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# Digitale Fabrik Methoden Und Praxisbeispiele Vdi

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System Lifecycle Management

Digital Plant

Advances in Production Management Systems.

Sustainable Production and Service Supply Chains

Production at the Leading Edge of Technology

Advances in Artificial Intelligence, Software and

Systems Engineering

Advanced Manufacturing and Sustainable

Logistics

Modular Programming of Adaptive CAX

Manufacturing Process Chains (E-Book)

Agents and Artificial Intelligence

Virtual, Augmented and Mixed Reality

Automation, Communication and Cybernetics in

Science and Engineering 2013/2014

Digitale Produktion

Engineering Education 4.0

MKWI 2012

Multiagent System Technologies

Ablaufsimulation in der Automobilindustrie

Technologies for economic and functional

lightweight design

Prozessgestaltung zum Einsatz digitaler

Fabrikgesamtmodelle

Resource Efficiency in Manufacturing Value  
Chains  
Proceedings of IAC in Vienna 2019  
Professionelles Produktmanagement  
Gestaltung von Fabrikstrukturen für die additive  
Fertigung  
Integrative Production Technology  
20. ASIM Fachtagung Simulation in Produktion  
und Logistik  
Digitale Fabrik  
Artificial Intelligence for Business Analytics  
Smart Product Engineering  
Kosten- und zeiteffizienter Wandel von  
Produktionssystemen  
Math for the Digital Factory  
Klimanlg - Planung klimagerechter Fabriken  
Responsible Artificial Intelligence  
Analytische Informationssysteme  
Tagungsband des 4. Kongresses Montage  
Handhabung Industrieroboter  
Standard- und Modulbasierte digitale  
Rohbauprozesskette : Fruehzeitige  
Produktbeeinflussung bezueglich  
Produktionsanforderungen im Karosserierohbau  
der Automobilindustrie  
Neue Entwicklungen in der  
Unternehmensorganisation  
Product-Service Integration for Sustainable  
Solutions  
Computational Collective Intelligence  
Simulation Science  
Integration virtueller Methoden in das

Anlaufmanagement skalierbarer  
Fertigungssysteme  
Präventive Schwachstellenanalytik mit  
Methodenzuweisung zur  
Produktivitätsoptimierung von  
Fertigungsbetrieben der  
Automobilzulieferindustrie  
The Mobility Revolution in the Automotive  
Industry

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**COLON  
WANG**

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*System  
Lifecycle  
Management*  
Springer  
This  
contributed  
volume  
contains the  
research  
results of the  
Cluster of  
Excellence  
“Integrative  
Production  
Technology  
for High-Wage  
Countries”,

funded by the  
German  
Research  
Society (DFG).  
The approach  
to the topic is  
genuinely  
interdisciplinar  
y, covering  
insights from  
fields such as  
engineering,  
material  
sciences,  
economics  
and social  
sciences. The  
book contains  
coherent  
deterministic  
models for  
integrative

product  
creation  
chains as well  
as harmonized  
cybernetic  
models of  
production  
systems. The  
content is  
structured into  
five sections:  
Integrative  
Production  
Technology,  
Individualized  
Production,  
Virtual  
Production  
Systems,  
Integrated  
Technologies,  
Self-

Optimizing Production Systems and Collaboration Productivity. The target audience primarily comprises research experts and practitioners in the field of production engineering, but the book may also be beneficial for graduate students.

### **Digital Plant**

KIT Scientific Publishing  
This book contains revised and extended versions of selected papers from the 8th International

Conference on Agents and Artificial Intelligence, ICAART 2016, held in Rome, Italy, in February 2016. The 17 revised full papers were carefully reviewed and selected from 149 initial submissions. The papers are organized in two sections: agents and artificial intelligence. They address open research trends and highlight in an innovative manner the trends in intelligent multi-agent

systems, natural language processing, and knowledge representation .

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

This volume provides a unique collection of mathematical tools and industrial case studies in digital manufacturing . It addresses various topics, ranging from models of single

<p>production technologies, production lines, logistics and workflows to models and optimization strategies for energy consumption in production. The digital factory represents a network of digital models and simulation and 3D visualization methods for the holistic planning, realization, control and ongoing improvement of all factory processes related to a specific product. In the past ten</p>	<p>years, all industrialized countries have launched initiatives to realize this vision, sometimes also referred to as Industry 4.0 (in Europe) or Smart Manufacturing (in the United States). Its main goals are</p> <ul style="list-style-type: none"> <li>• reconfigurable , adaptive and evolving factories capable of small-scale production • high-performance production, combining flexibility, productivity, precision and</li> </ul>	<p>zero defects • energy and resource efficiency in manufacturing None of these goals can be achieved without a thorough modeling of all aspects of manufacturing together with a multi-scale simulation and optimization of process chains; in other words, without mathematics. To foster collaboration between mathematics and industry in this area the European Consortium for Mathematics</p>
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in Industry (ECMI) founded a special interest group on Math for the Digital Factory (M4DiFa). This book compiles a selection of review papers from the M4DiFa kick-off meeting held at the Weierstrass Institute for Applied Analysis and Stochastics in Berlin, Germany, in May 2014. The workshop aimed at bringing together mathematicians working on modeling, simulation and

optimization with researchers and practitioners from the manufacturing industry to develop a holistic mathematical view on digital manufacturing. This book is of interest to practitioners from industry who want to learn about important mathematical concepts, as well as to scientists who want to find out about an exciting new area of application that is of vital importance for today's highly

industrialized and high-wage countries. Production at the Leading Edge of Technology Springer-Verlag This volume constitutes the refereed proceedings of the 8th International Conference on HCI in Virtual, Augmented and Mixed Reality, VAMR 2016, held as part of the 18th International Conference on Human-Computer Interaction, HCII 2016, which took place in Toronto,

Canada, in July 2016. HCII 2016 received a total of 4354 submissions, of which 1287 papers were accepted for publication after a careful reviewing process. The 70 papers presented in this volume are organized in topical sections named: Usability, User Experience and Design in VAMR, Perception, Cognition, Psychology and Behaviour in VAMR, Multimodal Interaction in VAMR, Novel Devices and

Technologies in VAMR, VAMR Applications in Aviation, Space and the Military, Medicine, Health and Well-Being Applications of VAMR, VAMR in Industry, Design and Engineering, Novel Virtual Environments. **Advances in Artificial Intelligence, Software and Systems Engineering** Springer The Internet of Things, cloud computing, connected vehicles, Big Data, analytics — what does this

have to do with the automotive industry? This book provides information about the future of mobility trends resulting from digitisation, connectedness, personalisation and data insights. The automotive industry is on the verge of undergoing a fundamental transformation. Large, traditional companies in particular will have to adapt, develop new business models and implement

<p>flexibility with the aid of appropriate enterprise architectures. Transforming critical business competencies is the key concept. The vehicle of the digital future is already here — who will shape it? <i>Advanced Manufacturing and Sustainable Logistics</i> GITO mbH Verlag Innovationen und nachhaltiges Wirtschaften sind die Basis für den Erfolg von Unternehmen. Grundlage dafür ist ein</p>	<p>zielorientierte s und professionell durchgeführte s Produktmanagement. Und Produktmanagement ist nur dann erfolgreich, wenn es alle Einflussfaktoren berücksichtigt, die Wertschöpfungskette integrativ betrachtet und konsequent prozessorientiert alle Schnittstellen bruchfrei bewältigt. Klar strukturiert und leicht lesbar stellt dieses Buch systematisch</p>	<p>und umfassend die relevanten Erfolgsfaktoren des Produktmanagements dar. Im ersten Teil erläutert es die verschiedenen Aspekte und Rahmenbedingungen des Produktmanagements, im zweiten Teil beschreibt es in einem umsetzungsnahen Referenzmodell den Kernprozess des Produktmanagements in 11 Phasen. Besondere, neue Schwerpunkte der aktuellen</p>
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Auflage sind die Einflüsse der Digitalisierung und die Auswirkungen von Industrie 4.0 sowie die Minimierung von Umweltauswirkungen durch das Konzept der Integrierten Produktpolitik. Dabei werden die digitale Fabrik und virtuelle Techniken speziell unter dem Aspekt der Produktions- und Prozessplanung betrachtet. Das Buch richtet sich an Betriebswirte, Ingenieure und Wirtschaftsingenieure in Vertrieb und Marketing, Produktentwicklung, Beschaffung und Fertigung, an Praktiker, Berufseinsteiger und Studierende: - Praktikern und Führungskräften im strategischen und operativen Produktmanagement für Industrie- und Konsumgüter dient es als aktuelles Nachschlagewerk zum schnellen Auffinden spezieller Themen, Vorgehensweisen und Methoden. - Berufseinsteiger und Schnittstellenmanager finden hier eine integrative Darstellung aller erfolgsrelevanten Faktoren. - Studierenden und Dozenten bietet das Buch eine gemeinsame Plattform, die neben den reinen Inhalten auch das Gesamtverständnis der Zusammenhänge und die Notwendigkeit der prozessorientierten Vorgehensweisen und Methoden. -

se vermittelt.

**Modular  
Programming of  
Adaptive  
CAx  
Manufacturing  
Process  
Chains (E-  
Book)**

Springer-  
Verlag

This book presents a concept for fostering resource efficient manufacturing . The protection of our environment demands a more responsible use of natural resources, and a higher degree of transparency along

manufacturing value chains will be required in order to make significant advances in this context. Industrial decision makers must be provided with adequate methods and tools to simultaneously and systematically pursue technical, economic and environmental targets. Building on established and complementary methods, such as material and energy flow analysis

(MEFA), value stream mapping (VSM), life cycle costing (LCC) and environmental life cycle assessment (LCA), this book introduces a concept that allows a holistic modeling and multi-dimensional performance assessment of manufacturing systems on different levels - from processes up to entire value chains and product life cycles. It also demonstrates the application of

the concept using two case studies from the metal mechanic industry.

**Agents and Artificial Intelligence**

Czech Institute of Academic Education z.s. This book comprises the proceedings of the conference “Future Production of Hybrid Structures 2020”, which took place in Wolfsburg. The conference focused on hybrid lightweight design, which is characterized by the combination of different materials with the aim of improving properties and reducing weight. In particular, production technologies for hybrid lightweight design were discussed, new evaluation methods for the ecological assessment of hybrid components were presented and future-oriented approaches motivated by nature for the development of components, assemblies and systems were introduced. Lightweight design is a key technology for the development of sustainable and resource-efficient mobility concepts. Vehicle manufacturers operate in an area of conflict between customer requirements, competition and legislation. Material hybrid structures,

which combine the advantages of different materials, have a high potential for reducing weight, while simultaneously expanding component functionality. The future, efficient use of function-integrated hybrid structures in vehicle design requires innovations and constant developments in vehicle and production technology. There is a great demand, especially with regard to new methods and

technologies, for "affordable" lightweight construction in large-scale production, taking into account the increasing requirements with regard to variant diversity, safety and quality. Virtual, Augmented and Mixed Reality Springer Science & Business Media "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), Linköping (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. *Automation, Communicatio*

*n and Cybernetics in Science and Engineering 2013/2014* Springer Science & Business Media  
Sebastian Kerber dokumentiert die Entwicklung eines Referenzprozessmodells zur virtuellen Absicherung der Produktionsplanung bei einem Automobilhersteller. Ausgangsbasis für die Prüfung ist der Einsatz digitaler Fabrikgesamtm Modelle

(Fabrik-Digital-Mock-Up). Die Methode beschreibt eine systematische Erzeugung, Prüfung und Dokumentation der erforderlichen Datenbasis unter Beachtung der projektspezifischen Einflussgrößen. Die sich daraus ergebenden Aufgabengebiete sind Rollen und Verantwortlichkeiten zugeordnet. Eine zeitliche Einordnung in den Projektablauf erfolgt über Prozessphase

n mit Bezug zum Produktentstehungsprozess. Die Ergebnisse des Autors stellen eine allgemeine, anpassbare und wiederverwendbare Gestaltungsempfehlung für den Einsatz der Methode dar.

### **Digitale Produktion**

diplom.de Informationssysteme für die analytischen Aufgaben von Fach- und Führungskräften treten verstärkt in den Vordergrund. Dieses

etablierte Buch diskutiert und evaluiert Begriffe und Konzepte wie Business Intelligence und Big Data. Die aktualisierte und erweiterte fünfte Auflage liefert einen aktuellen Überblick zu Technologien, Produkten und Trends im Bereich analytischer Informationssysteme. Beiträge aus Wirtschaft und Wissenschaft geben einen umfassenden Überblick und eignen sich als fundierte Entscheidungs

grundlage  
beim Aufbau  
und Einsatz  
derartiger  
Technologien.

### **Engineering Education**

**4.0** Springer

This book focuses on emerging issues following the integration of artificial intelligence systems in our daily lives. It focuses on the cognitive, visual, social and analytical aspects of computing and intelligent technologies, highlighting ways to improve technology acceptance, effectiveness,

and efficiency. Topics such as responsibility, integration and training are discussed throughout. The book also reports on the latest advances in systems engineering, with a focus on societal challenges and next-generation systems and applications for meeting them. It also discusses applications in smart grids and infrastructures , systems engineering education as well as defense and

aerospace. The book is based on both the AHFE 2018 International Conference on Human Factors in Artificial Intelligence and Social Computing, Software and Systems Engineering, The Human Side of Service Engineering and Human Factors in Energy, July 21-25, 2018, Loews Sapphire Falls Resort at Universal Studios, Orlando, Florida, USA.  
**MKWI 2012**

<p>Springer Science &amp; Business Media This book continues the tradition of its predecessors "Automation, Communication and Cybernetics in Science and Engineering 2009/2010 and 2011/2012" and includes a representative selection of scientific publications from researchers at the institute cluster IMA/ZLW &amp; IfU. IMA - Institute of Information Management in Mechanical</p>	<p>Engineering ZLW - Center for Learning and Knowledge Management IfU - Associated Institute for Management Cybernetics e.V. Faculty of Mechanical Engineering, RWTH Aachen University The book presents a range of innovative fields of application, including: cognitive systems, cyber-physical production systems, robotics, automation technology, machine learning,</p>	<p>natural language processing, data mining, predictive data analytics, visual analytics, innovation and diversity management, demographic models, virtual and remote laboratories, virtual and augmented realities, multimedia learning environments, organizational development and management cybernetics. The contributions selected reflect the fundamental</p>
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<p>paradigm shift toward an increasingly interdisciplinary research world – which has always been both the basis and spirit of the institute cluster IMA/ZLW &amp; IfU.</p> <p><u>Multiagent System Technologies</u></p> <p>Springer-Verlag</p> <p>This two-volume set (LNAI 10448 and LNAI 10449) constitutes the refereed proceedings of the 9th International Conference on Collective Intelligence,</p>	<p>ICCCI 2017, held in Nicosia, Cyprus, in September 2017. The 117 full papers presented were carefully reviewed and selected from 248 submissions. The conference focuses on the methodology and applications of computational collective intelligence, included: multi-agent systems, knowledge engineering and semantic web, social networks and recommender systems, text</p>	<p>processing and information retrieval, data mining methods and applications, sensor networks and internet of things, decision support &amp; control systems, and computer vision techniques.</p> <p><b>Ablaufsimulation in der Automobilindustrie</b></p> <p>Springer Nature</p> <p>Die 20. ASIM-Fachtagung "Simulation in Produktion und Logistik", Ilmenau, 13.-15. September</p>
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2023, steht unter dem Motto der „Nachhaltigkeit in Produktion und Logistik“. Sie soll Anregungen und Denkanstöße geben und über bereits erfolgreiche Projekte und Neuerungen berichten. Der vorliegende Tagungsband präsentiert neben aktuellen Beiträgen aus der klassischen Simulationsforschung und -anwendung, die z.B. den Digitalen Zwilling thematisieren, auch

hochinteressante und einschlägige Beiträge zu Fragen der Abbildung energie- und nachhaltigkeitsbezogener Einflussfaktoren in der Simulation. **Technologies for economic and functional lightweight design** Springer-Verlag Additive Fertigungsverfahren befinden sich an der Schwelle zur Industrialisierung. Daraus ergibt sich ein Praxisbedarf nach effizienten

und effektiven Prozessketten für die Fertigung von Bauteilen in Endqualität. Diese Dissertation beantwortet diesen Bedarf mit einer praxisorientierten Methode zur Gestaltung effizienter Fabrikstrukturen für die additive Fertigung und bewertet verschiedene Möglichkeiten zur Steigerung der Produktivität der Prozesskette unter Kosten- und Durchlaufzeitspekten. **Prozessgest**

**altung zum  
Einsatz  
digitaler  
Fabrikgesam  
tmodelle**

Springer  
Nature  
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.

**Resource Efficiency in Manufacturing Value Chains**

Apprimus Wissenschafts verlag  
Years of experience in

the area of Product Lifecycle Management (PLM) in industry, research and education form the basis for this overview. The author covers the development from PDM via PLM to SysLM (System Lifecycle Management) in the form commonly used today, which are necessary prerequisites for the sustainable development and implementation of IoT/loS, Industry 4.0

and Engineering 4.0 concepts. The building blocks and properties of future-proof systems for the successful implementation of the concepts of Engineering 4.0 are thereby dedicated to holistic considerations, which also inform in detail. SysLM functions and processes in mechatronic development and design as well as across the entire product lifecycle - from requirements

management to the Digital Twin - are covered as examples. SysLM trends such as low code development, cloud, disruptive business models, and bimodality provide an outlook on future developments. The author dedicates the treatment of the agile SysLM introduction to the implementation in the enterprise. The basics are deepened with examples of a concrete

SysLM system. **Proceedings of IAC in Vienna 2019** Springer  
Seit Jahren wächst das industrielle Interesse am Ansatz und der Umsetzung der Digitalen Fabrik. Für viele Unternehmen stellt die Digitale Fabrik eine Lösung zur Beschleunigung ihrer Produkt- und Produktionsentstehungsprozesse dar. Erwartet wird eine deutliche Kosteneinsparung. In diesem Buch wird der Begriff der

Digitalen Fabrik definiert sowie sein Potenzial für die Industrie und seine Umsetzung beschrieben. Dabei liegt der Fokus auf der frühzeitigen und mit allen Unternehmensprozessen abgestimmten Produktionsplanung und der Fabrikgestaltung. Die relevanten Prozesse mit ihren entsprechend en Modellen, Methoden und Werkzeugen werden umfassend erläutert. Dies umfasst auch Hinweise zum

<p>Datenmanagement und zur Systemarchitektur. Besonders wird auf die Einführung der Digitalen Fabrik und ihre begleitenden organisatorischen Maßnahmen eingegangen. Beispiele aus den Bereichen Maschinenbau, Automobilbau, Luft- und Raumfahrt sowie Schiff- und Anlagenbau veranschaulichen die Digitale Fabrik und ihre Umsetzung.</p> <p><u>Professionelle</u></p>	<p><u>Produktmanagement</u> Springer Nature</p> <p>Die digitale Produktion stellt eine ganzheitliche Produktionsfunktion dar. Sie berücksichtigt die Triade Mensch, Organisation und Technik und setzt innovative Informationstechnologien ein. Das Buch behandelt die Einordnung, den Aufbau, die Vernetzung sowie die Optimierung produkt- und produktionsbezogener Prozesse in Industrieunter</p>	<p>nehmen mit besonderer Berücksichtigung der unterstützenden Informationstechnologien. Dabei bilden die Gestaltungs- und Planungsprozesse von Produkten, technischen Prozessen und Anlagen den Schwerpunkt. Untersucht wird neben der Produktionsfunktion in Wechselwirkung mit vor- und nachgelagerten Unternehmensfunktionen die Steigerung</p>
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der Effizienz in der Produktion bei optimaler Unterstützung durch moderne IT- Systeme. Die Autoren	stellen Ergebnisse vor, die im Rahmen des Innovationsclu sters „Digitale Produktion“ erarbeitet	wurden. Sie liefern fundierte Methoden, Systembeschr eibungen und Anwendungsb ispiele.
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