

Tomohiko Sakao
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Editors

Introduction to Product/ Service-System Design

Introduction To Product Service System Design

Fabrizio Ceschin



Introduction To Product Service System Design:

Introduction to Product/Service-System Design Tomohiko Sakao, Mattias Lindahl, 2009-11-27 Introduction to Product Service System Design contains a collection of practical examples demonstrating how to design a PSS in industry These recent examples are the results of applying various theories developed in different countries and therefore accommodating diverse cultural differences Providing a useful overall guide to the state of the art in theory and practice each chapter covers the cutting edge of a different methodology or practice The book's focus on design is also evident in the discussion of how to anticipate and utilize the various dynamics within each dimension Introduction to Product Service System Design will help improve working processes and inspire creative thinking for the wide range of people involved in designing a PSS designers marketing professionals sales staff production engineers and service engineers It can also serve as a reference book for university students on advanced courses

Introduction to Product/Service-System Design Tomohiko Sakao, Mattias Lindahl, 2010-12-14 Introduction to Product Service System Design contains a collection of practical examples demonstrating how to design a PSS in industry These recent examples are the results of applying various theories developed in different countries and therefore accommodating diverse cultural differences Providing a useful overall guide to the state of the art in theory and practice each chapter covers the cutting edge of a different methodology or practice The book's focus on design is also evident in the discussion of how to anticipate and utilize the various dynamics within each dimension Introduction to Product Service System Design will help improve working processes and inspire creative thinking for the wide range of people involved in designing a PSS designers marketing professionals sales staff production engineers and service engineers It can also serve as a reference book for university students on advanced courses

Product-Service System Design for Sustainability Carlo Vezzoli, Cindy Kohtala, Amrit Srinivasan, Liu Xin, Moi Fusakul, Deepta Sateesh, J.C. Diehl, 2017-09-08 This book based on a huge European and Asian research project is a state of the art examination of the theory and practice of system innovation through Product Service System PSS design for sustainability from a trans cultural viewpoint PSS design incorporates innovative strategies that shift businesses away from simply designing and selling physical products to developing integrated systems of products and services that satisfy human needs The book provides background advice and tools for designers interested in sustainable PSSs and has a wealth of case studies for practitioners to digest

Functional Thinking for Value Creation Jürgen Hesselbach, Christoph Herrmann, 2011-03-18 After the IPS2 conferences in Cranfield and Linköping in 2009 and 2010 the 3rd CIRP International Conference on Industrial Product Service Systems IPS2 2011 takes place in Braunschweig Germany IPS2 itself is defined as an integrated industrial product and service offering that delivers value in use The customers expect comprehensive solutions which are adapted to their individual needs IPS2 offers the possibility to stand out from competition and for long term customer loyalty Particularly in times of economic crisis it becomes apparent which producing companies understand to satisfy the needs and requirements of their customers

Especially in this relatively new domain IPS2 it will be important to keep track of the whole context and to seek cooperation with other research fields and disciplines The 3rd CIRP International Conference on Industrial Product Service Systems IPS2 2011 serves as a platform for such collaborations and the discussion of new scientific ideas Effective and efficient design and provision of product-service systems Johannes Matschewsky, 2019-04-10 The world manufacturing companies operate in is changing In the past these companies relied on the design and sale of products Today this linear model of business is becoming increasingly insufficient As customers are more and more focused on their core business buying and operating machinery and other goods becomes unattractive to them In response to this manufacturing companies are expanding their value capture into additional stages of the product lifecycle by providing integrated offerings of products and services Product Service Systems PSSs Designing and providing PSSs is fundamentally different from traditional product sales Expanding to become a PSS provider is therefore challenging for companies with a history of designing and selling products Departing from this it is the aim of this thesis to support manufacturing companies in their expansion to effective and efficient design and provision of PSSs The research reported has both descriptive and prescriptive properties reflecting the goals of understanding the status quo in manufacturing companies practice and providing support based on this To establish a point of departure the current design and provision of two manufacturing companies expanding their business towards PSSs was investigated From this an in depth understanding of the status quo and a number of challenges emerged Based on this the research had the goal to contribute to identifying and developing solutions to these challenges with an initial focus on methods supporting PSS design and provision However although methods fitting to the challenges identified exist they appear to receive limited uptake in manufacturing companies practice In order to improve their practical utility a structured method is proposed to assist users in both academia and practice in developing methods in a requirements oriented fashion The utility of methods in improving the efficiency and effectiveness of PSS design and provision is thereby to be enhanced A particular challenge for manufacturing companies expanding to become PSS providers is the change in how value is captured Resulting from the extensive involvement throughout the lifecycle a need for a broader multidimensional understanding of value capture was identified However the manufacturing companies investigated have been found to experience challenges in grasping this change with a focus on a product sales centric understanding of value capture remaining prevalent To support companies towards reaping the benefits of the expansion to PSS design and provision methods to explore how value is currently created and captured in the use phase and how to enhance the future value capture based on that information in the design phase have been developed and applied As a result broadly relevant value dimensions were attained aiming to facilitate a lifecycle focused effective and efficient design and provision of PSSs Eventually to broaden the understanding of effective and efficient design and provision of PSSs in practice today the potential contributions of real world PSSs to a circular economy were investigated based on an existing framework The result was ambiguous indicating both advancements

compared to traditional sales and substantial room for improvement particularly with a focus on the absolute decoupling of economic activity and resource use Based on the synthesis of the research results manufacturing companies are supported in their expansion to effective and efficient design and provision of PSSs and towards a promising future *Product-Service Integration for Sustainable Solutions* Horst Meier,2013-03-14 An Industrial Product Service System is characterized by the integrated and mutually determined planning development provision and use of product and service shares including its immanent software components in Business to Business applications and represents a knowledge intensive socio technical system Meier Roy Seliger 2010 Since the first conference in 2009 the CIRP International Conference on Industrial Product Service Systems has become a well established international forum for the review and discussion of advances research results and industrial improvements Researchers from all over the world have met at previous IPS2 conferences in Cranfield 2009 Link ping 2010 Braunschweig 2011 and Tokyo 2012 In 2013 the 5th CIRP International Conference on Industrial Product Service Systems is held in Bochum Important topics of IPS2 research presented at the conference are planning and development sustainability business models operation service engineering knowledge management ICT modeling and simulation marketing and economic aspects as well as the role of the human in IPS2 **Systems Engineering in Research and Industrial Practice** Josip Stjepandić,Nel Wognum,Wim J. C. Verhagen,2019-10-31 This book details the foundations new developments and methods applications and current challenges of systems engineering SE It provides key insights into SE as a concept and as an approach based on the holistic view on the entire lifecycle requirements design production and exploitation of complex engineering systems such as spacecraft aircraft power plants and ships Written by leading international experts the book describes the achievements of the holistic transdisciplinary approach of SE as state of the art both in research and practice using case study examples from originating at universities and companies such as Airbus BAE Systems BMW Boeing and COMAC The reader obtains a comprehensive insight into the still existing challenges of the concept of SE today and the various forms in which SE is applied in a variety of areas **SPS2022** A.H.C. Ng,A. Syberfeldt,D. Högborg,2022-05-17 The realization of a successful product requires collaboration between developers and producers taking account of stakeholder value reinforcing the contribution of industry to society and enhancing the wellbeing of workers while respecting planetary boundaries Founded in 2006 the Swedish Production Academy SPA aims to drive and develop production research and education and to increase cooperation within the production area This book presents the proceedings of the 10th Swedish Production Symposium SPS2022 held in Skövde Sweden from 26-29 April 2022 The overall theme of the symposium was Industry 5.0 Transformation Towards a Sustainable Human Centric and Resilient Production Since its inception in 2007 the purpose of SPS has been to facilitate an event at which members and interested participants from industry and academia can meet to exchange ideas The 69 papers accepted for presentation here are grouped into ten sections resource efficient production flexible production humans in the production system circular production systems and

maintenance integrated product and production development industrial optimization and decision making cyber physical production systems and digital twins innovative production processes and additive manufacturing smart and resilient supply chains and linking research and education Also included are three sections covering the Special Sessions at SPS2022 artificial intelligence and industrial analytics in industry 4 0 development of resilient and sustainable production systems and boundary crossing and boundary objects in product and production development The book will be of interest to all those involved in the development and production of future products Interdisciplinary Design: Proceedings of the 21st CIRP Design Conference , Understanding and Supporting Product-Service System Designing Abhijna Neramballi,2020-04-06

This licentiate thesis aims to establish the basis for scientifically understanding and supporting the cognitive processes involved in the conceptual design of resource efficient and effective product service systems PSSs The research carried out is transdisciplinary in nature and includes both prescriptive and descriptive studies First the cognitive nature of conceptual PSS designing is investigated Multiple pre experimental protocol studies in a laboratory setting are carried out to do so The cohort of these explorative studies includes experienced industrial practitioners conceptually designing a resource efficient PSS These descriptive studies provide quantitative insights into the cognitive effort expended by designers on various design issues and processes during conceptual PSS designing and its potential differences to conceptual product designing These insights form the basis for future research that can eventually shine light on this complex process with statistically significant empirical results Second the essence of extant prescriptive PSS design principles methods and tools is distilled through a literature analysis and synthesis of the state of the art Subsequently important aspects that need to be considered during conceptual PSS designing are consolidated in the form of a PSS design schema Third a design navigator named lifecycle oriented function deployment LFD is developed LFD is essentially a contextual decision making support tool developed to guide the conceptual designing of environmentally benign PSSs This tool informs the designers regarding the potential environmental impacts of specific design parameters of an existing offering It subsequently guides the designers in the redesign of this existing offering into a PSS with relatively benign environmental impacts Fourth the effects of the two proposed prescriptions are tested empirically True experimental protocol studies are carried out in a laboratory setting to test the effects of the prescriptive PSS design schema on the cognition of PSS designers LFD is applied in an industrial case study using the action design research method to support the conceptual redesign of an existing product centric offering into an environmentally benign PSS Environmental impacts of the PSS concepts generated using LFD are then evaluated in comparison to that of the existing offering using simulated lifecycle assessment A semi structured interview is carried out to evaluate the utility and usability of LFD with the company personnel involved in the conceptual redesign process This licentiate thesis is an effort to effectively design the future research work of the author This future work will aim to support and establish generalizable scientific knowledge regarding the conceptual designing of resource efficient and effective PSSs

Trends in Applied Knowledge-Based Systems and Data Science Hamido Fujita, Moonis Ali, Ali Selamat, Jun Sasaki, Masaki Kurematsu, 2016-07-13 This book constitutes the refereed conference proceedings of the 29th International Conference on Industrial Engineering and Other Applications of Applied Intelligent Systems IEA AIE 2016 held in Morioka Japan in August 24 2016 The 80 revised full papers presented were carefully reviewed and selected from 168 submissions They are organized in topical sections data science knowledge base systems natural language processing and sentiment analysis semantic Web and social networks computer vision medical diagnosis system and bio informatics applied neural networks innovations in intelligent systems and applications decision support systems adaptive control soft computing and multi agent systems evolutionary algorithms and heuristic search system integration for real life applications **Advances in Ergonomics in Design** Francisco Rebelo, 2021-06-28 This book provides readers with a timely snapshot of ergonomics research and methods applied to the design development and evaluation of products systems and services It gathers theoretical contributions case studies and reports on technical interventions focusing on a better understanding of human machine interaction and user experience for improving product design The book covers a wide range of established and emerging topics in user centered design relating to design for special populations design education workplace assessment and design anthropometry ergonomics of buildings and urban design sustainable design as well as visual ergonomics and interdisciplinary research and practices among others Based on the AHFE 2021 International Conference on Ergonomics in Design held virtually on 25-29 July 2021 from USA the book offers a thought provoking guide for both researchers and practitioners in human centered design and related fields **The Philosopher's Stone for Sustainability** Yoshiki Shimomura, Koji Kimita, 2012-09-26 Industrial Product Service Systems IPS2 which is defined as an integrated industrial product and service offering that delivers value in use has expanded rapidly over the last decade IPS2 has allowed us to achieve both high added value and high productivity and has enriched our QOL by improving the performance of products and services We are now struggling with many awkward issues related to sustainability but IPS2 is expected to be the philosopher's stone for solving these issues Following the pattern of conferences held in Cranfield in 2009 Linköping in 2010 and Braunschweig in 2011 the fourth International CIRP Conference on Industrial Product Service Systems held on November 8-9 2012 in Tokyo will cover various aspects of IPS2 Topics planned for this year's conference reflect the latest IPS2 information in both the natural sciences and humanities and include case studies from various industries IPS2 is still a relatively new field so it is important to keep track of the entire context in order to promote more cross sectional cooperation between multimodal fields and disciplines The fourth International CIRP Conference on Industrial Product Service Systems will serve as a vital platform for such collaborations and the discussion of new scientific ideas The Future of Design Methodology Herbert Birkhofer, 2011-04-13 The Future of Design Methodology gives a holistic overview of perspectives for design methodology addresses trends for developing a powerful methodical support for design practice and provides a

starting point for future design research The chapters are written by leading scientists from around the world who have great expertise in design methodology as well as the farsightedness needed to develop design methodology further The Future of Design Methodology is a detailed contribution to consolidated design methodology and design research Instead of articulating the views of one scientist it provides a comprehensive collection of perspectives and visions The editor highlights the substantial deficiencies and problems of the current design methodology and summarizes the authors findings to draw future oriented conclusions The comprehensive overview of the status of design methodology given in The Future of Design Methodology will help enhance the individual scientific development of junior researchers while the authoritative perspectives on future design methodology will challenge the views of experts It is suitable for readers working in a wide range of design fields such as design methodology engineering design and industrial design

Research into Design for a Connected World Amaresh Chakrabarti, 2019-01-08 This book showcases cutting edge research papers from the 7th International Conference on Research into Design ICoRD 2019 the largest in India in this area written by eminent researchers from across the world on design processes technologies methods and tools and their impact on innovation for supporting design for a connected world The theme of ICoRD 19 has been Design for a Connected World While Design traditionally focused on developing products that worked on their own an emerging trend is to have products with a smart layer that makes them context aware and responsive individually and collectively through collaboration with other physical and digital objects with which these are connected The papers in this volume explore these themes and their key focus is connectivity how do products and their development change in a connected world The volume will be of interest to researchers professionals and entrepreneurs working in the areas on industrial design manufacturing consumer goods and industrial management who are interested in the use of emerging technologies such as IOT IIOT Digital Twins I4 0 etc as well as new and emerging methods and tools to design new products systems and services

Sustainable Product-Service Systems Fabrizio Ceschin, 2013-12-05 This book investigates the potential contribution that a strategic design approach can make to stimulating and supporting the societal embedding of sustainable PSSs product service systems A new strategic design role thus emerges a role in which the ideation and development of sustainable PSS concepts is coupled with the designing of appropriate transition paths sequence of socio technical experiments to gradually incubate introduce and diffuse these concepts The book also outlines the new design approach and capabilities needed by strategic designers project managers and consultants to operate at such a strategic level On a more operational point of view the work presents a practical how to do design process and associated guidelines to support practitioners in designing and managing the societal embedding process of sustainable PSS innovations

Product Lifecycle Management in the Era of Internet of Things Abdelaziz Bouras, Benoit Eynard, Sebti Foufou, Klaus-Dieter Thoben, 2016-04-20 This book constitutes the refereed proceedings of the 12th IFIP WG 5.1 International Conference on Product Lifecycle Management PLM 2015 held in Doha

Qatar in October 2015 The 79 revised full papers were carefully reviewed and selected from 130 submissions The papers are organized in the following topical sections smart products assessment approaches PLM maturity building information modeling BIM languages and ontologies product service systems future factory knowledge creation and management simulation and virtual environments sustainability and systems improvement configuration and engineering change education studies cyber physical and smart systems design and integration issues and PLM processes and applications

Robot-Oriented Design Thomas Bock, Thomas Linner, 2015-05-05 Robot Oriented Design introduces the design innovation and management methodologies that are key to the realization and implementation of the advanced concepts and technologies presented in the subsequent volumes of The Cambridge Handbooks in Construction Robotics series This book describes the efficient deployment of advanced construction and building technology It is concerned with the co adaptation of construction products processes organization and management and with automated robotic technology so that the implementation of modern technology becomes easier and more efficient It is also concerned with technology and innovation management methodologies and the generation of life cycle oriented views related to the use of advanced technologies in construction

Cross-Cultural Design P.L.Patrick Rau, 2014-06-02 This volume constitutes the refereed proceedings of the 6th International Conference on Cross Cultural Design CCD 2014 held as part of the 16th International Conference on Human Computer Interaction HCI International 2014 held in Heraklion Crete Greece jointly with 13 other thematically similar conferences The total of 1476 papers and 220 posters presented at the HCII 2014 conferences was carefully reviewed and selected from numerous submissions The papers address the latest research and development efforts and highlight the human aspects of design and use of computing systems They thoroughly cover the entire field of human computer interaction addressing major advances in knowledge and effective use of computers in a variety of application areas The 76 papers included in this volume deal with the following topics cross cultural product and service design cross cultural issues in interaction social aspects and implications of cross cultural design cross cultural issues in e commerce marketing and branding cross cultural design for knowledge sharing and learning cross cultural design for the smart city and cross cultural design for creativity

5th International Conference on Digital Enterprise Technology Alain Bernard, 2010 Digital Enterprise Technology DET is more than a concept Companies are facing new challenges in a context where the references are mostly numerical Nowadays digital methods and tools are widely generalized DET 2008 allowed excellent exchanges about the collection of systems and methods for the digital modelling and analysis of the global product development and realisation process in the context of lifecycle management This book of proceedings gives a short version of the keynotes and proposes the text of the papers that have been presented during DET 2008 This gives a clear view of the actual state of the art and of the industrial needs This book of proceedings is organized with respect to the topics that were addressed during the conference

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Table of Contents Introduction To Product Service System Design

1. Understanding the eBook Introduction To Product Service System Design
 - The Rise of Digital Reading Introduction To Product Service System Design
 - Advantages of eBooks Over Traditional Books
2. Identifying Introduction To Product Service System Design
 - Exploring Different Genres
 - Considering Fiction vs. Non-Fiction
 - Determining Your Reading Goals
3. Choosing the Right eBook Platform
 - Popular eBook Platforms
 - Features to Look for in an Introduction To Product Service System Design
 - User-Friendly Interface
4. Exploring eBook Recommendations from Introduction To Product Service System Design
 - Personalized Recommendations
 - Introduction To Product Service System Design User Reviews and Ratings
 - Introduction To Product Service System Design and Bestseller Lists

5. Accessing Introduction To Product Service System Design Free and Paid eBooks
 - Introduction To Product Service System Design Public Domain eBooks
 - Introduction To Product Service System Design eBook Subscription Services
 - Introduction To Product Service System Design Budget-Friendly Options
6. Navigating Introduction To Product Service System Design eBook Formats
 - ePub, PDF, MOBI, and More
 - Introduction To Product Service System Design Compatibility with Devices
 - Introduction To Product Service System Design Enhanced eBook Features
7. Enhancing Your Reading Experience
 - Adjustable Fonts and Text Sizes of Introduction To Product Service System Design
 - Highlighting and Note-Taking Introduction To Product Service System Design
 - Interactive Elements Introduction To Product Service System Design
8. Staying Engaged with Introduction To Product Service System Design
 - Joining Online Reading Communities
 - Participating in Virtual Book Clubs
 - Following Authors and Publishers Introduction To Product Service System Design
9. Balancing eBooks and Physical Books Introduction To Product Service System Design
 - Benefits of a Digital Library
 - Creating a Diverse Reading Collection Introduction To Product Service System Design
10. Overcoming Reading Challenges
 - Dealing with Digital Eye Strain
 - Minimizing Distractions
 - Managing Screen Time
11. Cultivating a Reading Routine Introduction To Product Service System Design
 - Setting Reading Goals Introduction To Product Service System Design
 - Carving Out Dedicated Reading Time
12. Sourcing Reliable Information of Introduction To Product Service System Design
 - Fact-Checking eBook Content of Introduction To Product Service System Design
 - Distinguishing Credible Sources
13. Promoting Lifelong Learning

- Utilizing eBooks for Skill Development
- Exploring Educational eBooks

14. Embracing eBook Trends

- Integration of Multimedia Elements
- Interactive and Gamified eBooks

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