems In recent years the digital transformation driving Industry 4.0 has had an enormous impact on globally distributed manufacturing Digitalisation the integration of digital technology into networked engineered systems is increasingly being adopted to respond to changes in the market This is achieved by means of a the concurrent design of adaptable systems b addressing flexibility in design parameters c conducting an operability analysis and d employing a reconfiguration strategy to address faults and variances in product quality and re establish connectivity among the elements in the system The design of manufacturing systems in the age of Industry 4.0 is addressed in this monograph The authors introduce the concept of a smart platform and a computational framework for the digitalization of networked manufacturing systems They also suggest how the framework and techniques in this monograph are applicable beyond the manufacturing domain for architecting networked engineered systems in other industries such as chemical processes and health care that are being transformed through the adoption of the Industry 4.0 construct

Evolutionary Computing in Advanced Manufacturing Manoj Tiwari, Jenny A. Harding, 2011-07-12 This cutting edge book covers emerging evolutionary and nature inspired optimization techniques in the field of advanced manufacturing The complexity of real life advanced manufacturing problems often cannot be solved by traditional engineering or computational methods Hence in recent years researchers and practitioners have proposed and developed new strands of advanced intelligent techniques and methodologies Evolutionary computing approaches are introduced in the context of a wide range of manufacturing activities and through the examination of practical problems and their solutions readers will gain confidence to apply these powerful computing solutions The initial chapters introduce and discuss the well established evolutionary algorithm to help readers to understand the basic building blocks and steps required to successfully implement their own solutions to real life advanced manufacturing problems In the later chapters modified and improved versions of evolutionary algorithms are discussed The book concludes with appendices which provide general descriptions of several evolutionary algorithms

Methodical Development of Modular Product Families Dieter Krause, Nicolas Gebhardt, 2023-02-01 This book focuses on the development of multi variant products using modular product structures and thus addresses the reduction of complexity from a product development perspective These modular product structures allow for a greater variety of demand with a smaller internal variety of components and processes As a supplement to the common product development methodology the necessary basics of modularity and variant diversity as well as the corresponding methods are presented comprehensively The book thus summarizes the current state of science as well as the research activities of the past ten years at the Institute of Product Development and Design Technology at the TU Hamburg Harburg The target groups This book is aimed at product developers and decision makers in practice Science is offered a helpful reference book and interested engineering students can immerse themselves in the development of modular product families with the necessary basics This book is a translation of the original German 1st edition Methodische Entwicklung modularer

Produktfamilien by Dieter Krause Nicolas Gebhardt published by Springer Fachmedien Wiesbaden GmbH part of Springer Nature in 2018 The translation was done with the help of artificial intelligence machine translation by the service DeepL.com A subsequent human revision was done primarily in terms of content so that the book will read stylistically differently from a conventional translation Springer Nature works continuously to further the development of tools for the production of books and on the related technologies to support the authors

Advances in Affective and Pleasurable Design Yong Gu Ji, 2012-07-17 This volume discusses pleasurable design a part of the traditional usability design and evaluation methodologies The book emphasizes the importance of designing products and services to maximize user satisfaction By combining this with traditional usability methods it increases the appeal of products and use of services

Proceedings of the ... ASME Design Engineering Technical Conferences, 2006

Advances in Mechanical Design Jianrong Tan, 2022-03-15 This book focus on innovation main objectives are to bring the community of researchers in the fields of mechanical design together to exchange and discuss the most recent investigations challenging problems and new trends and to encourage the wider implementation of the advanced design technologies and tools in the world particularly throughout China The theme of 2021 ICMD is Interdisciplinary and Design Innovation and this conference is expected to provide an excellent forum for cross fertilization of ideas so that more general intelligent robust and computationally economical mechanical design methods are created for multi disciplinary applications

Adaptable Design Peihua Gu, Deyi Xue, Qingjin Peng, Jian Zhang, 2023-12-14 This book provides a comprehensive discussion of Adaptable Design AD It covers the conception method and application of AD to the real world product design AD's benefits are substantial as it upgrades reuses remanufactures and recycles products throughout the product lifecycle It rapidly adapts the existing design in development of new designs Key elements of AD include rationalized function structures adaptable product architectures adaptable interfaces and adaptability evaluations The main feature of AD is adaptability in design methods and product applications with general and specific adaptability AD has also modeling and evaluating adaptabilities

Advances in Natural Computation Li-cheng Jiao, 2006 Annotation This is volume I of the proceedings of the Second International Conference on Natural Computation ICNC 2006 After a demanding review process 168 carefully revised full papers and 86 revised short papers were selected from 1915 submissions for presentation in two volumes This first volume includes 130 papers related to artificial neural networks natural neural systems and cognitive science neural network applications as well as evolutionary computation theory and algorithms

High Value Manufacturing: Advanced Research in Virtual and Rapid Prototyping Paulo Jorge Bártoło, 2013-09-16 High Value Manufacturing is the result of the 6th International Conference on Advanced Research in Virtual and Rapid Prototyping held in Leiria Portugal October 2013 It contains current contributions to the field of virtual and rapid prototyping V RP and is also focused on promoting better links between industry and academia This book contains current contributions to the field of virtual and rapid prototyping V RP and is also focused on promoting

better links between industry and academia It covers a wide range of topics such as additive and nano manufacturing technologies biomanufacturing materials rapid tooling and manufacturing CAD and 3D data acquisition technologies simulation and virtual environments and novel applications The book is intended for engineers designers and manufacturers who are active in the fields of mechanical industrial and biomedical engineering Research in Interactive Design (Vol. 4) Xavier Fischer,Alain Daidie,Benoit Eynard,Manuel Paredes,2016-03-02 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 *Digital Twin Driven Service* Fei Tao,Qinglin Qi,A.Y.C. Nee,2022-03-14 Digital Twin Driven Smart Service draws on the latest industry practice and research to explain how to implement digital twin service in a range of scenarios It addresses relevant theory and methodologies including product service prognostic health management service energy efficient service and testing service Other sections discuss key enabling technologies supported by cutting edge case studies of implementation Drawing on the work of researchers at the forefront of this technology this book is the ideal guide for anyone interested in product services manufacturing services and digital twin services This book is one part of a trilogy on digital twins the other titles being Digital Twin Driven Smart Design and Digital Twin Driven Smart Manufacturing Provides a wide range of applications including tribological testing cutting tool service and energy efficiency assessment Explains everything needed to understand and implement digital twin models for service including frameworks theories and technologies Explores future challenges for research in this area including the ongoing standardization of digital twin technology **Smart Product-Service Systems** Pai Zheng,Chun-Hsien Chen,Zuoxu Wang,2021-06-23 Smart Product Service Systems draws on innovative practice and academic research to demonstrate the unique benefits of Smart PSS and help facilitate its effective implementation This comprehensive guide explains how Smart PSS reshapes product service design in several unique aspects including a closed loop product design and redesign manner value co creation with integrated human machine intelligence and solution design context awareness Readers in industry as well as academia will find this to be an invaluable guide to the current body of technical knowledge on Smart Product Service Systems Smart PSS future research trajectories and experiences of implementation Rapid development of information and communication technologies artificial intelligence and digital technologies have driven today s industries towards the so called digital servitization era As a result a promising IT driven business paradigm known as Smart Product Service Systems Smart PSS has emerged where a large amount of low cost high performance smart connected products are leveraged together with their generated on demand services as a single solution

bundle to meet individual customer needs Explains what factors a company needs to consider in their transition towards digital servitization and its advantages Describes how this field relates to the sustainability movement and how Smart PSS can be implemented in a sustainable way Includes detailed case studies from different industries including DELTA Electronics Inc Singapore smart commercialization COMAC aviation industry smart manufacturing servitization and Van High Tech smart building services

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