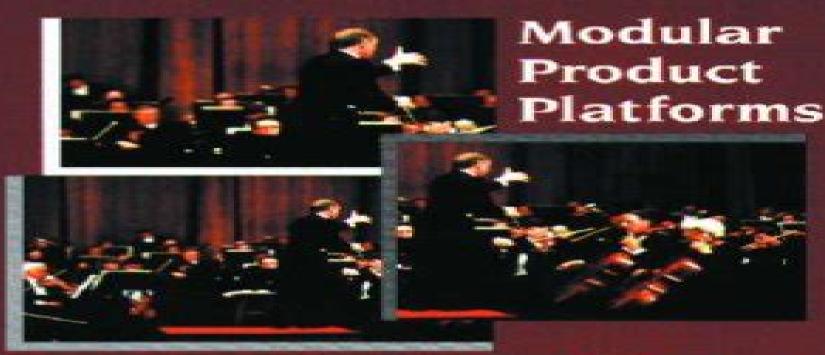
# Controlling Design Variants



Anna Ericsson Gunnar Erixon, Ph.D.

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# **Controlling Design Variants Modular Product Platforms**

Mark Sh. Levin

#### **Controlling Design Variants Modular Product Platforms:**

Controlling Design Variants Anna Ericsson, Gunnar Erixon, 1999 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

Cooperative Decision-Making in Modular Product Family Design Marc Windheim, 2019-11-21 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

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 Modularization of Services Peters, Christoph, 2016 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 Integrated Design of a Product Family and Its Assembly System Pierre De Lit, Alain Delchambre, 2011-06-28 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 Advances in Production Management Systems: Innovative and Knowledge-Based Production Management in a Global-Local World Bernard Grabot, Bruno Vallespir, Samuel Gomes, Abdelaziz Bouras, Dimitris Kiritsis, 2014-08-26 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 **Mass Customization: Concepts - Tools -Realization** Thorsten Blecker, 2005 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 Multicritieria 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 Role of Seismic Testing Facilities in Performance-Based Earthquake Engineering Michael N. Fardis, Zoran T. Rakicevic, 2011-10-07 Nowadays research in earthquake engineering is mainly experimental and in large scale advanced computations are integrated with large scale experiments to complement them and extend their scope even by coupling two different but simultaneous tests Earthquake engineering cannot give answers by testing and qualifying few small typical components or single large prototypes Besides the large diversity of Civil Engineering structures does not allow drawing conclusions from only a few tests structures are large and their seismic response and performance cannot be meaningfully tested in an ordinary lab or in the field So seismic testing facilities should be much larger than in other scientific fields their staff has to be resourceful devising intelligent ways to carry out simultaneously different tests and advanced computations To better serve such a mission European testing facilities and researchers in earthquake engineering have shared their resources and activities in the framework of the European project SERIES combining their research and jointly developing advanced testing and instrumentation techniques that maximize testing capabilities and increase the value of the tests This volume presents the first outcomes of the SERIES and its contribution towards Performance based Earthquake Engineering i e to the most important development in Earthquake Engineering of the past three decades The concept and the methodologies for performance based earthquake engineering have now matured However they are based mainly on analytical numerical research large scale seismic testing has entered the stage recently The SERIES Workshop in Ohrid MK in Sept 2010 pooled together the largest European seismic testing facilities Europe s best experts in experimental earthquake engineering and select experts from the USA to present recent research achievements and to address future developments Audience This volume will be ofinterest to researchers and advanced practitioners in structural earthquake engineering geotechnical earthquake engineering engineering seismology and experimental dynamics including seismic qualification Mass Customization Information Systems in Business Blecker, Thorsten, Friedrich, Gerhard, 2007-04-30 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: Innovative Production Management Towards Sustainable Growth Shigeki Umeda, Masaru Nakano, Hajime Mizuyama, Nironori Hibino, Dimitris Kiritsis, Gregor von Cieminski, 2015-08-17 The two volumes IFIP AICT 459 and 460 constitute the refereed proceedings of the International IFIP WG 5 7 Conference on Advances in Production

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Concurrent Engineering Approaches for Sustainable Product Development in a Multi-Disciplinary Environment Josip Stjepandić, Georg Rock, Cees Bil, 2012-08-10 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

Advances in Production Management Systems. Sustainable Production and Service Supply Chains Vittal Prabhu, Marco Taisch, Dimitris Kiritsis, 2013-09-05 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 **Towards Sustainable** Customization: Bridging Smart Products and Manufacturing Systems Ann-Louise Andersen, Rasmus Andersen, Thomas Ditlev Brunoe, Maria Stoettrup Schioenning Larsen, Kjeld Nielsen, Alessia Napoleone, Stefan Kjeldgaard, 2021-10-31 This book features state of the art contributions from two well established conferences Changeable Agile Reconfigurable and Virtual Production Conference CARV2020 and Mass Customization and Personalization Conference MCPC2020 Together they focus on the joint design development and management of products production systems and business for sustainable customization and personalization. The book covers a large range of topics within this domain ranging from industrial success factors to original contributions within the field Enterprise Information Systems VI Isabel Seruca, José Cordeiro, Slimane Hammoudi, Joaquim Filipe, 2006-07-08 This book contains the best papers of the Sixth International Conference on Enterprise Information Systems ICEIS 2004 held in Porto Portugal and organized by INSTICC Institute for Systems and Technologies of Information Communication and Control in collaboration with PORTUCALENSE UNIVERSITY who hosted the event Following the route started in 1999 ICEIS has become a major point of contact between research scientists engineers and practitioners on the area of business applications of information systems. This conference has received an increased interest every year from especially from the international academic community and it is now one of the world largest conferences in its area This year five simultaneous tracks were held covering different aspects related to enterprise computing including Databases and Information Systems Integration Artificial Intelligence and Decision Support Systems Information Systems Analysis and Specification Software Agents and Internet Computing and Human Computer Interaction The sections of this book reflect the conference tracks Enabling Manufacturing Competitiveness and Economic Sustainability Michael F. Zaeh, 2013-09-12 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

Managing Complexity Jocelyn Bellemare, Serge Carrier, Kjeld Nielsen, Frank T. Piller, 2016-08-10 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

Information and Management Systems for Product Customization Thorsten Blecker, Gerhard Friedrich, Bernd Kaluza, Nizar Abdelkafi, Gerold Kreutler, 2005-12-28 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 
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

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