

# Component Based Software Engineering Putting The Pieces Together

On behalf of the Organizing Committee I am pleased to present the proceedings of the 2005 Symposium on Component-Based Software Engineering (CBSE). CBSE is concerned with the development of software-intensive systems from reusable parts (components), the development of reusable parts, and system maintenance and improvement by means of component replacement and c- tomization. CBSE 2005, "Software Components at Work," was the eighth in a series of events that promote a science and technology foundation for achieving predictable quality in software systems through the use of software component technology and its associated software engineering practices. We were fortunate to have a dedicated Program Committee comprised of 30 internationally recognized researchers and industrial practitioners. We received 91 submissions and each paper was reviewed by at least three Program Comm- tee members (four for papers with an author on the Program Committee). The entire reviewing p rocess was supported by CyberChairPro, the Web-based paper submission and reviews system developed and supported by Richard van de Stadt of Borbala Online Conference Services. After a two-day virtual Program C- mittee meeting, 21 submissions were accepted as long papers and 2 submissions were accepted as short papers.

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Here's a complete guide to building reliable component-based software systems. Written by world-renowned experts in the component-based software engineering field, this unique resource helps you manage complex software through the development, evaluation and integration of software components. You quickly develop a keen awareness of the benefits and risks to be considered when developing reliable systems using components. A strong software engineering perspective helps you gain a better understanding of software component design, to build systems with stronger requirements, and avoid typical errors throughout the process, leading to improved quality and time to market. From component definition, standards, objects and frameworks, to organizational development and support of the component-based life cycle, the book describes aspects of systems development using components and component development. It focuses on dependable and real-time systems, employing case studies from the process automation industry, software production, electronic consumer equipment and office software development.

This book contains a collection of thoroughly refereed papers presented at the 6th International Conference on Evaluation of Novel Approaches to Software Engineering, ENASE 2011, held in Beijing, China, in June 2011. The 18 revised and extended full papers presented together with 10 revised short papers were carefully reviewed and selected from 75 initial submissions. The papers cover a wide range of topics, such as software quality and testing, requirements

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engineering, programming, software processes and methods, software tools and environments, business process and services modeling, software components, software effort and processes, and socio-technical aspects of software development.

Capacity management is a core activity when designing and operating distributed software systems. Particularly, enterprise application systems are exposed to highly varying workloads. Employing static capacity management, this leads to unnecessarily high total cost of ownership due to poor resource usage efficiency. This thesis introduces a model-driven online capacity management approach for distributed component-based software systems, called SLA<sup>stic</sup>. The core contributions of this approach are a) modeling languages to capture relevant architectural information about a controlled software system, b) an architecture-based online capacity management framework based on the common MAPE-K control loop architecture, c) model-driven techniques supporting the automation of the approach, d) architectural runtime reconfiguration operations for controlling a system's capacity, as well as e) an integration of the Palladio Component Model. A qualitative and quantitative evaluation of the approach is performed by case studies, lab experiments, and simulation.

It is a great pleasure to share with you the Springer CCIS 111 proceedings of the Third World Summit on the Knowledge Society—WSKS 2010—that was organized by the International Scientific Council for the Knowledge Society, and supported by the Open Research Society,

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NGO, (<http://www.open-knowledge-society.org>) and the International Journal of the Knowledge Society Research, (<http://www.igi-global.com/ijksr>), and took place in Aquis Corfu Holiday Palace Hotel, on Corfu island, Greece, September 22–24, 2010. The Third World Summit on the Knowledge Society (WSKS 2010) was an international scientific event devoted to promoting the dialogue on the main aspects of the knowledge society towards a better world for all. The multidimensional economic and social crisis of the last couple years brings to the fore the need to discuss in depth new policies and strategies for a human-centric developmental process in the global context. This annual summit brings together key stakeholders of knowledge society development worldwide, from academia, industry, government, policy makers, and active citizens to look at the impact and prospects of it information technology, and the knowledge-based era it is creating, on key facets of living, working, learning, innovating, and collaborating in today's hyper-complex world.

Component-based Software Engineering Putting the Pieces Together Addison-Wesley Professional Papers presented at a conference.

- First book of its kind (case studies in CBD) - Covers different kinds of components - Covers different component models/technologies - Includes a wide scope of CBD topics - Covers both theoretical and practical work - Includes both formal and informal approaches - Provides a snapshot of current concerns and pointers to future trends

This book constitutes the refereed proceedings of the 7th

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International Symposium on Search-Based Software Engineering, SSBSE 2015, held in Bergamo, Italy, in September 2015. The 12 revised full papers presented together with 2 invited talks, 4 short papers, 2 papers of the graduate track, and 13 challenge track papers were carefully reviewed and selected from 51 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.

Providing all the latest on a topic of extreme commercial relevance, this book contains the refereed proceedings of the 10th International ACM SIGSOFT Symposium on Component-Based Software Engineering, held in Medford, MA, USA in July 2007. The 19 revised full papers presented were carefully reviewed and selected from 89 submissions. The papers feature new trends in global software services and distributed systems architectures to push the limits of established and tested component-based methods, tools and platforms.

This book constitutes the refereed proceedings of the 14th International Conference on Software Reuse for Dynamic Systems in the Cloud and Beyond, ICSR 2015, held in Miami, FL, USA, in January 2015. The 21 revised full papers presented together with 3 revised short papers were carefully reviewed and selected from 60 submissions. The papers cover several software engineering areas where software reuse is important, such as software product lines, domain analysis, open source, components, cloud, quality.

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Embedded systems are ubiquitous. They appear in cell phones, microwave ovens, refrigerators, consumer electronics, cars, and jets. Some of these embedded systems are safety- or security-critical such as in medical equipment, nuclear plants, and X-by-wire control systems in naval, ground and aerospace transportation vehicles. With the continuing shift from hardware to software, embedded systems are increasingly dominated by embedded software. Embedded software is complex. Its engineering inherently involves a multidisciplinary interplay with the physics of the embedding system or environment. Embedded software also comes in ever larger quantity and diversity. The next generation of premium automobiles will carry around one gigabyte of binary code. The proposed US DDX submarine is effectively a floating embedded software system, comprising 30 billion lines of code written in over 100 programming languages. Embedded software is expensive. Cost estimates are quoted at around US\$15–30 per line (from commencement to shipping). In the defense realm, costs can range up to \$100, while for highly critical applications, such as the Space Shuttle, the cost per line approximates \$1,000. In view of the exponential increase in complexity, the projected costs of future embedded software are staggering.

This book reports on the concepts and ideas discussed at the well attended ICRA2005 Workshop on "Principles and Practice of Software Development in Robotics", held in Barcelona, Spain, April 18 2005. It collects contributions that describe the state of the art in software development for the Robotics domain. It also reports a

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number of practical applications to real systems and discuss possible future developments.

A superior primer on software testing and quality assurance, from integration to execution and automation This important new work fills the pressing need for a user-friendly text that aims to provide software engineers, software quality professionals, software developers, and students with the fundamental developments in testing theory and common testing practices. Software Testing and Quality Assurance: Theory and Practice equips readers with a solid understanding of: Practices that support the production of quality software Software testing techniques Life-cycle models for requirements, defects, test cases, and test results Process models for units, integration, system, and acceptance testing How to build test teams, including recruiting and retaining test engineers Quality Models, Capability Maturity Model, Testing Maturity Model, and Test Process Improvement Model Expertly balancing theory with practice, and complemented with an abundance of pedagogical tools, including test questions, examples, teaching suggestions, and chapter summaries, this book is a valuable, self-contained tool for professionals and an ideal introductory text for courses in software testing, quality assurance, and software engineering. This book includes a set of rigorously reviewed world-class manuscripts addressing and detailing state-of-the-art research projects in the areas of Computer Science, Informatics, and Systems Sciences, and Engineering. It includes selected papers form the conference proceedings of the Ninth International Joint Conferences

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on Computer, Information, and Systems Sciences, and Engineering (CISSE 2013). Coverage includes topics in: Industrial Electronics, Technology & Automation, Telecommunications and Networking, Systems, Computing Sciences and Software Engineering, Engineering Education, Instructional Technology, Assessment, and E-learning. • Provides the latest in a series of books growing out of the International Joint Conferences on Computer, Information, and Systems Sciences, and Engineering; • Includes chapters in the most advanced areas of Computing, Informatics, Systems Sciences, and Engineering; • Accessible to a wide range of readership, including professors, researchers, practitioners and students.

The 2009 Symposium on Component-Based Software Engineering (CBSE 2009) was the 12th in a series of successful events that have grown into the main forum for industrial and academic experts to discuss component technology. Component-based software engineering (CBSE) has emerged as the underlying technology for the assembly of flexible software systems. In essence, CBSE is about composing computational building blocks to construct larger building blocks that fulfill client needs. Most software engineers are involved in some form of component-based development. Nonetheless, the implications of CBSE adoption are wide-reaching and its challenges grow in tandem with its uptake, continuing to inspire our scientific speculation. Component-based development necessarily involves elements of software architecture, modular software design, software verification, testing, configuration and

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deployment. This year's submissions represent a cross-section of CBSE - search that touches upon all these aspects. The theoretical foundations of component specification, composition, analysis, and verification continue to pose research challenges. What exactly constitutes an adequate semantics for communication and composition so that bigger things can be built from smaller things? How can formal approaches facilitate predictable assembly through better analysis? We have grouped the proceedings into two sub-themes that deal with these issues: component models and communication and composition. At the same time, the world is changing.

"This book addresses the complex issues associated with software engineering environment capabilities for designing real-time embedded software systems"--Provided by publisher.

This is the refereed proceedings of the 9th International Symposium on Component-Based Software Engineering, CBSE 2006, held in Västerås, Sweden in June/July 2006. The 22 revised full papers and 9 revised short papers presented cover issues concerned with the development of software-intensive systems from reusable parts, the development of reusable parts, and system maintenance and improvement by means of component replacement and customization.

Current IT developments like component-based development and Web services have emerged as effective ways of building complex enterprise-scale information systems and providing enterprise application integration. To aid this process, platforms such as .NET

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and WebSphere have become standards in web-based systems development. However, there are still a lot of issues that need to be addressed before service-oriented software engineering (SOSE) becomes a prominent and widely accepted paradigm for enterprise information systems development and integration. This book provides a comprehensive view of SOSE through a number of different perspectives. Some of those perspectives include: service-based concepts, modeling and documentation, service discovery and composition, service-oriented architecture, model-driven development of service-oriented applications, service security and service-orientation in mobile settings. The book provides readers with an in-depth knowledge of the main challenges and practices in the exciting, new world of service-oriented software engineering. Addressing both technical and organizational aspects of this new field, it offers a balance making it valuable to a variety of readers, including IT architects, developers, managers, and analysts.

The book provides a comprehensive coverage of the widely accepted desiderata of component-based software development, as well as the foundations that these desiderata necessitate. Its unique focus is on component models, the cornerstone of component-based software development. In addition, it presents and analyses existing approaches according to these desiderata. This compendium is an indispensable textbook for an advance undergraduate or postgraduate course unit. Researchers will also find this volume an essential reference material.

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Business Component-Based Software Engineering, an edited volume, aims to complement some other reputable books on CBSE, by stressing how components are built for large-scale applications, within dedicated development processes and for easy and direct combination. This book will emphasize these three facets and will offer a complete overview of some recent progresses. Projects and works explained herein will prompt graduate students, academics, software engineers, project managers and developers to adopt and to apply new component development methods gained from and validated by the authors. The authors of Business Component-Based Software Engineering are academic and professionals, experts in the field, who will introduce the state of the art on CBSE from their shared experience by working on the same projects. Business Component-Based Software Engineering is designed to meet the needs of practitioners and researchers in industry, and graduate-level students in Computer Science and Engineering.

Exchange of information and innovative ideas are necessary to accelerate the development of technology. With advent of technology, intelligent and soft computing techniques came into existence with a wide scope of implementation in engineering sciences. Keeping this ideology in preference, this book includes the insights that reflect the 'Advances in Computer and Computational Sciences' from upcoming researchers and leading academicians across the globe. It contains high-quality peer-reviewed papers of 'International Conference on Computer, Communication and

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Computational Sciences (ICCCCS 2016), held during 12-13 August, 2016 in Ajmer, India'. These papers are arranged in the form of chapters. The content of the book is divided into two volumes that cover variety of topics such as intelligent hardware and software design, advanced communications, power and energy optimization, intelligent techniques used in internet of things, intelligent image processing, advanced software engineering, evolutionary and soft computing, security and many more. This book helps the perspective readers' from computer industry and academia to derive the advances of next generation computer and communication technology and shape them into real life applications.

From the basics to the most advanced quality of service (QoS) concepts, this all encompassing, first-of-its-kind book offers an in-depth understanding of the latest technical issues raised by the emergence of new types, classes and qualities of Internet services. The book provides end-to-end QoS guidance for real time multimedia communications over the Internet. It offers you a multiplicity of hands-on examples and simulation script support, and shows you where and when it is preferable to use these techniques for QoS support in networks and Internet traffic with widely varying characteristics and demand profiles. This practical resource discusses key standards and protocols, including real-time transport, resource reservation, and integrated and differentiated service models, policy based management, and mobile/wireless QoS. The book features numerous examples, simulation results and

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graphs that illustrate important concepts, and pseudo codes are used to explain algorithms. Case studies, based on freely available Linux/FreeBSD systems, are presented to show you how to build networks supporting Quality of Service. Online support material including presentation foils, lab exercises and additional exercises are available to text adopters.

This volume presents two regular revised papers, a guest editors' introduction, and six papers in a special section that have been through a careful peer reviewing process by the journal's Editorial Board. Besides a wide range of topics from software design to implementation of aspect-oriented languages, the six papers of the special section concentrate on AOP systems, software and middleware.

Component-Based Software Engineering (CBSE) is the way to produce software fast. This book presents the concepts in CBSE. While detailing both the advantages and the limitations of CBSE, it covers every aspect of component engineering, from software engineering practices to the design of software component infrastructure, technologies, and system.

This book contains the refereed proceedings of the 11th International Conference on Agile Software Development, XP 2010, held in Trondheim, Norway, in June 2010. In order to better evaluate the submitted papers and to highlight the applicational aspects of agile software practices, there were two different program committees, one for research

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papers and one for experience reports. Regarding the research papers, 11 out of 39 submissions were accepted as full papers; and as far as the experience reports were concerned, the respective number was 15 out of 50 submissions. In addition to these papers, this volume also includes the short research papers, the abstracts of the posters, the position papers of the PhD symposium, and the abstracts of the panel on “Collaboration in an Agile World”.

th 2002 DEXA, the 13 International Conference on Database and Expert Systems Applications was held on September 2–6, 2002, at the Université Aix–Marseille II, France. The quickly growing field of information systems required the establishment of more specialized discussion platforms (the DaWaK conference, EC-Web conference, eGOV conference and DEXA workshops), and there were held in parallel with DEXA, also in Aix-en-Provence. The resulting book was prepared with great effort.

Starting with the preparation of submitted papers, the papers went through the reviewing process. The accepted papers were revised to final versions by their authors and arranged to the conference program. This year 241 papers were submitted and our thanks go to all who have contributed. The program committee and the supporting reviewers produced altogether about 730 referee reports, on average three reports per paper, and selected 89 papers for presentation. The papers presented here

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encompass the extensive domain of databases; together with the other conferences and workshops of the DEXA event cluster a vast part of applied computer science was covered. In this way DEXA has blazed the trail. At this point we would like to acknowledge to all institutions which actively supported this conference and made it possible. These are: • IUT (Université Aix – Marseille II), • FAW, • DEXA Association, • the Austrian Computer Society, • and Microsoft Research

On behalf of the Organizing Committee we are pleased to present the proceedings of the 2008 Symposium on Component-Based Software Engineering (CBSE). CBSE is concerned with the development of software-intensive systems from independently developed software-building blocks (components), the development of components, and system maintenance and improvement by means of component replacement and customization. CBSE 2008 was the 11th in a series of events that promote a science and technology foundation for achieving predictable quality in software systems through the use of software component technology and its associated software engineering practices.

We were fortunate to

have a dedicated Program Committee comprising many internationally recognized researchers and industrial practitioners. We would like to thank the members of the Program Committee and associated reviewers for

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their contribution in making this conference a success. We received 70 submissions and each paper was reviewed by at least three Program Committee members (four for papers with an author on the Program Committee). The entire reviewing process was supported by the Conference Management Toolkit provided by Microsoft. In total, 20 submissions were accepted as full papers and 3 submissions were accepted as short papers.

Component-based software development, CBSD, is no longer just one more new paradigm in software engineering, but is effectively used in development and practice. So far, however, most of the efforts from the software engineering community have concentrated on the functional aspects of CBSD, leaving aside the treatment of the quality issues and extra-functional properties of software components and component-based systems. This book is the first one focusing on quality issues of components and component-based systems. The 16 revised chapters presented were carefully reviewed and selected for inclusion in the book; together with an introductory survey, they give a coherent and competent survey of the state of the art in the area. The book is organized in topical parts on COTS selection, testing and certification, software component quality models, formal models to quality assessment, and CBSD management.

This book constitutes the refereed proceedings of

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the 7th International Symposium on Component-Based Software Engineering, CBSE 2004, held in Edinburgh, UK in May 2004 as an adjunct event to ICSE 2004. The 12 revised long papers and 13 revised short papers presented together with the abstracts of 2 invited talks were carefully reviewed and selected from 82 submissions. The papers are organized in topical sections on generation and adoption of component-based systems, tools and building frameworks, components for real-time embedded systems, extra-functional properties of components and component-based systems, and measurement and prediction models for component assemblies.

Deployment is the act of taking components and readying them for productive use. There may be steps following deployment, such as installation or management related functions, but all decisions about how to configure and compose/assemble a component are made at the deployment stage. This is therefore the one opportunity in the software lifecycle to bridge the gap between what the component developer couldn't know about the deployment environment and what the environment's developer couldn't know about the open set of deployable components. It is not surprising that deployment as a dedicated step gains importance when addressing issues of system-wide qualities, such as coping with constrained resources

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or preparing for component adaptation and system evolution. Yet, component deployment is still a discipline in its infancy: it became mainstream practice only in the mid 1990s. Much of the best practice impulse originated in products like Microsoft's Transaction Server and its approach to attribute-based programming and later products like Enterprise JavaBeans and now the Corba Component Model. All these address the specific needs of enterprise application servers. However, the potential of the deployment concept goes far beyond this. Deployment can and should touch effectively all truly component-based solutions. The proceedings of Component Deployment 2002 represent a good cross-section of the gamut of deployment issues. From customization to address - source constraints to reconfiguration of deployed systems and from architecture to design to languages, the avid reader will find some contribution.

This book constitutes the refereed proceedings of the Second International Conference on COTS-Based Software Systems, ICCBSS 2003, held in Ottawa, Canada in February 2003. The 24 revised full papers presented were carefully reviewed and selected from numerous submissions. The papers address all current issues on commercial-off-the-shelf-systems, from the point of view of research and development as well as from the practitioner's application point of view.

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This book constitutes the refereed proceedings of the 19th International Conference on Logic Programming, ICLP 2003, held in Mumbai, India in December 2003. The 23 revised full papers and 19 poster papers presented together with 5 invited full contributions and abstracts of 4 invited contributions were carefully reviewed and selected from 81 submissions. All current issues in logic programming are addressed.

Summary "Critical Insights From Government Projects" examines the implementation of major projects in the governmental field, and more specifically those in the Gulf Cooperation Council (GCC) countries. The book is divided in to four research categories: project management, project evaluation, electronic services, and technology implementation. The chapters cover the theory and practice of the implementation, in the public sector, of advanced technologies in a governmental setting. The research in this book was conducted and written by senior government officials and practitioners. The chapters include key critical insights from several strategic government initiatives, general management frameworks, reflections and a review of fundamental lessons learned. Key Features Includes a rare insight in to major government projects in the Middle Eastern region. Examines implementation of major projects from a practical perspective. The review of the various projects is set against a broader framework, making the analysis of the implementation far more rigorous and relevant. Written by leading players in the area. Critical Insights From Government Projects is easy-to-read and is highly practical. The Author Dr Al-Khoury is the Director General (Under Secretary) of the Emirates Identity Authority: a federal government organisation established in 2004 to rollout and manage the national identity management infrastructure program in the United Arab Emirates. He has been involved

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in the UAE national identity card program since its early conceptual phases during his work with the Ministry of Interior. He has also been involved in many other strategic government initiatives in the past 22 years of his experience in the government sector. Contents Project management: projects management in reality; lessons from government IT projects; an innovative project management methodology Projects evaluation: UAE National ID Programme case study; using quality models to evaluate large IT systems Electronic services: electronic government in the GCC countries Technology implementations: digital identities and the promise of the 'technology trio' PKI, smart cards, and biometrics IRIS; recognition and the challenge of homeland and border control security in UAE

The 2010 Symposium on Component-Based Software Engineering (CBSE 2010) was the 13th in a series of successful events that have grown into the main forum for industrial and academic experts to discuss component technology. CBSE is concerned with the development of software-intensive systems from - dependently developed software-building blocks (components), the development of components, and system maintenance and improvement by means of com- nent replacement and customization. The aim of the conference is to promote a science and technology foundation for achieving predictable quality in software systems through the use of software component technology and its associated software engineering practices. In line with a broad interest, CBSE 2010 received 48 submissions. From these submissions, 14 were accepted after a careful peer-review process followed by an online program committee discussion. This resulted in an acceptance rate of 29%. The selected technical papers are published in this volume. For the fourth time, CBSE 2010 was held as part of the conference series: Fed- ated Events on Component-Based

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Software Engineering and Software Architecture (COMPARCH). The federated events were: the 13th International Symposium on Component-Based Software Engineering (CBSE 2010), the 6th International Conference on the Quality of Software Architectures (QoSA 2010), and the 1st International Symposium on Architecting Critical Systems (ISARCS 2010). Together with COMPARCH's Industrial Experience Report Track and the co-located Workshop on Component-Oriented Programming (WCOP 2010), COMPARCH provided a broad spectrum of events related to components and architectures.

The instruction put forth in this new book is all related to successfully using Select Perspective, a process conceived and marketed by Select Business solutions, a division of Aonix. Select Perspective is a pragmatic, component-based software development process that can be implemented by all roles in software development, and includes the business people that specify, accept, verify and use software solutions. Every individual who is involved in the specification, acceptance, construction, testing, delivery or budgetary control of software solutions will benefit from this book. The authors have helped organizations realize the benefit of component-based development with Select Perspective, and this book shows how it can be done, taking into account varying team sizes, uneven skill levels, and different industries. The book uses the UML for expression of designs, and will allow the reader to meet the demands of web services.

This book constitutes the refereed proceedings of the 8th International Workshop on Software Engineering for Resilient Systems, SERENE 2016, held in Gothenburg, Sweden, in September 2016. The 10 papers presented were carefully reviewed and selected from 15 submissions. They cover the following areas: development of resilient systems;

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incremental development processes for resilient systems; requirements engineering and re-engineering for resilience; frameworks, patterns and software architectures for resilience; engineering of self-healing autonomic systems; design of trustworthy and intrusion-safe systems; resilience at run-time (mechanisms, reasoning and adaptation); resilience and dependability (resilience vs. robustness, dependable vs. adaptive systems); verification, validation and evaluation of resilience; modeling and model based analysis of resilience properties; formal and semi-formal techniques for verification and validation; experimental evaluations of resilient systems; quantitative approaches to ensuring resilience; resilience prediction; case studies and applications; empirical studies in the domain of resilient systems; methodologies adopted in industrial contexts; cloud computing and resilient service provisioning; resilience for data-driven systems (e.g., big data-based adaptation and resilience); resilient cyber-physical systems and infrastructures; global aspects of resilience engineering: education, training and cooperation.

Industrial development of software systems needs to be guided by recognized engineering principles. Commercial-off-the-shelf (COTS) components enable the systematic and cost-effective reuse of prefabricated tested parts, a characteristic approach of mature engineering disciplines. This reuse necessitates a thorough test of these components to make sure that each works as specified in a real context. Beydeda and Gruhn invited leading researchers in the area of component testing to contribute to this monograph, which covers all related aspects from testing components in a context-independent manner through testing components in the context of a specific system to testing complete systems built from different components. The authors take the viewpoints of both component developers and component users, and their contributions encompass functional

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requirements such as correctness and functionality compliance as well as non-functional requirements like performance and robustness. Overall this monograph offers researchers, graduate students and advanced professionals a unique and comprehensive overview of the state of the art in testing COTS components and COTS-based systems.

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