

Requirements Engineering From System Goals To Uml Models To Software Specifications

"Information security covers the protection of information against unauthorized disclosure, transfer, modification, and destruction, whether accidentally or intentionally. Quality of life in general and of individual citizens, and the effectiveness of the economy critically depends on our ability to build software in a transparent and efficient way. Furthermore, we must be able to enhance the software development process systematically in order to ensure software's safety and security. This, in turn, requires very high software reliability, i.e., an extremely high confidence in the ability of the software to perform flawlessly. Foundations of software technology provide models that enable us to capture application domains and their requirements, but also to understand the structure and working of software systems and software architectures. Based on these foundations tools allow to prove and ensure the correctness of software's functioning. New developments must pay due diligence to the importance of security-related aspects, and align current methods and techniques to information security, integrity, and system reliability. The articles in this book describe the state-of-the-art ideas on how to meet these challenges in software engineering."

This volume contains the papers selected for presentation at the 17th International Symposium on Methodologies for Intelligent Systems (ISMIS 2008), held in York University, Toronto, Canada, May 21–23, 2008. ISMIS is a conference series started in 1986. Held twice every three years, ISMIS provides an international forum for exchanging scientific research and technological achievements in building intelligent systems. Its goal is to achieve a vibrant interchange between researchers and practitioners on fundamental and advanced issues related to intelligent systems. ISMIS 2008 featured a selection of latest research work and applications from the following areas related to intelligent systems: active media human–computer interaction, autonomic and evolutionary computation, digital libraries, intelligent agent technology, intelligent information retrieval, intelligent information systems, intelligent language processing, knowledge representation and integration, knowledge discovery and data mining, knowledge visualization, logic for artificial intelligence, soft computing, Web intelligence, and Web services. Researchers and developers from 29 countries submitted more than 100 full papers to the conference. Each paper was rigorously reviewed by three committee members and external reviewers. Out of these submissions, 40% were selected as regular papers and 22% as short papers. ISMIS 2008 also featured three plenary talks given by John Mylopoulos, Jiawei Han and Michael Lowry. They spoke on their recent research in age-oriented software engineering, information network mining, and intelligent software engineering tools, respectively.

This book constitutes the refereed proceedings of the 32nd International Conference on Conceptual Modeling, ER 2014, held in Atlanta, GA, USA. The 23 full and 15 short papers presented were carefully reviewed and selected from 80 submissions. Topics of interest presented and discussed in the conference span the entire spectrum of conceptual modeling including research and practice in areas such as: data on the web, unstructured data, uncertain and incomplete data, big data, graphs and networks, privacy and safety, database design, new modeling languages and applications, software concepts and strategies, patterns and narratives, data management for enterprise architecture, city and urban applications. This book constitutes the refereed proceedings of the IFIP WG 8.4, 8.9, TC 5 International Cross-Domain Conference on Availability, Reliability and Security, CD-ARES 2013, held in Regensburg, Germany, in September 2013. The 21 revised papers presented were carefully reviewed and selected for inclusion in the volume. The papers concentrate on the many aspects of information systems bridging the gap between research results in computer science

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and the many application fields. They are organized in the following topical sections: economic, ethical, legal, multilingual, organizational and social aspects; context-oriented information integration; data/information management as a service; context-oriented information integration and location-aware computing; security and privacy; risk management and business continuity; and security and privacy and location based applications. Also included are 15 papers from a special session on Human-Computer Interaction and Knowledge Discovery (HCI-KDD 2013). The purpose of this book is to question the relationships involved in decision making and the systems designed to support it: decision support systems (DSS). The focus is on how these systems are engineered; to stop and think about the questions to be asked throughout the engineering process and, in particular, about the impact designers' choices have on these systems.

This book comprises a set of papers selected from those presented at the fifth « International Conference on Enterprise Information Systems », (ICEIS'2003) held in Angers, France, from 23 to 26 April 2003. The conference was organised by École Supérieure d'Électronique de l'Ouest (ESEO) of Angers, France and the Escola Superior de Tecnologia of Setúbal, Portugal. Since its first edition in 1999, ICEIS focuses on real world applications and aims at bringing together researchers, engineers and practitioners interested in the advances and business applications of information systems. As in previous years, ICEIS'2003 held four simultaneous tracks covering different aspects of enterprise computing: Databases and Information Systems Integration, Artificial Intelligence and Decision Support Systems, Information Systems Analysis and Specification and Software Agents and Internet Computing. Although ICEIS'2003 received 546 paper submissions from over 50 countries, only 80 were accepted as full papers and presented in 30-minutes oral presentations. With an acceptance rate of 15%, these numbers demonstrate the intention of preserving a high quality forum for future editions of this conference. From the articles accepted as long papers for the conference, only 32 were selected for inclusion in this book. Additional keynote lectures, tutorials and industrial sessions were also held during ICEIS'2003, and, for the first time this year, the 1st Doctoral Consortium on Enterprise Information Systems gave PhD students an opportunity to present their work to an international audience of experts in the field of information systems.

This book contains a collection of innovative chapters emanating from topics raised during the 5th KES International Conference on Intelligent Decision Technologies (IDT), held during 2013 at Sesimbra, Portugal. The authors were invited to expand their original papers into a plethora of innovative chapters espousing IDT methodologies and applications. This book documents leading-edge contributions, representing advances in Knowledge-Based and Intelligent Information and Engineering System. It acknowledges that researchers recognize that society is familiar with modern Advanced Information Processing and increasingly expect richer IDT systems. Each chapter concentrates on the theory, design, development, implementation, testing or evaluation of IDT techniques or applications. Anyone that wants to work with IDT or simply process knowledge should consider reading one or more chapters and focus on their technique of choice. Most readers will benefit from reading additional chapters to access alternative technique that often represent alternative approaches. This book is suitable for anyone interested in or already working with IDT or Intelligent Decision Support Systems. It is also suitable for students and researchers seeking to learn more about modern Artificial Intelligence and Computational Intelligence techniques that support decision-making in modern computer systems.

This book constitutes the refereed proceedings of the 25th International Conference on Advanced Information Systems Engineering, CAiSE 2013, held in Valencia, Spain, in June 2013. The 44 revised full papers were carefully reviewed and selected from 162 submissions. The contributions have been grouped into the following topical sections: services; awareness;

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business process execution; products; business process modelling; modelling languages and meta models; requirements engineering 1; enterprise architecture; information systems evolution; mining and predicting; data warehouses and business intelligence; requirements engineering 2; knowledge and know-how; information systems quality; and human factors. The book presents both the current state of the art in requirements engineering and a systematic method for engineering high-quality requirements, broken down into four parts. The first part introduces fundamental concepts and principles including the aim and scope of requirements engineering, the products and processes involved, requirements qualities to aim at and flaws to avoid, and the critical role of requirements engineering in system and software engineering. The second part of the book is devoted to system modeling in the specific context of engineering requirements. It presents a multi-view modeling framework that integrates complementary techniques for modeling the system-as-is and the system-to-be. The third part of the book reviews goal-based reasoning techniques to support the various steps of the KAOS method. The fourth part of the book goes beyond requirements engineering to discuss the mapping from goal-oriented requirements to software specifications and to software architecture. Online software will accompany the book and will add value to both classroom and self-study by enabling students to build models and specifications involved in the book's exercises and case studies, helping them to discover the latest RE technology solutions. Instructor resources such as slides, figures and handouts are available from an accompanying website.

Because almost all technical systems are more or less interfaced with software these days, attacks against computer systems can cause considerable economic and physical damage. For this reason, understanding the dependability of such systems, as well as the improvement of cyber security and its development process, are amongst the most challenging and crucial issues in current computer science research. This book contains the lectures from the NATO Advanced Study Institute (ASI) Summer School entitled Engineering Dependable Software Systems, held in Marktoberdorf, Germany, in July and August 2012. This two week course for young computer scientists and mathematicians working in the field of formal software and systems was designed to give an in-depth presentation of state-of-the-art topics in the field, as well as promoting international contacts and collaboration and the teaming up of leading researchers and young scientists. The 12 lectures delivered at the school and presented here cover subjects including: model-based testing, formal modeling and verification, deductively verified software, model checking, performance analysis, integrating risk analysis, embedded systems and model checking, among others. The book will be of interest to all those whose work involves the development of large-scale, reliable and secure software systems.

As a usability specialist or interaction designer working with the government, or as a government or contractor professional involved in specifying, procuring, or managing system development, you need this book. Editors Elizabeth Buie and Dianne Murray have brought together over 30 experts to outline practical advice to both usability specialists and government technology professionals and managers. Working with internal and external government systems is a unique and difficult task because of the sheer magnitude of the audience for external systems (the entire population of a country, and sometimes more), and because of the need to achieve government transparency while protecting citizens' privacy.. Open government, plain language, accessibility, biometrics, service design, internal vs. external systems, and cross-cultural issues, as well as working with the government, are all covered in this book. Covers both public-facing systems and internal systems run by governments Details usability and user experience approaches specific to government websites, intranets, complex systems, and applications Provides practical material that allows you to take the information and immediately use it to make a difference in your projects

This book constitutes the refereed proceedings of the 20th International Working Conference

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on Requirements Engineering: Foundation for Software Quality, REFSQ 2014, held in Essen, Germany, in April 2014. The 23 papers presented were carefully reviewed and selected from 89 submissions. The REFSQ conference is organised as a three-day symposium with two days devoted to scientific papers presentation with a one-day industry track in-between. Both the industry and scientific presentations concern a variety of topics, which shows the liveliness of the requirements engineering domain. These topics are for instance: scalability in RE, communication issues, compliance with law and regulations, RE for self adaptive systems, requirements traceability, new sources of requirements, domain specific RE, Natural Language issues and of course games. 'Games for RE and RE for Games' was the special topic of REFSQ 2014. This is materialized by a plenary session at the conference, and by a keynote given by Catherine Rolland, a serious games expert and project manager at KTM Advance, a French company specialized in serious games.

Advanced space exploration is performed by unmanned missions with integrated autonomy in both flight and ground systems. Risk and feasibility are major factors supporting the use of unmanned craft and the use of automation and robotic technologies where possible. Autonomy in space helps to increase the amount of science data returned from missions, perform new science, and reduce mission costs. Elicitation and expression of autonomy requirements is one of the most significant challenges the autonomous spacecraft engineers need to overcome today. This book discusses the Autonomy Requirements Engineering (ARE) approach, intended to help software engineers properly elicit, express, verify, and validate autonomy requirements. Moreover, a comprehensive state-of-the-art of software engineering for aerospace is presented to outline the problems handled by ARE along with a proof-of-concept case study on the ESA's BepiColombo Mission demonstrating the ARE's ability to handle autonomy requirements.

Build your own intelligent agent system... Intelligent agent technology is a tool of modern computer science that can be used to engineer complex computer programmes that behave rationally in dynamic and changing environments. Applications range from small programmes that intelligently search the Web buying and selling goods via electronic commerce, to autonomous space probes. This powerful technology is not widely used, however, as developing intelligent agent software requires high levels of training and skill. The authors of this book have developed and tested a methodology and tools for developing intelligent agent systems. With this methodology (Prometheus) developers can start agent-oriented designs and implementations easily from scratch saving valuable time and resources. Developing Intelligent Agent Systems not only answers the questions "what are agents?" and "why are they useful?" but also the crucial question: "how do I design and build intelligent agent systems?" The book covers everything a practitioner needs to know to begin to effectively use this technology - including an introduction to the notion of agents, a description of the concepts involved, and a software engineering methodology. Read on for: a practical step-by-step introduction to designing and building intelligent agent systems. a full life-cycle methodology for developing intelligent agent systems covering specification, analysis, design and implementation of agents. PDT: Prometheus Design Tool – software support for the Prometheus design process. the example of an electronic bookstore to illustrate the design process throughout the book. Electronic resources including the Prometheus Design Tool (PDT), can be found at: <http://www.cs.rmit.edu.au/agents/prometheus> This book is aimed at industrial software developers, software engineers and at advanced undergraduate students. It assumes knowledge of basic software engineering but does not require knowledge of Artificial Intelligence or of mathematics. Familiarity with Java will help in reading the examples in chapter 10.

This book constitutes the refereed proceedings of the Third International Symposium on Engineering Secure Software and Systems, ESSoS 2011, held in Madrid, Italy, in February

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2011. The 18 revised full papers presented together with 3 idea papers were carefully reviewed and selected from 63 submissions. The papers are organized in topical sections on model-based security, tools and mechanisms, Web security, security requirements engineering, and authorization.

This book constitutes the refereed proceedings of the 5th IFIP TC 5 International Conference on Computer Science and Its Applications, CIIA 2015, held in Saida, Algeria, in May 2015. The 56 revised papers presented were carefully reviewed and selected from 225 submissions. The papers are organized in the following four research tracks: computational intelligence; security and network technology; information technology; and software engineering.

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This book constitutes the thoroughly refereed post-conference proceedings of the 14th Brazilian Symposium on Formal Methods, SBMF 2011, held in Sao Paulo, Brazil, in September 2011; co-located with CBSoft 2011, the second Brazilian Conference on Software: Theory and Practice. The 13 revised full papers were carefully reviewed and selected from 37 submissions. The papers presented cover a broad range of foundational and methodological issues in formal methods for the design and analysis of software and hardware systems as well as applications in various domains.

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 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 "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 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.

This tutorial volume includes revised and extended lecture notes of six long tutorials, five short tutorials, and one peer-reviewed participant contribution held at the 4th International Summer School on Generative and Transformational Techniques in Software Engineering, GTTSE 2011. The school presents the state of the art in software language engineering and generative and transformational techniques in software engineering with coverage of foundations, methods, tools, and case studies.

System Requirements Engineering presents a balanced view of the issues, concepts, models, techniques and tools found in requirements engineering research and practice. Requirements engineering is presented from business, behavioural and software engineering perspectives and a general framework is established at the outset. This book considers requirements

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engineering as a combination of three concurrent and interacting processes: eliciting knowledge related to a problem domain, ensuring the validity of such knowledge and specifying the problem in a formal way. Particular emphasis is given to requirements elicitation techniques and there is a fully integrated treatment of the development of requirements specifications through enterprise modelling, functional requirements and non-functional requirements.

This book constitutes the proceedings of the 24th International Working Conference on Requirements Engineering - Foundation for Software Quality, REFSQ 2018, held in Utrecht, The Netherlands, in March 2018. The 23 full and 2 invited talks papers presented in this volume were carefully reviewed and selected from 57 submissions. The papers were organized in topical sections named: RE in Industrial Practice; NLP in Theory and Practice; Empirical Insights into Traceability; Taming Ambiguity; Large-Scale RE; Quality Requirements; User and Job Stories; Requirements Alignment; RE Previews and Visions; Big Data; Mindmapping and Requirements Modeling.

This book constitutes the proceedings of 26th International Conference on Advanced Information Systems Engineering, CAiSE 2014, held in Thessaloniki, Greece in June 2014. The 41 papers and 3 keynotes presented were carefully reviewed and selected from 226 submissions. The accepted papers were presented in 13 sessions: clouds and services; requirements; product lines; requirements elicitation; processes; risk and security; process models; data mining and streaming; process mining; models; mining event logs; databases; software engineering.

This volume constitutes the refereed proceedings of two workshops: the International Cross-Domain Conference and Workshop on Availability, Reliability and Security, CD-ARES 2014, and the 4th International Workshop on Security and Cognitive Informatics for Homeland Defense, SeCIHD 2014, co-located with the International Conference on Availability, Reliability and Security, ARES 2014, held in Fribourg, Switzerland, in September 2014. The 23 revised full papers presented were carefully reviewed and selected from numerous submissions. The papers deal with knowledge management, software security, mobile and social computing, enterprise information systems, homeland security and information processing.

This book constitutes the proceedings of the Third Asia Pacific Requirements Engineering Symposium, APRES 2016, held in Nagoya, Japan, in November 2016. The 7 full papers presented together with three short papers, were carefully reviewed and selected from 14 submissions. The papers are organized in topical sections on requirements traceability and prioritization; requirements modeling and process for quality; requirements validation; requirements analysis.

Information Systems Development: Business Systems and Services: Modeling and Development, is the collected proceedings of the 19th International Conference on Information Systems Development held in Prague, Czech Republic, August 25 - 27, 2010. It follows in the tradition of previous conferences in the series in exploring the connections between industry, research and education. These proceedings represent ongoing reflections within the academic community on established information systems topics and emerging concepts, approaches and ideas. It is hoped that the papers herein contribute towards disseminating research and improving practice.

As the first to focus on the issue of Data Warehouse Requirements Engineering, this book introduces a model-driven requirements process used to identify requirements granules and incrementally develop data warehouse fragments. In addition, it presents an approach to the pair-wise integration of requirements granules for consolidating multiple data warehouse fragments. The process is systematic and does away with the fuzziness associated with existing techniques. Thus, consolidation is treated as a requirements engineering issue. The notion of a decision occupies a central position in the decision-based approach. On one hand,

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information relevant to a decision must be elicited from stakeholders; modeled; and transformed into multi-dimensional form. On the other, decisions themselves are to be obtained from decision applications. For the former, the authors introduce a suite of information elicitation techniques specific to data warehousing. This information is subsequently converted into multi-dimensional form. For the latter, not only are decisions obtained from decision applications for managing operational businesses, but also from applications for formulating business policies and for defining rules for enforcing policies, respectively. In this context, the book presents a broad range of models, tools and techniques. For readers from academia, the book identifies the scientific/technological problems it addresses and provides cogent arguments for the proposed solutions; for readers from industry, it presents an approach for ensuring that the product meets its requirements while ensuring low lead times in delivery. This book constitutes the refereed proceedings of the Fourth International Symposium on Search-Based Software Engineering, SSBSE 2012, held in Riva del Garda, Italy in collocation with the 28th IEEE International Conference on Software Maintenance. The 15 revised full papers, 3 revised short papers, and 2 papers of the graduate track presented together with 2 keynote talks and 1 tutorial paper were carefully reviewed and selected from 38 initial submissions. Search-based Software Engineering (SBSE) studies the application of meta-heuristic optimization techniques to various software engineering problems, ranging from requirements engineering to software testing and maintenance. The papers present current research in all areas of Search Based Software Engineering, including theoretical work, research on SBSE applications, empirical studies, and reports on industrial experience. This book constitutes the refereed proceedings of workshops, held at the 33rd International Conference on Conceptual Modeling, ER 2014, in Atlanta, GA, USA in October 2014. The 24 revised full and 6 short papers were carefully reviewed and selected out of 59 submissions and are presented together with 4 demonstrations. The papers are organized in sections related to the individual workshops: the First International Workshop on Enterprise Modeling, ENMO 2014; the Second International Workshop on Modeling and Management of Big Data, MoBiD 2014; the First International Workshop on Conceptual Modeling in Requirements and Business Analysis, MReBA 2014; the First International Workshop on Quality of Models and Models of Quality, QMMQ 2014; the 8th International Workshop on Semantic and Conceptual Issues in GIS, SeCoGIS 2014; and the 11th International Workshop on Web Information Systems Modeling, WISM 2014. The contributions cover a variety of topics in conceptual modeling, including requirements and enterprise modeling, modeling of big data, spatial conceptual modeling, exploring the quality of models, and issues specific to the design of web information systems.

KES International (KES) is a worldwide organisation that provides a professional community and association for researchers, originally in the discipline of Knowledge Based and Intelligent Engineering Systems, but now extending into other related areas. Through this, KES provides its members with opportunities for publication and beneficial interaction. The focus of KES is research and technology transfer in the area of Intelligent Systems, i.e. computer-based software systems that operate in a manner analogous to the human brain, in order to perform advanced tasks. Recently KES has started to extend its area of interest to encompass the contribution that intelligent systems can make to sustainability and renewable energy, and also the knowledge transfer, innovation and enterprise agenda. Involving several thousand researchers, managers and engineers drawn from universities and companies world-wide, KES is in an excellent position to facilitate international research co-operation and generate synergy in the area of artificial intelligence applied to real-world 'Smart' systems and the underlying related theory. The KES annual conference covers a broad spectrum of intelligent systems topics and attracts several hundred delegates from a range of countries round the world. KES also organises symposia on specific technical topics, for example, Agent and Multi Agent

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Systems, Intelligent Decision Technologies, Intelligent Interactive M- timedia Systems and Services, Sustainability in Energy and Buildings and Innovations through Knowledge Transfer. KES is responsible for two peer-reviewed journals, the International Journal of Knowledge based and Intelligent Engineering Systems, and Intelligent Decision Technologies: an International Journal.

Everyone expects the products and services they use to be secure, but 'building security in' at the earliest stages of a system's design also means designing for use as well. Software that is unusable to end-users and unwieldy to developers and administrators may be insecure as errors and violations may expose exploitable vulnerabilities. This book shows how practitioners and researchers can build both security and usability into the design of systems. It introduces the IRIS framework and the open source CAIRIS platform that can guide the specification of secure and usable software. It also illustrates how IRIS and CAIRIS can complement techniques from User Experience, Security Engineering and Innovation & Entrepreneurship in ways that allow security to be addressed at different stages of the software lifecycle without disruption. Real-world examples are provided of the techniques and processes illustrated in this book, making this text a resource for practitioners, researchers, educators, and students. This book addresses mechanisms for reducing model heterogeneity induced by the absence of explicit semantics expression in the formal techniques used to specify design models. More precisely, it highlights the advances in handling both implicit and explicit semantics in formal system developments, and discusses different contributions expressing different views and perceptions on the implicit and explicit semantics. The book is based on the discussions at the Shonan meeting on this topic held in 2016, and includes contributions from the participants summarising their perspectives on the problem and offering solutions. Divided into 5 parts: domain modelling, knowledge-based modelling, proof-based modelling, assurance cases, and refinement-based modelling, and offers inspiration for researchers and practitioners in the fields of formal methods, system and software engineering, domain knowledge modelling, requirement analysis, and explicit and implicit semantics of modelling languages.

This book constitutes the thoroughly refereed papers of the workshops held at the 8th International Conference on New Trends in Model and Data Engineering, MEDI 2018, in Marrakesh, Morocco, in October 2018. The 19 full and the one short workshop papers were carefully reviewed and selected from 50 submissions. The papers are organized according to the 4 workshops: International Workshop on Modeling, Verification and Testing of Dependable Critical Systems, DETECT 2018, Model and Data Engineering for Social Good Workshop, MEDI4SG 2018, Second International Workshop on Cybersecurity and Functional Safety in Cyber-Physical Systems, IWCFS 2018, International Workshop on Formal Model for Mastering Multifaceted Systems, REMEDY 2018.

This book presents recent advances in mechatronic and integrated monitoring and management systems with applications to architectural, archaeology survey, construction management and civil engineering. It consists of 16 chapters authored by recognized experts in a variety of fields including dynamics, signal processing, inverse modeling, robotics and automation, in particular, here applied to design and construction of civil structures and architectural survey, monitoring and maintenance of cultural heritage assets, structures and infrastructure. The book is organized in three main sections: "Robotics and Automation", "Digital Technologies for Cultural Heritage" and "Civil Structural Health Monitoring". Topics include image processing for automated visual inspection, fiber optical sensor technology, wireless sensor monitoring, bridge inspection and monitoring of tunnel infrastructures, design tools for construction engineering, smart cities. Direct and inverse modeling of multibody systems and robots contributes to the development of applications for civil engineering and smart cities. Digital technology and mechatronic systems changes the way of looking at restoration of historical and archeological sites, analysis, inspection, visualization,

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management systems and sensor network for Human-Machine Interfaces (HMI). Combined use of geographical information system (GIS), laser scanner, remote sensing, digital thermography and drones as integrated systems permits to highlight new frontier for building and infrastructure knowledge. The book offers a valuable reference work for scientists, architects, engineers, researchers and practitioners in engineering and architecture since the integrated development of new technologies for the design and management of existing and new infrastructure may produce a new market of services and products for safe and economically optimized infrastructure management. Through the dissemination of advanced research developments in mechatronics and integrated management systems, the book promotes exchanges and collaborations among researchers of different disciplines. The book contributes to further advancements in the rapidly growing field of integration of robotic, automation and information technologies in the area of facilities and infrastructure management and construction processes.

This book contains the refereed proceedings of the 15th International Conference on Business Process Modeling, Development and Support (BPMDS 2014) and the 19th International Conference on Exploring Modeling Methods for Systems Analysis and Design (EMMSAD 2014), held together with the 26th International Conference on Advanced Information Systems Engineering (CAiSE 2014) in Thessaloniki, Greece, in June 2014. The 20 full papers accepted for BPMDS were selected from 48 submissions and cover a wide spectrum of issues related to business process development, modeling, and support. They are grouped into topical sections on business process modeling as a human-driven process, representing the human perspective of business processes, supporting humans in business processes, variability-enabling process models, various models for various process perspectives, and BPMDS in practice. The ten full and three short papers accepted for EMMSAD were chosen from 27 submissions and focus on exploring, evaluating, and enhancing modeling methods and methodologies for the analysis and design of information systems, enterprises, and business processes. They are grouped into sections on conceptual modeling, requirements modeling, business process modeling, goal and language action modeling, enterprise and business modeling, and new approaches.

This classroom-texted textbook/reference presents a set of useful modeling techniques, describing how these can be combined into a powerful framework for the analysis and design of business systems. These techniques follow an interactive modeling and simulation (IMS) approach, enabling the modeling and simulation of separate parts of the system at different levels of abstraction, and the composition of these parts in a flexible crosscutting manner that preserves the behavior of the individual parts. Topics and features: presents a detailed introduction to the foundations of IMS for business system design, covering protocol modeling and goal modeling semantics; describes the practical application of IMS for business system design, illustrated by a selection of useful case studies; highlights the advantages of this approach to IMS for business system design, with a focus on performance management, motivation modeling, and communication; includes review questions and exercises at the end of each chapter.

Although the self-adaptability of systems has been studied in a wide range of disciplines, from biology to robotics, only recently has the software engineering community recognized its key role in enabling the development of self-adaptive systems that are able to adapt to internal faults, changing requirements, and evolving environments. The 15 carefully reviewed papers included in this state-of-the-art survey were presented at the International Seminar on "Software Engineering for Self-Adaptive Systems", held in Dagstuhl Castle, Germany, in October 2010. Continuing the course of the first book of the series on "Software

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Engineering for Self-Adaptive Systems" the collection of papers in this second volume comprises a research roadmap accompanied by four elaborating working group papers. Next there are two parts - with three papers each - entitled "Requirements and Policies" and "Design Issues"; part four of the book contains four papers covering a wide range of "Applications".

This book constitutes the refereed proceedings of workshops, held at the 32nd International Conference on Conceptual Modeling, ER 2013, in Hong Kong, China in November 2013. The 30 revised full papers were carefully reviewed and selected out of 57 submissions. The papers are organized in sections related to the individual workshops: LSAWM, Legal and Social Aspects in Web Modeling; MoBiD, 1st International Workshop on Modeling and Management of Big Data; RIGiM, 5th International Workshop on Requirements, Intentions and Goals in Conceptual Modeling; SeCoGIS, 7th International Workshop on Semantic and Conceptual Issues in Geographic Information Systems; WISM, 10th International Workshop on Web Information Systems Modeling; DaSeM, Data Mining and Semantic Computing for Object Modeling; SCME, 1st Symposium on Conceptual Modeling Education; and PhD Symposium. Continuing the ER tradition, the ER 2013 workshops provided researchers, students, and industry professionals with a forum to present and discuss emerging, cutting-edge topics related to conceptual modeling and its applications.

"This book provides innovative ideas and methods on the development, operation, and maintenance of secure software systems and highlights the construction of a functional software system and a secure system simultaneously"--Provided by publisher.

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 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

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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.

This book constitutes the proceedings of the 4th Asia Pacific Requirements Engineering Symposium, APRES 2017, held in Melaka, Malaysia, in November 2017. The 11 full papers presented together with four short papers were carefully reviewed and selected from 45 submissions. The papers are organized in topical sections on big data, cyber security, crowd-sourcing, requirements challenges, automation.

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