Requirement Engineering Processes And Techniques

"This book provides a compendium of terms, definitions, and explanations of concepts in various areas of systems and design, as well as a vast collection of cutting-edge research articles from the field's leading experts"--Provided by publisher.
This book focuses on the interfaces of Requirements Management to the other disciplines of Systems Engineering. An introduction into Requirements Management and Requirements Development is given, along with a short sketch of Systems Engineering, and especially the necessary inputs and resulting outputs of Requirements Management are explained. Using these it is shown how Requirements Management can support and optimize the other project disciplines.
This open access book summarizes research being pursued within the Manutelligence project, the goal of which is to help enterprises develop smart, social and flexible products with high value added services. Manutelligence has improved Product and Service Design by developing suitable models and methods, and connecting them through a modular, collaborative and secure ICT Platform. The use of real data collected in real time by Internet of Things (IoT) technologies underpins the design of product-service systems and makes it possible to monitor them throughout their life cycle. Available data allows costs and sustainability issues to be more accurately measured and simulated in the form of Life Cycle Cost (LCC) and Life Cycle Assessment (LCA). Analysing data from IoT systems and sharing LCC and LCA information via the ICT Platform can help to accelerate the design of product-service systems, reduce costs and better understand customer needs. Industrial partners involved in Manutelligence provide a clear overview of the project's outcomes, and demonstrate how its technological solutions can be used to improve the design of product-service systems and the management of product-service life cycles.
Solid requirements engineering has become increasingly essential to on-time and on-budget delivery of software and systems projects. As more engineering programs make it a mandatory part of their curricula, students and working engineers require significant training to master the field, especially the complicated emerging ancillary software tools vital to the requirements engineering process. With a focus on software-intensive systems, Requirements Engineering for Software and Systems provides a probing and comprehensive review of recent developments in intelligent systems, soft computing techniques, and their diverse applications in manufacturing. Topics covered can be applied to the requirements engineering practices for: Advanced production machines and systems Collaborative and responsive manufacturing systems Digital manufacturing E-manufacturing E-business and virtual enterprises Fit manufacturing Human machine interfaces Innovative design technologies Intelligent and competitive manufacturing Intelligent planning and scheduling systems Mechatronics and MEMS Micro and nano manufacturing Production automation and control Reconfigurable manufacturing systems Sustainable manufacturing systems Robotics To illustrate key ideas associated with requirements engineering, the text presents three common example systems: an airline baggage handling system, a point-of-sale system for one location of a large pet store chain, and a system for a smart home in which one or more PCs control various aspects of the home's functions. The selected systems encompass a wide range of applications—from embedded to organic, for both industrial and consumer uses.
Requirements Engineering for Service and Cloud Computing
Processes and Techniques
Industrial and Research Perspectives
Requirements Engineering for Software and Systems
SREP'05
Introduction to tutorial: software requirements engineering; Introductions, issues and terminology; System and software systems engineering; Software requirements analysis and specifications; Software requirements methodologies and tools; Requirements and quality management; Software system engineering process models; Appendix; Author's biographies. \t.
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 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 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 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)
This book looks at how to design complex products that have many components with intricate relationships and requirements. It also discusses how to manage processes involved in their lifecycle, from concept generation to disposal, with the objectives of increasing customer satisfaction, quality, safety, and usability and meeting program timings and budgets. Part I covers systems engineering concepts, issues, and bases in product design. Part II examines quality, human factors, and safety engineering approaches. Part III describes important tools and methods used in these fields, and Part IV includes other relevant integration topics, interesting applications of useful techniques, and observations from a few "landmark" product development case studies.
Software Systems are now everywhere. Almost all electrical equipment now includes some kind of software; software is used to help run manufacturing, schools and universities, healthcare, finance and government; many people use different types of software for entertainment and education. The specification, development, management and development of these software systems constitute the discipline of software engineering. Even simple software systems have a high inherent complexity, so engineering principles must be used in their development. Therefore, software engineering is an engineering discipline, and software engineers use computer science methods and theories, and apply this in a cost-effective way to solve problems. These difficult problems mean that many software development projects have not been successful. However, most modern software provides users with good service; we should not let high-profile failures blur the true success of software engineers over the past 30 years. Software engineering w s developed to address the issue of building large custom software systems for defines, government, and industrial applications. We are now developing a wider range of software, from games on professional consoles to PC products and network-based systems to large-scale distributed systems. While some technologies for custom systems, such as object-oriented development, are common, new software engineering technologies are being developed for different types of software. It's impossible to cover everything in a book, so we focus on developing common technologies and technologies for large systems rather than individual software products. Although this book is intended as a general introduction to software engineering, it is geared toward system requirements engineering. We think this is especially important for software engineering in the 21st century. The challenge we face is to ensure that our software meets the actual needs of users without damaging them or the environment. The approach we take in this book is to present a broad perspective on software engineering, and we won't focus on any particular method or tool. There are no simple solutions to software engineering problems, and we need a wide range of tools and techniques to solve software engineering problems.
Software Requirements
Designing Secure Socio-Technical Systems
The Interface Between Requirements Development and All Other Systems Engineering Processes
Handbook of Research on Modern Systems Analysis and Design Technologies and Applications
The Manutelligence Project

Gathering customer requirements is a key activity for developing software that meets the customer's needs. A concise and practical overview of everything a requirement's analyst needs to know about establishing customer requirements, this first-of-its-kind book is the perfect desk guide for systems or software development work. The book enables professionals to identify the real customer requirements for their projects and control changes and additions to these requirements. This unique resource helps practitioners understand the importance of requirements, leverage effective requirements practices, and better utilize resources. The book also explains how to strengthen interpersonal relationships and communications which are major contributors to project effectiveness. Moreover, analysts find clear examples and checklists to help them implement best practices.
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 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 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.
Now in its third edition, this classic guide to software requirements engineering has been fully updated with new topics, examples, and guidance. Two leaders in the requirements community have teamed up to deliver a contemporary set of practices covering the full range of requirements development and management activities on software projects. Describes practical, effective, field-tested techniques for managing the requirements engineering process from end to end. Provides examples demonstrating how requirements "good practices" can lead to fewer change requests, higher customer satisfaction, and lower development costs. Fully updated with contemporary examples and many new practices and techniques. Describes how to apply effective requirements practices to agile projects and numerous other special project situations. Targeted to business analysts, developers, project managers, and other software project stakeholders who have a general understanding of the software development process. Shares the insights gleaned from the authors' extensive experience delivering hundreds of software-requirements training courses, presentations, and webinars. New chapters are included on specifying data requirements, writing high-quality functional requirements, and requirements reuse. Considerable depth has been added on business requirements, elicitation techniques, and nonfunctional requirements. In addition, new chapters recommend effective requirements practices for various special project situations, including enhancement and replacement, packaged solutions, outsourced, business process automation, analytics and reporting, and embedded and other real-time systems projects.
This book has two audiences: the practising Requirements Engineer and the advanced student of software engineering or computer science. The book is unique because it introduces latest research results and, at the same time, presents highly practical and useful techniques. This book is complementary to texts on software requirements and system Requirements Engineering because of its focus on the problems caused by the fact that Requirements Engineering involves people. Throughout this book the author has sought to introduce the reader to a number of techniques which have not previously been included within mainstream computer science literature. The techniques chosen have been shown to work in practice in both commercial and research pro jects. The appendices contain step-by-step guides to particular tech niques; sufficient detail is provided for readers to try the techniques for themselves. The problem faced by the Requirements Engineer is complex, it con cerns meeting the needs of the customer and at the same time meeting the needs of the designer.
Requirements Engineering
Third International Conference, CNC 2012, Chennai, India, February 24-25, 2012, Revised Selected Papers
Requirements Engineering: Laying a Firm Foundation
Models, Methods and Tools for Product Service Design
Advances in Communication, Network, and Computing

Solid requirements engineering has increasingly been recognized as the key to improved, on-time, and on-budget delivery of software and systems projects. This textbook provides a comprehensive treatment of the theoretical and practical aspects of discovering, analyzing, modeling, validating, testing, and writing requirements for systems of all kinds, with an intentional focus on software-intensive systems. It brings into play a variety of formal methods, social models, and modern requirements for writing techniques to be useful to the practicing engineer. This book was written to support both undergraduate and graduate requirements engineering courses. Each chapter includes simple, intermediate, and advanced exercises. Advanced exercises are suitable as a research assignment or independent study and are denoted by an asterisk. Various exemplar systems illustrate points throughout the book, and four systems in particular—a baggage handling system, a point of sale system, a smart home system, and a wet well pumping system—are used repeatedly. These systems involve application domains with which most readers are likely to be familiar, and they cover a wide range of applications from embedded to organic in both industrial and consumer implementations. Vignettes at the end of each chapter provide mini-case studies showing how the learning in the chapter can be employed in real systems. Requirements engineering is a dynamic field and this text keeps pace with these changes. Since the first edition of this text, there have been many changes and improvements. Feedback from instructors, students, and corporate users of the text was used to correct, expand, and improve the material. This third edition includes many new topics, expanded discussions, additional exercises, and more examples. A focus on safety critical systems, where appropriate in examples and exercises, has also been introduced. Discussions have also been added to address the important domain of the Internet of Things. Another significant change involved the transition from the retired IEEE Standard 830, which was referenced throughout previous editions of the text, to its successor, the ISO/IEC/IEEE 29148 standard.
"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 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.
Requirements engineering is the process by which the requirements for software systems are gathered, analyzed, documented, and managed throughout their complete lifecycle. Traditionally it has been concerned with technical goals for, functions of, and constraints on software systems. Aurum and Wohlin, however, argue that it is no longer appropriate for software systems professionals to focus only on functional and non-functional aspects of the intended system and to somehow assume that organizational context and needs are outside their remit. Instead, they call for a broader perspective in order to gain a better understanding of the interdependencies between enterprise stakeholders, processes, and software systems, which would in turn give rise to more appropriate techniques and higher-quality systems. Following an introductory chapter that provides an exploration of key issues in requirements engineering, the book is organized in three parts. Part 1 presents surveys of state-of-the art requirements engineering process research along with critical assessments of existing models, frameworks and techniques. Part 2 addresses key areas in requirements engineering, such as market-driven requirements engineering, goal modeling, requirements ambiguity, and others. Part 3 concludes the book with articles that present empirical evidence and experiences from practices in industrial projects. Its broader perspective gives this book its distinct appeal and makes it of interest to both researchers and practitioners, not only in software engineering but also in other disciplines such as business process engineering and management science.
This textbook lays the foundations for System-of-Systems Requirements Engineering and Requirements Management practices, principles, technique, and processes. It provides a comprehensive treatment of requirements engineering, an integral part of Multidisciplinary Systems Engineering. The book takes the student/reader though the entire process of documenting, analyzing, tracing, prioritizing, and managing requirements, and then goes on the describe controlling and communicating requirement change throughout the system development lifecycle. The authors discuss the role of requirements management in support of other requirements engineering processes; describe the principal requirements engineering activities and their relationships; introduces techniques for requirements elicitation and analysis and describes requirements validation and the role of requirements reviews; and discusses the role of requirements management in support of other requirements engineering processes. A full suite of classroom material is provided including exercises, assignments, and PowerPoint slides.
13th International Conference, ENASE 2018, Funchal, Madeira, Portugal, March 23–24, 2018, Revised Selected Papers
Human-System Integration in the System Development Process
Software Engineering for Secure Systems: Industrial and Research Perspectives
Evaluation of Novel Approaches to Software Engineering
The Scenario-based Engineering Process
Gathering customer requirements is a key activity for developing software that meets the customer's needs. A concise and practical overview of everything a requirements analyst needs to know about establishing customer requirements, this first-of-its-kind book is the perfect desk guide for systems or software development work.
Requirements Engineering and Management for Software Development Projects presents a complete guide on requirements for software development including engineering, computer science and management activities. It is the first book to cover all aspects of requirements management in software development projects. This book introduces the understanding of the requirements, elicitation and gathering, requirements analysis, verification and validation of the requirements, establishment of requirements, different methodologies in brief, requirements traceability and change management among other topics. The best practices, pitfalls, and metrics used for efficient software requirements management are also covered. Intended for the professional market, including software engineers, programmers, designers and researchers, this book is also suitable for advanced-level students in computer science or engineering courses as a textbook or reference.
Requirements engineering is the process of discovering, documenting and managing the requirements for a computer-based system. The goal of requirements engineering is to produce a set of system requirements which, as far as possible, is complete, consistent, relevant and reflects what the customer actually wants. Although this ideal is probably unattainable, the use of a systematic approach based on engineering principles leads to better requirements than the informal approach which is still commonly used. This book presents a set of guidelines which reflect the best practice in requirements engineering. Based on the authors' experience in research and in software and systems development, these guidelines explain in an easy-to-understand way how you can improve your requirements engineering processes. The guidelines are applicable for any type of application and, in general, apply to both systems and software engineering. The guidelines here range from simple 'common sense' to those which propose the introduction of complex new methods. The guidelines and process improvement schemes have been organised so that you can pick and choose according to your problems, goals and available budget. There are few dependencies between guidelines so you can introduce them in any order in your organisation. Guidelines presented in the book are consistent with ISO 9000 and CMM are ranked with cost/benefit analysis give implementation advice can be combined and applied to suit your organisation's needs are supported by a web page pointing to RE tools and resources
This revision of the bestselling software requirements book reflects the new way of categorizing software requirements techniques--objects, functions, and states. The author takes an analytical approach by helping the reader analyze which technique is best, rather than imposing one specific technique.
A New Look
Methods, Techniques and Tools to Support Situation-Specific Requirements Engineering Processes
Requirements Management
A Good Practice Guide Set
Engineering and Managing Software Requirements

Requirements Engineering Processes and Techniques Why this book was written The value of introducing requirements engineering to trainee software engineers is to equip them for the real world of software and systems development. What is involved in Requirements Engineering? As a discipline, newly emerging from software engineering, there are a range of views on where requirements engineering starts and finishes and what it should encompass. This book offers the most comprehensive coverage of the requirements engineering process to date - from initial requirements elicitation through to requirements validation. How and Which methods and techniques should you use? As there is no one catch-all technique applicable to all types of system, requirements engineers need to know about a range of different techniques. Tried and tested techniques such as data-flow and object-oriented models are covered as well as some promising new ones. They are all based on real systems descriptions to demonstrate the applicability of the approach. Who should read it? Principally written for senior undergraduate and graduate students studying computer science, software engineering or systems engineering, this text will also be helpful for those in industry new to requirements engineering. Accompanying Website: http: //www.comp.lancs.ac.uk/computing/resources/re Visit our Website: http://www.wiley.com/college/wws
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 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
"This book provides coverage of recent advances in the area of secure software engineering that address the various stages of the development process from requirements to design to testing to implementation"--Provided by publisher.
The final quality of software products and services depends on the requirements stated in the Software Requirements Specifications (SRSs). However, some problems like ambiguity, incompleteness and inconsistency have been reported in the writing of SRSs, especially when natural language is used. Requirements reuse has been proposed as a key asset for requirements engineers to efficiently elicit, validate and document software requirements and, as a consequence, obtain SRSs of better quality through more effective engineering processes. Among all the possible techniques to achieve reuse, patterns hold a prominent position. In their most classical form, patterns describe problems that occur over and over again, and then describe the core of the solution to these problems. Software engineering practitioners have adopted the notion of pattern in several contexts, remarkably related to software design (e.g., design patterns and software architectural patterns), but also in other software development phases, both earlier and later. Following this strategy, requirement patterns emerge as a natural way to reuse knowledge during the Requirements Engineering (RE) stage. Although there have been several techniques proposed to reuse requirements, it has been observed that no concrete proposal has achieved a wide acceptance, neither any covered all the necessary elements to encourage organizations to adopt requirements reuse. As a consequence, this thesis proposes the use of Software Requirement Patterns (SRPs) as a means to capture and reuse requirements knowledge in the context of information technology projects. Following the typical context-problem-solution structure of patterns, an SRP mainly consists of: a template (solution) that may generate one or more requirements when applied in a certain project, and some information (context-problem) to identify its applicability in that project. To facilitate their use, SRPs are encapsulated inside the PABRE (PAttern-Based Requirements Elicitation) framework. The framework covers all the elements that could be critical for the adoption of a requirements reuse technique. Specifically, the framework includes: - A metamodel that describes the structure and semantics of SRPs and their organization inside a catalogue. - An SRP catalogue composed by non-functional, non-technical and functional SRPs, the functional ones being specific for the content management system domain. - A method for guiding the use of an SRP catalogue during requirements elicitation and specification, as well as another one for constructing and updating it. - An economic model to perform cost-benefit analysis on the adoption of SRPs based on return-on-investment. - The PABRE system as technological support. In order to analyse the benefits and drawbacks of the SRPs proposed in this thesis, two empirical studies have been carried out to investigate the perception of participants about requirement patterns in general and SRPs in particular. The first one is an exploratory survey addressed to information technology people with industrial experience in RE, which analyses the current state of the practice of requirement patterns approaches. The second one corresponds to a set of semi-structured interviews, focussed on the SRP approach, conducted to requirements engineers of Swedish organizations. Moreover, as it has been discovered that there are few empirical studies showing the state of the practice of requirements reuse in industry, the first study also explores the current situation of requirements reuse practices in organizations.
A Good Practice Guide
Definition and Use of Software Requirement Patterns in Requirements Engineering
Mastering the Requirements Process
Requirements Engineering Processes and Techniques with Requirements Engineering
Fundamentals, Principles, and Techniques

This book focuses on various topics related to engineering and management of requirements, in particular elicitation, negotiation, prioritisation, and documentation (whether with natural languages or with graphical models). The book provides methods and techniques that help to characterise, in a systematic manner, the requirements of the intended engineering system. It was written with the goal of being adopted as the main text for courses on requirements engineering, or as a strong reference to the topics of requirements in courses with a broader scope. It can also be used in vocational courses, for professionals interested in the software and information systems domain. Readers who have finished this book will be able to: - establish and plan a requirements engineering process within the development of complex engineering systems; - define and identify the types of relevant requirements in engineering projects; - choose and apply the most appropriate techniques to elicit the requirements of a given system; - conduct and manage negotiation and prioritisation processes for the requirements of a given engineering system; - document the requirements of the system under development, either in natural language or with graphical and formal models. Each chapter includes a set of exercises.
This authoritative text/reference describes the state of the art in requirements engineering for software systems for distributed computing. A particular focus is placed on integrated solutions, which take into account the requirements of scalability, flexibility, sustainability and operability for distributed environments. Topics and features: discusses the latest developments, tools, technologies and trends in software requirements engineering; reviews the relevant theoretical frameworks, practical approaches and methodologies for service requirements; examines the three key components of the requirements engineering process, namely requirements elicitation, requirements specification, and requirements validation and evaluation; presents detailed contributions from an international selection of highly reputed experts in the field; offers guidance on best practices, and suggests directions for further research in the area.
In April 1991 BusinessWeek ran a cover story entitled, â€œI Can't Work This ?#!!@ Thing,â€ about the difficulties many people have with consumer products, such as cell phones and VCRs. More than 15 years later, the situation is much the sameâ€"-but at a very different level of scale. The disconnect between people and technology has had society-wide consequences in the large-scale system accidents from major human error, such as those at Three Mile Island and in Chernobyl. To prevent both the individually annoying and nationally significant consequences, human capabilities and needs must be considered early and throughout system design and development. One challenge for such consideration has been providing the background and data needed for the seamless integration of humans into the design process from various perspectives: human factors engineering, manpower, personnel, training, safety and health, and, in the military, habitability and survivability. This collection of development activities has come to be called human-system integration (HSI). Human-System Integration in the System Development Process reviews in detail more than 20 categories of HSI methods to provide invaluable guidance and information for system designers and developers.
Proven Software & Systems Requirements Engineering Techniques "Requirements engineering is a discipline used primarily for large and complex applications. It is more formal than normal methods of gathering requirements, and this formality is needed for many large applications. The authors are experienced requirements engineers, and this book is a good compendium of sound advice based on practical experience." --Capers Jones, Chief Scientist Emeritus, Software Productivity Research Deliver feature-rich products faster, cheaper, and more reliably using state-of-the-art SSRE methods and modeling procedures. Written by global experts, Software & Systems Requirements Engineering: In Practice explains how to effectively manage project objectives and user needs across the entire development lifecycle. Gather functional and quality attribute requirements, work with models, perform system tests, and verify compliance. You will also learn how to mitigate risks, avoid requirements creep, and sidestep the pitfalls associated with large, complex projects. Define and prioritize customer expectations using taxonomies Elicit and analyze functional and quality attribute requirements Develop artifact models, meta-models, and prototypes Manage platform and product line development requirements Derive and generate test cases from UML activity diagrams Deploy validation, verification, and rapid development procedures Handle RE for globally distributed software and system development projects Perform hazard analysis, risk assessment, and threat modeling Conceptualize
A Study Guide for the Certified Professional for Requirements Engineering Exam - Foundation Level - Ireb Compliant
Software Engineering
Security Requirements Engineering
The Requirements Engineering Handbook

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 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. 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.
*Developing today's complex systems requires more than just good software engineering solutions. Many are faced with complex systems projects, incomplete or inaccurate requirements, canceled projects, or cost overruns, and have their systems' users in revolt and demanding more. Others want to build user-centric systems, but fear managing the process. This book describes an approach that brings the engineering process together with human performance engineering and business process reengineering. The result is a manageable user-centered process for gathering, analyzing, and evaluating requirements that can vastly improve the success rate in the development of medium-to-large size systems and applications. Unlike some texts that are primarily conceptual, this volume provides guidelines, "how-to" information, and examples, enabling the reader to quickly apply the process and techniques to accomplish the following goals: * define high quality requirements, * enhance productive client involvement, * help clients maintain competitiveness, * ensure client buy-in and support throughout the process, * reduce missing functionality and corrections, and * improve user satisfaction with systems. This volume clearly details the role of user-centered requirements and knowledge acquisition within Scenario-Based Engineering Process (SEP) and identifies SEP products and artifacts. It assists project personnel in planning and managing effective requirements activities, including managing risks, avoiding common problems with requirements elicitation, organizing project participants and tools, and managing the logistics. Guidelines are provided for the following: selecting the right individual and group techniques to elicit scenarios and requirements from users; subject matter experts, or other shareholders; and ensuring engineers or analysts have the necessary skills.*
This is the digital version of the printed book (Copyright © 2000). Derek Hatley and Imtiaz Pirbhai—authors of Strategies for Real-Time System Specification—join with influential consultant Peter Hruschka to present a much anticipated update to their widely implemented Hatley/Pirbhai methods. Process for System Architecture and Requirements Engineering introduces a new approach that is particularly useful for multidisciplinary system development: It applies equally well to all technologies and thereby provides a common language for developers in widely differing disciplines. The Hatley-Pirbhai-Hruschka approach (H/H/P) has another important feature: the coexistence of the requirements and architecture methods and of the corresponding models they produce. These two models are kept separate, but the approach fully records their ongoing and changing interrelationships. This feature is missing from virtually all other system and software development methods and from CASE tools that only automate the requirements model. System managers, system architects, system engineers, and managers and engineers in all of the diverse engineering technologies will benefit from this comprehensive, pragmatic text. In addition to its models of requirements and architecture and of the development process itself, the book uses in-depth case studies of a hospital monitoring system and of a multidisciplinary groundwater analysis system to illustrate the principles. Compatibility Between the H/H/P Methods and the UML: The Hatley/Pirbhai architecture and requirements methods—described in Strategies for Real-Time System Specification—have been widely used for almost two decades in system and software development. Now known as the Hatley/Hruschka/Pirbhai (H/H/P) methods, they have always been compatible with object-oriented software techniques, such as the UML, by defining architectural elements as classes, objects, messages, inheritance relationships, and so on. In Process for System Architecture and Requirements Engineering, that compatibility is made more specific through the addition of message diagrams, inheritance diagrams, and new notations that go with them. In addition, state charts, while never excluded, are now specifically included as a representation of sequential machines. These additions make definition of the system/software boundary even more straightforward, while retaining the clear separation of requirements and design at the system levels that is a hallmark of the H/H/P methods—not shared by most OO techniques. Once the transition to software is made, the developer is free to continue using the H/H/P methods, or to use the UML or any other software-specific technique.
This book constitutes the thoroughly refereed proceedings of the Third International Conference on Advances in Communication, Network, and Computing, CNC 2012, held in Chennai, India, February 24-25, 2012. The 41 revised full papers presented together with 29 short papers and 14 poster papers were carefully selected and reviewed from 425 submissions. The papers cover a wide spectrum of issues in the field of Information Technology, Networks, Computational Engineering, Computer and Telecommunication Technology, ranging from theoretical and methodological issues to advanced applications.
Objects, Functions, and States
Process for System Architecture and Requirements Engineering
Requirements Engineering Fundamentals
Getting Requirements Right
A SysML Supported Requirements Engineering Method

A novel, model-driven approach to security requirements engineering that focuses on socio-technical systems rather than merely technical systems. Security requirements engineering is especially challenging because designers must consider not just the software under design but also interactions among people, organizations, hardware, and software. Taking this broader perspective means designing a secure socio-technical system rather than a merely technical system. This book presents a novel, model-driven approach to designing secure socio-technical systems. It introduces the Socio-Technical Modeling Language (STS-ML) and presents a freely available software tool, STS-Tool, that supports this design approach through graphical modeling, automated reasoning capabilities to verify the models constructed, and the automatic derivation of security requirements documents. After an introduction to security requirements engineering and an overview of computer and information security, the book presents the STS-ML modeling language, introducing the modeling concepts used, explaining how to use STS-ML within the STS method for security requirements, and providing guidelines for the creation of models. The book then puts the STS approach into practice, introducing the STS-Tool and presenting two case studies from industry: an online collaborative platform and an e-Government system. Finally, the book considers other methods that can be used in conjunction with the STS method or that constitute an alternative to it. The book is suitable for course use or as a reference for practitioners. Exercises, review questions, and problems appear at the end of each chapter.
This book constitutes the refereed proceedings of the 13th International Conference on Evaluation of Novel Approaches to Software Engineering, ENASE 2018, held in Funchal, Madeira, Portugal, in March 2018. The 17 revised full papers and 5 revised short papers presented were carefully reviewed and selected from 95 submissions. The papers are organized in topical sections on service science and business information systems and software engineering.
Requirements in Engineering Projects
Software & Systems Requirements Engineering: In Practice
Requirements Engineering and Management for Software Development Projects
User-centered Requirements
System Requirements Engineering