

Requirements Engineering Fundamentals Klaus Pohl Chris Rupp

This book constitutes the refereed post-conference proceedings of the 16th IFIP WG 5.1 International Conference on Product Lifecycle Management, PLM 2019, held in Moscow, Russia, in July 2019. The 38 revised full papers presented were carefully reviewed and selected from 63 submissions. The papers are organized in the following topical sections: 3D modelling and data structures; PLM

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maturity and industry 4.0; ontologies and semantics; PLM and conceptual design; knowledge and change management; IoT and PLM; integrating manufacturing realities; and integration of in-service and operation.

Embedded systems have long become essential in application areas in which human control is impossible or infeasible. The development of modern embedded systems is becoming increasingly difficult and challenging because of their overall system complexity, their tighter and cross-functional integration, the increasing requirements concerning safety and real-time

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behavior, and the need to reduce development and operation costs. This book provides a comprehensive overview of the Software Platform Embedded Systems (SPES) modeling framework and demonstrates its applicability in embedded system development in various industry domains such as automation, automotive, avionics, energy, and healthcare. In SPES 2020, twenty-one partners from academia and industry have joined forces in order to develop and evaluate in different industrial domains a modeling framework that reflects the current state of the art in embedded systems engineering. The content of this book is structured in four parts. Part I

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“Starting Point” discusses the status quo of embedded systems development and model-based engineering, and summarizes the key requirements faced when developing embedded systems in different application domains. Part II “The SPES Modeling Framework” describes the SPES modeling framework. Part III “Application and Evaluation of the SPES Modeling Framework” reports on the validation steps taken to ensure that the framework met the requirements discussed in Part I. Finally, Part IV “Impact of the SPES Modeling Framework” summarizes the results achieved and provides an outlook on future work. The book is mainly aimed at

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professionals and practitioners who deal with the development of embedded systems on a daily basis. Researchers in academia and industry may use it as a compendium for the requirements and state-of-the-art solution concepts for embedded systems development.

Looking for a reliable way to learn how to program on your own, without being overwhelmed by confusing concepts? Head First Programming introduces the core concepts of writing computer programs -- variables, decisions, loops, functions, and objects -- which apply regardless of the programming language. This book offers concrete

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examples and exercises in the dynamic and versatile Python language to demonstrate and reinforce these concepts. Learn the basic tools to start writing the programs that interest you, and get a better understanding of what software can (and cannot) do. When you're finished, you'll have the necessary foundation to learn any programming language or tackle any software project you choose. With a focus on programming concepts, this book teaches you how to: Understand the core features of all programming languages, including: variables, statements, decisions, loops, expressions, and operators Reuse code with functions Use library

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code to save time and effort Select the best data structure to manage complex data Write programs that talk to the Web Share your data with other programs Write programs that test themselves and help you avoid embarrassing coding errors We think your time is too valuable to waste struggling with new concepts. Using the latest research in cognitive science and learning theory to craft a multi-sensory learning experience, Head First Programming uses a visually rich format designed for the way your brain works, not a text-heavy approach that puts you to sleep.

This book covers everything you need to master the

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iSAQB© Certified Professional for Software Architecture - Foundation Level (CPSA-F) certification. This internationally renowned education and certification schema defines various learning path for practical software architects. This book concentrates on the foundation level examination. It explains and clarifies all 40+ learning goals of the CPSA-F© curriculum. In addition, you find step-by-step preparation guide for the examination. Please beware: This book is not meant as a replacement for existing software architecture books and courses, but strongly focusses on explaining and clarifying the iSAQB CPSA-F

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foundation.

Fundamentals of Engineering Economics and
Decision Analysis

Advanced Information Systems Engineering
A Study Guide for the Certified Professional for
Requirements Engineering Exam, Foundation
Level--IREB Compliant

Introduction to Computer Numerical Control (CNC)

The SPES 2020 Methodology

SysML Distilled

"Mastering the Requirements Process: Getting Requirements Right" sets out an industry-proven process for gathering and verifying requirements, regardless of whether you work in a

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traditional or agile development environment. In this sweeping update of the bestselling guide, the authors show how to discover precisely what the customer wants and needs, in the most efficient manner possible.

This open access book presents the outcomes of the “Design for Future – Managed Software Evolution” priority program 1593, which was launched by the German Research Foundation (“Deutsche Forschungsgemeinschaft (DFG)”) to develop new approaches to software engineering with a specific focus on long-lived software systems. The different lifecycles of software and hardware platforms lead to interoperability problems in such systems. Instead of separating the development, adaptation and evolution of

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software and its platforms, as well as aspects like operation, monitoring and maintenance, they should all be integrated into one overarching process. Accordingly, the book is split into three major parts, the first of which includes an introduction to the nature of software evolution, followed by an overview of the specific challenges and a general introduction to the case studies used in the project. The second part of the book consists of the main chapters on knowledge carrying software, and cover tacit knowledge in software evolution, continuous design decision support, model-based round-trip engineering for software product lines, performance analysis strategies, maintaining security in software evolution, learning from evolution for evolution,

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and formal verification of evolutionary changes. In turn, the last part of the book presents key findings and spin-offs. The individual chapters there describe various case studies, along with their benefits, deliverables and the respective lessons learned. An overview of future research topics rounds out the coverage. The book was mainly written for scientific researchers and advanced professionals with an academic background. They will benefit from its comprehensive treatment of various topics related to problems that are now gaining in importance, given the higher costs for maintenance and evolution in comparison to the initial development, and the fact that today, most software is not developed from scratch, but as part of a continuum of

former and future releases.

These days, more and more software development projects are being carried out using agile methods like Scrum. Agile software development promises higher software quality, a shorter time to market, and improved focus on customer needs. However, the transition to working within an agile methodology is not easy. Familiar processes and procedures change drastically. Software testing and software quality assurance have a crucial role in ensuring that a software development team, department, or company successfully implements long-term agile development methods and benefits from this framework. This book discusses agile methodology from the perspective of software testing and software quality

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assurance management. Software development managers, project managers, and quality assurance managers will obtain tips and tricks on how to organize testing and assure quality so that agile projects maintain their impact. Professional certified testers and software quality assurance experts will learn how to work successfully within agile software teams and how best to integrate their expertise. Topics include: Agile methodology and classic process models How to plan an agile project Unit tests and test first approach Integration testing and continuous integration System testing and test nonstop Quality management and quality assurance Also included are five case studies from the manufacturing, online-trade, and software industry as well as test exercises for self-assessment.

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This book covers the new ISTQB Syllabus for Agile Software Testing and is a relevant resource for all students and trainees worldwide who plan to undertake this ISTQB certification.

Software product line engineering has proven to be the methodology for developing a diversity of software products and software intensive systems at lower costs, in shorter time, and with higher quality. In this book, Pohl and his co-authors present a framework for software product line engineering which they have developed based on their academic as well as industrial experience gained in projects over the last eight years. They do not only detail the technical aspect of the development, but also an integrated view of the business,

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organisation and process aspects are given. In addition, they explicitly point out the key differences of software product line engineering compared to traditional single software system development, as the need for two distinct development processes for domain and application engineering respectively, or the need to define and manage variability.

A Brief Guide to the Systems Modeling Language

Carbon Dioxide Chemistry, Capture and Oil Recovery

Software Architecture Fundamentals

Requirements Writing for System Engineering

A Study Guide for the Certified Professional for

Requirements Engineering Exam - Foundation Level - Ireb Compliant

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The Essence of Software Engineering

This book provides a comprehensive introduction into the SPES XT modeling framework. Moreover, it shows the applicability of the framework for the development of embedded systems in different industry domains and reports on the lessons learned. It also describes how the SPES XT modeling framework can be tailored to meet domain and project-specific needs. The book is structured into four parts: Part I “ Starting Situation ” discusses the status quo of the development of embedded systems with specific focus on model-based engineering and summarizes key challenges emerging from industrial practice. Part II “ Modeling Theory ”

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introduces the SPES XT modeling framework and explains the core underlying principles. Part III “ Application of the SPES XT Framework ” describes the application of the SPES XT modeling framework and how it addresses major industrial challenges. Part IV “ Evaluation and Technology Transfer ” assess the impact of the SPES XT modeling framework and includes various exemplary applications from automation, automotive, and avionics. Overall, the SPES XT modeling framework offers a seamless model-based engineering approach. It addresses core challenges faced during the engineering of embedded systems. Among others, it offers aligned and integrated

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techniques for the early validation of engineering artefacts (including requirements and functional and technical designs), the management of product variants and their variability, modular safety assurance and deployment of embedded software.

Requirements engineering is the process of eliciting individual stakeholder requirements and needs and developing them into detailed, agreed requirements documented and specified in such a way that they can serve as the basis for all other system development activities. In this textbook, Klaus Pohl provides a comprehensive and well-structured introduction to the fundamentals, principles, and techniques of

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requirements engineering. He presents approved techniques for eliciting, negotiating and documenting as well as validating, and managing requirements for software-intensive systems. The various aspects of the process and the techniques are illustrated using numerous examples based on his extensive teaching experience and his work in industrial collaborations. His presentation aims at professionals, students, and lecturers in systems and software engineering or business applications development. Professionals such as project managers, software architects, systems analysts, and software engineers will benefit in their daily work from the didactically well-presented

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combination of validated procedures and industrial experience. Students and lecturers will appreciate the comprehensive description of sound fundamentals, principles, and techniques, which is completed by a huge commented list of references for further reading. Lecturers will find additional teaching material on the book 's website, www.requirements-book.com.

Your ultimate one-stop networking reference Designed to replace that groaning shelf-load of dull networking books you 'd otherwise have to buy and house, Networking All-in-One For Dummies covers all the basic and not-so-basic information you need to get a network up and running. It also helps you keep it running as it

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grows more complicated, develops bugs, and encounters all the fun sorts of trouble you expect from a complex system. Ideal both as a starter for newbie administrators and as a handy quick reference for pros, this book is built for speed, allowing you to get past all the basics—like installing and configuring hardware and software, planning your network design, and managing cloud services—so you can get on with what your network is actually intended to do. In a friendly, jargon-free style, Doug Lowe—an experienced IT Director and prolific tech author—covers the essential, up-to-date information for networking in systems such as Linux and Windows 10 and clues you in on best practices for

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security, mobile, and more. Each of the nine minibooks demystifies the basics of one key area of network management. Plan and administrate your network Implement virtualization Get your head around networking in the Cloud Lock down your security protocols The best thing about this book? You don ' t have to read it all at once to get things done; once you ' ve solved the specific issue at hand, you can put it down again and get on with your life. And the next time you need it, it ' ll have you covered.

Software architecture is an important factor for the success of any software project. In the context of systematic design and construction, solid software

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architecture ensures the fulfilment of quality requirements such as expandability, flexibility, performance, and time-to-market. Software architects reconcile customer requirements with the available technical options and the prevailing conditions and constraints. They ensure the creation of appropriate structures and smooth interaction of all system components. As team players, they work closely with software developers and other parties involved in the project. This book gives you all the basic know-how you need to begin designing scalable system software architectures. It goes into detail on all the most important terms and concepts and how they relate to

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other IT practices. Following on from the basics, it describes the techniques and methods required for the planning, documentation, and quality management of software architectures. It details the role, the tasks, and the work environment of a software architect, as well as looking at how the job itself is embedded in company and project structures. The book is designed for self-study and covers the curriculum for the Certified Professional for Software Architecture – Foundation Level (CPSA-F) exam as defined by the International Software Architecture Qualification Board (iSAQB).

Software Product Line Engineering
Your Guide to Looking and Sounding Your Best

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Requirements Engineering Fundamentals

Networking All-in-One For Dummies

Foundations, Principles and Techniques

Mastering the Requirements Process

Strength of Materials provides a comprehensive overview of the latest theory of strength of materials. The unified theory presented in this book is developed around three concepts: Hooke's Law, Equilibrium Equations, and Compatibility conditions. The first two of these methods have been fully understood, but clearly are indirect methods with limitations. Through research, the

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authors have come to understand compatibility conditions, which, until now, had remained in an immature state of development. This method, the Integrated Force Method (IFM) couples equilibrium and compatibility conditions to determine forces directly. The combination of these methods allows engineering students from a variety of disciplines to comprehend and compare the attributes of each. The concept that IFM strength of materials theory is problem independent, and can be easily generalized for solving difficult problems in linear, nonlinear, and dynamic regimes is focused

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upon. Discussion of the theory is limited to simple linear analysis problems suitable for an undergraduate course in strength of materials. To support the teaching application of the book there are problems and an instructor's manual. Provides a novel approach integrating two popular indirect solution methods with newly researched, more direct conditions Completes the previously partial theory of strength of materials A new frontier in solid mechanics

This open access book includes contributions by leading researchers and industry thought leaders on various topics related to the

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essence of software engineering and their application in industrial projects. It offers a broad overview of research findings dealing with current practical software engineering issues and also pointers to potential future developments. Celebrating the 20th anniversary of adesso AG, adesso gathered some of the pioneers of software engineering including Manfred Broy, Ivar Jacobson and Carlo Ghezzi at a special symposium, where they presented their thoughts about latest software engineering research and which are part of this book. This way it offers readers a concise overview of the essence of software

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engineering, providing valuable insights into the latest methodological research findings and adesso's experience applying these results in real-world projects.

Requirements engineering tasks have become increasingly complex. In order to ensure a high level of knowledge and competency among requirements engineers, the International Requirements Engineering Board (IREB) developed a standardized qualification called the Certified Professional for Requirements Engineering (CPRE). The certification defines the practical skills of a requirements engineer on various training levels. This

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book is designed for self-study and covers the curriculum for the Certified Professional for Requirements Engineering Foundation Level exam as defined by the IREB. The 2nd edition has been thoroughly revised and is aligned with the curriculum Version 2.2 of the IREB. In addition, some minor corrections to the 1st edition have been included. About IREB: The mission of the IREB is to contribute to the standardization of further education in the fields of business analysis and requirements engineering by providing syllabi and examinations, thereby achieving a higher level of applied requirements engineering.

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The IRE Board is comprised of a balanced mix of independent, internationally recognized experts in the fields of economy, consulting, research, and science. The IREB is a non-profit corporation. For more information visit www.certified-re.com.

Requirements engineering tasks have become increasingly complex. In order to ensure a high level of knowledge and competency among requirements engineers, the International Requirements Engineering Board (IREB) developed a standardized qualification called the Certified Professional for Requirements Engineering (CPRE). The certification defines

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the practical skills of a requirements engineer on various training levels. This book is designed for self-study and covers the curriculum for the Certified Professional for Requirements Engineering Foundation Level exam as defined by the IREB. The 2nd edition has been thoroughly revised and is aligned with the curriculum Version 2.2 of the IREB. In addition, some minor corrections to the 1st edition have been included. About IREB: The mission of the IREB is to contribute to the standardization of further education in the fields of business analysis and requirements engineering by providing syllabi

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and examinations, thereby achieving a higher level of applied requirements engineering. The IRE Board is comprised of a balanced mix of independent, internationally recognized experts in the fields of economy, consulting, research, and science. The IREB is a non-profit corporation. For more information visit www.certified-re.com

15th IFIP WG 5.1 International Conference,
PLM 2018, Turin, Italy, July 2-4, 2018,
Proceedings

Getting Requirements Right
From System Goals to UML Models to Software
Specifications

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Seminal Contributions to Information Systems Engineering

A Guide for Software Quality Assurance in the Agile World

Fundamentals, Principles, and Techniques

Learn how to create good requirements when designing hardware and software systems. While this book emphasizes writing traditional “ shall ” statements, it also provides guidance on use case design and creating user stories in support of agile methodologies. The book surveys modeling techniques and various tools that support requirements collection and analysis. You ’ ll learn to manage requirements, including discussions of document types and digital approaches using spreadsheets, generic databases, and dedicated

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requirements tools. Good, clear examples are presented, many related to real-world work the author has done during his career. Requirements Writing for System Engineering advantages of different requirements approaches and implement them correctly as your needs evolve. Unlike most requirements books, Requirements Writing for System Engineering teaches writing both hardware and software requirements because many projects include both areas. To exemplify this approach, two example projects are developed throughout the book, one focusing on hardware and the other on software. This book Presents many techniques for capturing requirements. Demonstrates gap analysis to find missing requirements. Shows how to address both software and hardware, as most projects involve both. Provides

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extensive examples of “ shall ” statements, user stories, and use cases. Explains how to supplement or replace traditional requirement statements with user stories and use cases that work well in agile development environments What You Will Learn Understand the 14 techniques for capturing all requirements. Address software and hardware needs; because most projects involve both. Ensure all statements meet the 16 attributes of a good requirement. Differentiate the 19 different functional types of requirement, and the 31 non-functional types. Write requirements properly based on extensive examples of good ‘ shall ’ statements, user stories, and use cases. Employ modeling techniques to mitigate the imprecision of words. Audience Writing Requirements teaches you to write requirements the correct way. It is

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targeted at the requirements engineer who wants to improve and master his craft. This is also an excellent book from which to teach requirements engineering at the university level. Government organizations at all levels, from Federal to local levels, can use this book to ensure they begin all development projects correctly. As well, contractor companies supporting government development are also excellent audiences for this book.

This Open Access book presents the results of the "Collaborative Embedded Systems" (CrESt) project, aimed at adapting and complementing the methodology underlying modeling techniques developed to cope with the challenges of the dynamic structures of collaborative embedded systems (CESs) based on the SPES development methodology. In

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order to manage the high complexity of the individual systems and the dynamically formed interaction structures at runtime, advanced and powerful development methods are required that extend the current state of the art in the development of embedded systems and cyber-physical systems. The methodological contributions of the project support the effective and efficient development of CESs in dynamic and uncertain contexts, with special emphasis on the reliability and variability of individual systems and the creation of networks of such systems at runtime. The project was funded by the German Federal Ministry of Education and Research (BMBF), and the case studies are therefore selected from areas that are highly relevant for Germany ' s economy (automotive, industrial production, power generation, and

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robotics). It also supports the digitalization of complex and transformable industrial plants in the context of the German government's "Industry 4.0" initiative, and the project results provide a solid foundation for implementing the German government's high-tech strategy "Innovations for Germany" in the coming years.

The authors cover two general topics: basic engineering economics and risk analysis in this text. Within the topic of engineering economics are discussions on the time value of money and interest relationships. These interest relationships are used to define certain project criteria that are used by engineers and project managers to select the best economic choice among several alternatives. Projects examined will include both income- and service-producing investments. The

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effects of escalation, inflation, and taxes on the economic analysis of alternatives are discussed. Risk analysis incorporates the concepts of probability and statistics in the evaluation of alternatives. This allows management to determine the probability of success or failure of the project. Two types of sensitivity analyses are presented. The first is referred to as the range approach while the second uses probabilistic concepts to determine a measure of the risk involved. The authors have designed the text to assist individuals to prepare to successfully complete the economics portions of the Fundamentals of Engineering Exam. Table of Contents: Introduction / Interest and the Time Value of Money / Project Evaluation Methods / Service Producing Investments / Income Producing Investments / Determination of Project

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Cash Flow / Financial Leverage / Basic Statistics and
Probability / Sensitivity Analysis

Prepare for the new Certified Ethical Hacker version 8 exam with this Sybex guide Security professionals remain in high demand. The Certified Ethical Hacker is a one-of-a-kind certification designed to give the candidate a look inside the mind of a hacker. This study guide provides a concise, easy-to-follow approach that covers all of the exam objectives and includes numerous examples and hands-on exercises.

Coverage includes cryptography, footprinting and reconnaissance, scanning networks, enumeration of services, gaining access to a system, Trojans, viruses, worms, covert channels, and much more. A companion website includes additional study tools, Including practice exam and chapter

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review questions and electronic flashcards. Security remains the fastest growing segment of IT, and CEH certification provides unique skills The CEH also satisfies the Department of Defense ' s 8570 Directive, which requires all Information Assurance government positions to hold one of the approved certifications This Sybex study guide is perfect for candidates studying on their own as well as those who are taking the CEHv8 course Covers all the exam objectives with an easy-to-follow approach Companion website includes practice exam questions, flashcards, and a searchable Glossary of key terms CEHv8: Certified Ethical Hacker Version 8 Study Guide is the book you need when you're ready to tackle this challenging exam Also available as a set, Ethical Hacking and Web Hacking Set, 9781119072171 with The Web Application

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Hacker's Handbook: Finding and Exploiting Security Flaws,
2nd Edition.

Introduction to Mechatronic Design

Situational Method Engineering: Fundamentals and
Experiences

Fundamentals of Tissue Engineering and Regenerative
Medicine

A Study Guide for the Certified Professional for Software
Architecture® – Foundation Level – iSAQB compliant
16th IFIP WG 5.1 International Conference, PLM 2019,
Moscow, Russia, July 8–12, 2019, Revised Selected Papers
Requirements Engineering for Software and Systems,
Second Edition

This book constitutes the refereed post-

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conference proceedings of the 15th IFIP WG 5.1 International Conference on Product Lifecycle Management, PLM 2018, held in Turin, Spain, in July 2018. The 72 revised full papers presented were carefully reviewed and selected from 82 submissions. The papers are organized in the following topical sections: building information modeling; collaborative environments and new product development; PLM for digital factories and cyber physical systems; ontologies and data models; education in the field of industry 4.0; product-service

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systems and smart products; lean organization for industry 4.0; knowledge management and information sharing; PLM infrastructure and implementation; PLM maturity, implementation and adoption; 3D printing and additive manufacturing; and modular design and products and configuration and change management. Introduction to Mechatronic Design is ideal for upper level and graduate Mechatronics courses in Electrical, Computing, or Mechanical & Aerospace Engineering. Unlike other texts on

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mechatronics that focus on derivations and calculations, Introduction to Mechatronics, 1e, takes a narrative approach, emphasizing the importance of building intuition and understanding before diving into the math. The authors believe that integration is the core of mechatronics and students must have a command of each of the domains to create the balance necessary for successful mechatronic design and devote sections of the book to each area, including mechanical, electrical, and software

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disciplines, as well as a section on system design and engineering. A robust package of teaching and learning resources accompanies the book.

"In this must-have guide, one of the nation's premier speech coaches, Christine K. Jahnke, details the practices and techniques of successful women to help all women improve their presentation and public speaking skills. With access to her expertise, you'll learn how to present your best self in forums from PTA meetings to TV studios, conferences to classrooms,

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boardrooms to YouTube. Jahnke has advised First Lady Michelle Obama, provided speaker training to Hillary Clinton's presidential campaign, and coached corporate CEOs and more women elected officials than any other trainer. In *The Well-Spoken Woman*, Jahnke shares stories of trial and triumph to answer the questions: "how did she do it?" and "What can I learn from her?"--Publisher's description.

This guide will help readers learn how to employ the significant power of use cases

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to their software development efforts. It provides a practical methodology, presenting key use case concepts.

Head First Programming

Software Architecture Foundation

Extensions of the SPES 2020 Methodology

Product Lifecycle Management in the

Digital Twin Era

CEH: Certified Ethical Hacker Version 8

Study Guide

Requirements Engineering Fundamentals, 2nd
Edition

Over the last decade, Method Engineering, defined as

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the engineering discipline to design, construct and adapt methods, including supportive tools, has emerged as the research and application area for using methods for systems development. This book contains the papers from the IFIP Working Group 8.1 conference on Situational Method Engineering.

Written for those who want to develop their knowledge of requirements engineering process, whether practitioners or students. Using the latest research and driven by practical experience from industry, this book gives useful hints to practitioners on how to write and structure requirements. - Explains the importance of Systems Engineering and the creation of effective

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solutions to problems - Describes the underlying representations used in system modeling - data flow diagrams; statecharts; object-oriented approaches - Covers a generic multi-layer requirements process - Discusses the key elements of effective requirements management - Includes a chapter written by one of the developers of rich traceability - Introduces an overview of DOORS - a software tool which serves as an enabler of a requirements management process Additional material and links are available at:

<http://www.requirementsengineering.info> "In recent years we have been finding ourselves with a shortage of engineers with good competence in requirements

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engineering. Perhaps this is in part because requirements management tool vendors have persuaded management that a glitzy tool will solve their requirements engineering problems. Of course, the tools only make it possible for engineers who understand requirements engineering to do a better job. This book goes a long way towards building a foundational set of skills in requirements engineering, so that today's powerful tools can be used sensibly. Of particular value is a recognition of the place software requirements have within the system context, and of ways for dealing with that sensitive connection. This is an important book. I think its particular value in

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industry will be to bring the requirements engineers and their internal customers to a practical common understanding of what can and should be achieved."

(Byron Purves, Technical Fellow, The Boeing Company)

Requirements Engineering Fundamentals A Study Guide for the Certified Professional for Requirements Engineering Exam - Foundation Level - Ireb Compliant
Written for those who want to develop their knowledge of requirements engineering process, whether practitioners or students. Using the latest research and driven by practical experience from industry, Requirements Engineering gives useful hints to practitioners on how to write and structure

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requirements. It explains the importance of Systems Engineering and the creation of effective solutions to problems. It describes the underlying representations used in system modeling and introduces the UML2, and considers the relationship between requirements and modeling. Covering a generic multi-layer requirements process, the book discusses the key elements of effective requirements management. The latest version of DOORS (Version 7) - a software tool which serves as an enabler of a requirements management process - is also introduced to the reader here. Additional material and links are available at:

<http://www.requirementsengineering.info>

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*A Study Guide for the Certified Professional for
Requirements Engineering Exam - Foundation Level -
IREB compliant*

*Model-Based Engineering of Collaborative Embedded
Systems*

*Proceedings of the IFIP WG 8.1 Working Conference,
12-14 September 2007, Geneva, Switzerland*

*Advanced Model-Based Engineering of Embedded
Systems*

*29th International Conference, CAiSE 2017, Essen,
Germany, June 12-16, 2017, Proceedings*

In 2013, the International Conference on

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Advance Information Systems Engineering (CAiSE) turns 25. Initially launched in 1989, for all these years the conference has provided a broad forum for researchers working in the area of Information Systems Engineering. To reflect on the work done so far and to examine prospects for future work, the CAiSE Steering Committee decided to present a selection of seminal papers published for the conference during these years and to ask their authors, all prominent researchers in the field, to comment on their work and how it has

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developed over the years. The scope of the papers selected covers a broad range of topics related to modeling and designing information systems, collecting and managing requirements, and with special attention to how information systems are engineered towards their final development and deployment as software components. With this approach, the book provides not only a historical analysis on how information systems engineering evolved over the years, but also a fascinating social network analysis of the research

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community. Additionally, many inspiring ideas for future research and new perspectives in this area are sparked by the intriguing comments of the renowned authors.

Putting all the elements together, this book addresses CNC (Computer Numerical Control) technology in a comprehensive format that offers abundant illustrations, examples and exercises. It includes a strong foundation in blue print reading, graphical descriptions of CNC machine tools, a chapter on right triangle

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trigonometry and programming that uses Fanuc Controllers. It emphasizes program pattern recognition and contains completely solved programming examples and self-contained programming examples. Thoroughly updated for this edition, it includes two new chapters, four new appendices, and is bundled with Predator Simulation and Kwik Trig software. For CNC Programmers/Operators, Machinists, Process Engineers, Industrial Engineers, Shop Operators/Managers, Planners, Coordinators, Sales Personnel

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Practical Matlab Applications for Engineers provides a tutorial for those with a basic understanding of Matlab®. It can be used to follow Misza Kalechman's, Practical Matlab Basics for Engineers (cat no. 47744). This volume explores the concepts and Matlab tools used in the solution of advanced course work for engineering and technology students. It covers the material encountered in the typical engineering and technology programs at most colleges. It illustrates the direct connection between theory and

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real applications. Each chapter reviews basic concepts and then explores those concepts with a number of worked out examples.

This book constitutes the refereed proceedings of the 29th International Conference on Advanced Information Systems Engineering, CAiSE 2017, held in Essen, Germany, in June 2017. The 37 papers presented together with 3 keynote papers in this volume were carefully reviewed and selected from 175 submissions. The papers are organized in topical sections on

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information systems architecture; business process alignment; user knowledge discovery; business process performance; big data exploration; process variability management; information systems transformation and evolution; business process modeling readability; business process adaption; data mining; process discovery; business process modeling notation.

Extensions of the SPES Methodology

25 Years of CAiSE

The Best Industrial Practice in Product

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Line Engineering

A learner's guide to programming using the
Python language

CPSA Foundation® Exam Preparation

Product Lifecycle Management to Support
Industry 4.0

***The Systems Modeling Language (SysML)
extends UML with powerful systems engineering
capabilities for modeling a wider spectrum of
systems and capturing all aspects of a system's
design. SysML Distilled is the first clear, concise
guide for everyone who wants to start creating***

effective SysML models. (Drawing on his pioneering experience at Lockheed Martin and NASA, Lenny Delligatti illuminates SysML's core components and provides practical advice to help you create good models and good designs. Delligatti begins with an easy-to-understand overview of Model-Based Systems Engineering (MBSE) and an explanation of how SysML enables effective system specification, analysis, design, optimization, verification, and validation. Next, he shows how to use all nine types of SysML diagrams, even if you have no previous

experience with modeling languages. A case study running through the text demonstrates the use of SysML in modeling a complex, real-world sociotechnical system. Modeled after Martin Fowler's classic UML Distilled, Delligatti's indispensable guide quickly teaches you what you need to know to get started and helps you deepen your knowledge incrementally as the need arises. Like SysML itself, the book is method independent and is designed to support whatever processes, procedures, and tools you already use. Coverage Includes Why SysML was

***created and the business case for using it
Quickly putting SysML to practical use What to
know before you start a SysML modeling project
Essential concepts that apply to all SysML
diagrams SysML diagram elements and
relationships Diagramming block definitions,
internal structures, use cases, activities,
interactions, state machines, constraints,
requirements, and packages Using allocations to
define mappings among elements across a
model SysML notation tables, version changes,
and sources for more information***

As requirements engineering continues to be recognized as the key to on-time and on-budget delivery of software and systems projects, many engineering programs have made requirements engineering mandatory in their curriculum. In addition, the wealth of new software tools that have recently emerged is empowering practicing engineers to improve their requirements engineering habits. However, these tools are not easy to use without appropriate training. Filling this need, Requirements Engineering for Software and Systems, Second Edition has been

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vastly updated and expanded to include about 30 percent new material. In addition to new exercises and updated references in every chapter, this edition updates all chapters with the latest applied research and industry practices. It also presents new material derived from the experiences of professors who have used the text in their classrooms. Improvements to this edition include: An expanded introductory chapter with extensive discussions on requirements analysis, agreement, and consolidation An expanded chapter on

requirements engineering for Agile methodologies An expanded chapter on formal methods with new examples An expanded section on requirements traceability An updated and expanded section on requirements engineering tools New exercises including ones suitable for research projects Following in the footsteps of its bestselling predecessor, the text illustrates key ideas associated with requirements engineering using extensive case studies and three common example systems: an airline baggage handling system, a point-of-sale

system for a large pet store chain, and a system for a smart home. This edition also includes an example of a wet well pumping system for a wastewater treatment station. With a focus on software-intensive systems, but highly applicable to non-software systems, this text provides a probing and comprehensive review of recent developments in requirements engineering in high integrity systems. Fossil fuels still need to meet the growing demand of global economic development, yet they are often considered as one of the main

sources of the CO₂ release in the atmosphere. CO₂, which is the primary greenhouse gas (GHG), is periodically exchanged among the land surface, ocean, and atmosphere where various creatures absorb and produce it daily. However, the balanced processes of producing and consuming the CO₂ by nature are unfortunately faced by the anthropogenic release of CO₂. Decreasing the emissions of these greenhouse gases is becoming more urgent. Therefore, carbon sequestration and storage (CSS) of CO₂, its utilization in oil recovery, as well as its

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conversion into fuels and chemicals emerge as active options and potential strategies to mitigate CO2 emissions and climate change, energy crises, and challenges in the storage of energy.

***Essential comprehensive coverage of the fundamentals of requirements engineering
Requirements engineering (RE) deals with the variety of prerequisites that must be met by a software system within an organization in order for that system to produce stellar results. With that explanation in mind, this must-have book***

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presents a disciplined approach to the engineering of high-quality requirements. Serving as a helpful introduction to the fundamental concepts and principles of requirements engineering, this guide offers a comprehensive review of the aim, scope, and role of requirements engineering as well as best practices and flaws to avoid. Shares state-of-the-art techniques for domain analysis, requirements elicitation, risk analysis, conflict management, and more Features in-depth treatment of system modeling in the specific context of engineering

requirements Presents various forms of reasoning about models for requirements quality assurance Discusses the transitions from requirements to software specifications to software architecture In addition, case studies are included that complement the many examples provided in the book in order to show you how the described method and techniques are applied in practical situations.

The Well-Spoken Woman

16th International Conference, CAiSE 2004, Riga, Latvia, June 7-11, 2004, Proceedings

Strength of Materials

A Unified Theory

Software Product Lines in Action

Practical MATLAB Applications for Engineers

Software product lines represent perhaps the most exciting paradigm shift in software development since the advent of high-level programming languages. Nowhere else in software engineering have we seen such breathtaking improvements in cost, quality, time to market, and developer productivity, often registering in the

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order-of-magnitude range. Here, the authors combine academic research results with real-world industrial experiences, thus presenting a broad view on product line engineering so that both managers and technical specialists will benefit from exposure to this work. They capture the wealth of knowledge that eight companies have gathered during the introduction of the software product line engineering approach in their daily practice.

th CAiSE 2004 was the 16 in the series of International Conferences on Advanced

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Information Systems Engineering. In the year 2004 the conference was hosted by the Faculty of Computer Science and Information Technology, Riga Technical University, Latvia. Since the late 1980s, the CAiSE conferences have provided a forum for the presentation and exchange of research results and practical experiences within the field of Information Systems Engineering. The conference theme of CAiSE 2004 was Knowledge and Model Driven Information Systems Engineering for Networked Organizations. Modern businesses

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and IT systems are facing an ever more complex environment characterized by openness, variety, and change. Organizations are becoming less self-sufficient and increasingly dependent on business partners and other actors. These trends call for openness of business as well as IT systems, i.e. the ability to connect and interoperate with other systems. Furthermore, organizations are experiencing ever more variety in their business, in all conceivable dimensions. The different competencies required by the

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workforce are multiplying. In the same way, the variety in technology is overwhelming with a multitude of languages, platforms, devices, standards, and products. Moreover, organizations need to manage an environment that is constantly changing and where lead times, product life cycles, and partner relationships are shortening. The demand of having to constantly adapt IT to changing technologies and business practices has resulted in the birth of new ideas which may have a profound impact on the information systems

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engineering practices in future years, such as autonomic computing, component and services marketplaces and dynamically generated software.

"Fundamentals of Tissue Engineering and Regenerative Medicine" provides a complete overview of the state of the art in tissue engineering and regenerative medicine.

Tissue engineering has grown tremendously during the past decade. Advances in genetic medicine and stem cell technology have significantly improved the potential to influence cell and tissue performance,

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and have recently expanded the field towards regenerative medicine. In recent years a number of approaches have been used routinely in daily clinical practice, others have been introduced in clinical studies, and multitudes are in the preclinical testing phase. Because of these developments, there is a need to provide comprehensive and detailed information for researchers and clinicians on this rapidly expanding field. This book offers, in a single volume, the prerequisites of a comprehensive

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understanding of tissue engineering and regenerative medicine. The book is conceptualized according to a didactic approach (general aspects: social, economic, and ethical considerations; basic biological aspects of regenerative medicine: stem cell medicine, biomolecules, genetic engineering; classic methods of tissue engineering: cell, tissue, organ culture; biotechnological issues: scaffolds; bioreactors, laboratory work; and an extended medical discipline oriented approach: review of clinical use

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in the various medical specialties). The content of the book, written in 68 chapters by the world's leading research and clinical specialists in their discipline, represents therefore the recent intellect, experience, and state of this bio-medical field.

Requirements engineering tasks have become increasingly complex. In order to ensure a high level of knowledge and competency among requirements engineers, the International Requirements Engineering Board (IREB) developed a standardized

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qualification called the Certified Professional for Requirements Engineering (CPRE). The certification defines the practical skills of a requirements engineer on various training levels. This book is designed for self-study and covers the curriculum for the Certified Professional for Requirements Engineering Foundation Level exam as defined by the IREB. The 2nd edition has been thoroughly revised and is aligned with the curriculum Version 2.2 of the IREB. In addition, some minor corrections to the 1st edition have

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been included.

Model-Based Engineering of Embedded
Systems

Managed Software Evolution

Requirements Engineering

Writing Effective Use Cases

Testing in Scrum