

A Survey Of Agile Development Methodologies

Agile is a relatively recent methodology used in the development process of a project. Therefore, it is important to share new emerging knowledge with researchers and professionals interested in adopting an agile mindset. Emerging Innovations in Agile Software Development focuses on the use of agile methodologies to manage, design, develop, test and maintain software projects. Emphasizing research-based solutions for contemporary software development, this publication is designed for use by software developers, researchers, and graduate-level students in software engineering and project management programs.

The safety case (SC) is one of the railway industry's most important deliverables for creating confidence in their systems. This is the first book on how to write an SC, based on the standard EN 50129:2003. Experience has shown that preparing and understanding an SC is difficult and time consuming, and as such the book provides insights that enhance the training for writing an SC. The book discusses both "regular" safety cases and agile safety cases, which avoid too much documentation, improve communication between the stakeholders, allow quicker approval of the system, and which are important in the light of rapidly changing technology. In addition, it discusses the necessity of frequently updating software due to market requirements, changes in requirements and increased cyber-security threats. After a general introduction to SCs

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and agile thinking in chapter 1, chapter 2 describes the majority of the roles that are relevant when developing railway-signaling systems. Next, chapter 3 provides information related to the assessment of signaling systems, to certifications based on IEC 61508 and to the authorization of signaling systems. Chapter 4 then explains how an agile safety plan satisfying the requirements given in EN 50126-1:1999 can be developed, while chapter 5 provides a brief introduction to safety case patterns and notations. Lastly, chapter 6 combines all this and describes how an (agile) SC can be developed and what it should include. To ensure that infrastructure managers, suppliers, consultants and others can take full advantage of the agile mind-set, the book includes concrete examples and presents relevant agile practices. Although the scope of the book is limited to signaling systems, the basic foundations for (agile) SCs are clearly described so that they can also be applied in other cases.

This book focuses on emerging issues following the integration of artificial intelligence systems in our daily lives. It focuses on the cognitive, visual, social and analytical aspects of computing and intelligent technologies, highlighting ways to improve technology acceptance, effectiveness, and efficiency. Topics such as responsibility, integration and training are discussed throughout. The book also reports on the latest advances in systems engineering, with a focus on societal challenges and next-generation systems and applications for meeting them. It also discusses applications in smart grids and infrastructures, systems engineering education as well as defense and

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

This book empowers you to take a fresh, effective approach to getting better data from your surveys.

This book contains the refereed proceedings of the 14th International Conference on Agile Software Development, XP 2013, held in Vienna, Austria, in June 2013. In the last decade, the interest in agile and lean software development has been continuously growing. Agile and lean have evolved from a way of working -- restricted in the beginning to a few early adopters -- to the mainstream way of developing software. All this time, the XP conference series has actively promoted agility and widely disseminated research results in this area. XP 2013 successfully continued this tradition. The 17 full papers accepted for XP 2013 were selected from 52 submissions and are organized in sections on: teaching and learning; development teams; agile practices; experiences and lessons learned; large-scale projects; and architecture and design.

This book constitutes revised selected papers from the 9th Brazilian Workshop on Agile Methods, WBMA 2018, held in Campinas, Brazil, in October 2018. The 6 full and 1

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short papers presented in this volume were carefully reviewed and selected from 18 submissions. Accepted papers in this edition present empirical results and literature reviews on agile requirements validation in Brazilian software development companies; a survey on Brazilian software processes about to be agile or not; an evaluation of an agile maturity model; strategies to increase customer value in agile software development; an agile development environment and scrum in a strongly hierarchical organization.

This book constitutes the proceedings of the first Asia Pacific Requirements Engineering Symposium, APRES 2014, held in Auckland, New Zealand, in April 2014. The 16 papers presented were carefully reviewed and selected from 30 submissions. The focus of the papers is on the following topics: novel ideas, methods, tools, and techniques for improving and enhancing Requirement Engineering products and processes.

This open access book constitutes the proceedings of the 19th International Conference on Agile Software Development, XP 2018, held in Porto, Portugal, in May 2018. XP is the premier agile software development conference combining research and practice, and XP 2018 provided a playful and informal environment to learn and trigger discussions around its main theme – make, inspect, adapt. The 21 papers presented in this volume were carefully reviewed and selected from 62 submissions. They were organized in topical sections named: agile requirements; agile testing; agile

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transformation; scaling agile; human-centric agile; and continuous experimentation. This book addresses the development of safety-critical software and to this end proposes the SafeScrum® methodology. SafeScrum® was inspired by the agile method Scrum, which is extensively used in many areas of the software industry. Scrum is, however, not intended or designed for use with safety-critical systems; hence the authors propose guidelines and additions to make it both practically useful and compliant with the additional requirements found in safety standards. The book provides an overview of agile software development and how it can be linked to safety and relevant safety standards. SafeScrum® is described in detail as a useful approach for reaping the benefits of agile methods, and is intended as a set of ideas and a basis for adaptation in industry projects. The book covers roles, processes and practices, and documentation. It also includes tips on how standard software process tools can be employed. Lastly, some insights into relevant research in this new and emerging field are provided, and selected real-world examples are presented. The ideas and descriptions in this book are based on collaboration with the industry, in the form of discussions with assessment organizations, general discussions within the research fields of safety and software, and last but not least, the authors' own experiences and ideas. It was mainly written for practitioners in industry who know a great deal about how to produce safety-critical software but less about agile development in general and Scrum in particular.

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As the software industry continues to evolve, professionals are continually searching for practices that can assist with the various problems and challenges in information technology (IT). Agile development has become a popular method of research in recent years due to its focus on adapting to change. There are many factors that play into this process, so success is no guarantee. However, combining agile development with other software engineering practices could lead to a high rate of success in problems that arise during the maintenance and development of computing technologies. Software Engineering for Agile Application Development is a collection of innovative research on the methods and implementation of adaptation practices in software development that improve the quality and performance of IT products. The presented materials combine theories from current empirical research results as well as practical experiences from real projects that provide insights into incorporating agile qualities into the architecture of the software so that the product adapts to changes and is easy to maintain. While highlighting topics including continuous integration, configuration management, and business modeling, this book is ideally designed for software engineers, software developers, engineers, project managers, IT specialists, data scientists, computer science professionals, researchers, students, and academics.

This book examines the possibilities of incorporating elements of user-centred design (UCD) such as user experience (UX) and usability with agile software development. It explores the difficulties and problems inherent in integrating these two practices despite

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their relative similarities, such as their emphasis on stakeholder collaboration. Developed from a workshop held at NordiCHI in 2014, this edited volume brings together researchers from across the software development, UCD and creative design fields to discuss the current state-of-the-art. Practical case studies of integrating UCD in Agile development across diverse contexts are presented, whilst the different futures for UCD and other design practices in the context of agile software development are identified and explored. Integrating User Centred Design in Agile Development will be ideal for researchers, designers and academics who are interested in software development, user-centred design, agile methodologies and related areas.

This book explores how agile development practices, in particular pair programming, code review and automated testing, help software development teams to perform better. Agile software engineering has become the standard software development paradigm over the last decade, and the insights provided here are taken from a large-scale survey of 80 professional software development teams working at SAP SE in Germany. In addition, the book introduces a novel measurement tool for assessing the performance of software development teams. No previous study has researched this topic with a similar data set comprising insights from more than 450 professional software engineers.

This research investigated the opinions, thoughts, and actual experiences of software project managers working with application software projects that used one of the agile

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development methodologies. The purpose of the study was to determine the effectiveness and efficiency of utilizing agile methodologies to ensure rapid deployment in a changing business environment. Members of the software group within the Project Management Institute (PMI) were surveyed to gain perspective on agile software development. Thirty-three PMI members from the United States and abroad responded to the survey which included closed and open-ended questions. The respondents agreed that agile software development is an effective and efficient IT project methodology which allows projects to adapt to a changing business strategic environment. Survey respondents also agreed that agile development allows for the timely delivery of application software while still preserving quality and business user satisfaction. For those project managers reporting quality issues, it appeared that poor system performance after implementation was a significant issue to be addressed. This book constitutes the refereed proceedings of three international workshops held in Rome, Italy, in conjunction with the 15th International Conference on Agile Software Development, XP 2014, in May 2014. The workshops comprised Principles of Large-Scale Agile Development, Refactoring & Testing (RefTest 2014), and Estimations in the 21st Century Software Engineering (EstSE21 2014). The 13 revised full papers presented were carefully reviewed and selected from 28 submissions. In addition, an introduction and a keynote paper are included.

The field of software engineering is characterized by speed and turbulence in many

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regards. While new ideas are proposed almost on a yearly basis, very few of them live for a decade or a longer. Lightweight software development methods were a new idea in the latter part of the 1990s. Now, ten years later, they are better known as agile software development methods, and an active community driven by practitioners has formed around the new way of thinking. Agile software development is currently being embraced by the research community as well. As a sign of increased research activity, most research-oriented conferences have an agile software development track included in the conference program. The XP conference series established in 2000 was the first conference dedicated to agile processes in software engineering. The idea of the conference is to offer a unique setting for advancing the state of the art in research and practice of agile processes. This year's conference was the tenth consecutive edition of this international event. Due to the diverse nature of different activities during the conference, XP is claimed to be more of an experience rather than a regular conference. It offers several different ways to interact and strives to create a truly collaborative environment where new ideas and exciting findings can be presented and shared. This is clearly visible from this year's program as well.

Agile Methods9th Brazilian Workshop, WBMA 2018, Campinas, Brazil, October 4, 2018, Revised Selected PapersSpringer

This book constitutes revised selected papers from the 8th Brazilian Workshop on Agile Methods, WBMA 2017, held in Belém, Brazil, in September 2017. The 10 full and 2

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short papers presented in this volume were carefully reviewed and selected from 19 submissions. The papers present empirical studies on agile values and principles; agile practices; agile adoption; agile testing and quality; metrics; conceptual studies; cultural aspects on agile business; organizational transformation and future trends.

This book contains the refereed proceedings of the 12th International Conference on Agile Software Development, XP 2011, held in Madrid, Spain, in May 2011. The year 2011 marked the 10th anniversary of the Agile Manifesto. In this spirit, the XP conference continued its fine tradition of promoting agility by disseminating new research results in a timely manner and by bringing together researchers and practitioners for a fruitful mutual exchange of experiences. As introduced for XP 2010, there were again two different program committees, one for research papers and one for experience reports. Regarding the research papers, 11 out of 56 submissions were accepted as full papers; and as far as the experience reports were concerned, the respective number was 4 out of 17 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 workshops.

This book contains the refereed proceedings of the 17th International Conference on Agile Software Development, XP 2016, held in Edinburgh, UK, in May 2016. While agile development has already become mainstream in industry, this field is still constantly evolving and continues to spur an enormous interest both in industry and academia. To

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this end, the XP conference attracts a large number of software practitioners and researchers, providing a rare opportunity for interaction between the two communities.

The 14 full papers accepted for XP 2016 were selected from 42 submissions.

Additionally, 11 experience reports (from 25 submissions) 5 empirical studies (out of 12 submitted) and 5 doctoral papers (from 6 papers submitted) were selected, and in each case the authors were shepherded by an experienced researcher. Generally, all of the submitted papers went through a rigorous peer-review process.

This book constitutes the refereed proceedings of the 5th IFIP WG 13.2 International Conference on Human-Centered Software Engineering, HCSE 2014, held in Paderborn, Germany, in September 2014. The 13 full papers and 10 short papers presented together with one keynote were carefully reviewed and selected from 35 submissions. The papers cover various topics such as integration of software engineering and user-centered design; HCI models and model-driven engineering; incorporating guidelines and principles for designing usable products in the development process; usability engineering; methods for user interface design; patterns in HCI and HCSE; software architectures for user interfaces; user interfaces for special environments; representations for design in the development process; working with iterative and agile process models in HCSE; social and organizational aspects in the software development lifecycle; human-centric software development tools; user profiles and mental models; user requirements and design constraints; and user

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experience and software design.

This book constitutes the refereed proceedings of the Second International Conference on Software Process, held in Leipzig, Germany, in May 2008 - colocated with ICSE 2008, the 30th International Conference on Software Engineering. The 33 revised full papers presented together with 2 invited papers were carefully reviewed and selected from 106 submissions. The papers are organized in topical sections on process content, process tools and metrics, process management, process representation, analysis and modeling, experience report, and simulation modeling.

This book contains the refereed proceedings of the 13th International Conference on Agile Software Development, XP 2012, held in Malmö, Sweden, in May 2012. In the last decade, we have seen agile and lean software development strongly influence the way software is developed. Agile and lean software development has moved from being a way of working for a number of pioneers to becoming, more or less, the expected way of developing software in industry. The topics covered by the selected full papers include general aspects of agility, agile teams, studies related to the release and maintenance of software, and research on specific practices in agile and lean software development. They are complemented by four short papers capturing additional aspects of agile and lean projects.

This book gathers outstanding research papers presented at the International Joint Conference on Computational Intelligence (IJCCI 2018), which was held at Daffodil

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International University on 14–15 December 2018. The topics covered include: collective intelligence, soft computing, optimization, cloud computing, machine learning, intelligent software, robotics, data science, data security, big data analytics, and signal and natural language processing.

Programming has become a significant part of connecting theoretical development and scientific application computation. Computer programs and processes that take into account the goals and needs of the user meet with the greatest success, so it behooves software engineers to consider the human element inherent in every line of code they write. Research Anthology on Recent Trends, Tools, and Implications of Computer Programming is a vital reference source that examines the latest scholarly material on trends, techniques, and uses of various programming applications and examines the benefits and challenges of these computational developments. Highlighting a range of topics such as coding standards, software engineering, and computer systems development, this multi-volume book is ideally designed for programmers, computer scientists, software developers, analysts, security experts, IoT software programmers, computer and software engineers, students, professionals, and researchers.

"This book provides the research and instruction used to develop and implement software quickly, in small iteration cycles, and in close cooperation with the customer in an adaptive way, making it possible to react to changes set by the constant changing business environment. It presents four values explaining extreme programming (XP),

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the most widely adopted agile methodology"--Provided by publisher.

This open access book constitutes the research workshops, doctoral symposium and panel summaries presented at the 20th International Conference on Agile Software Development, XP 2019, held in Montreal, QC, Canada, in May 2019. XP is the premier agile software development conference combining research and practice. It is a hybrid forum where agile researchers, academics, practitioners, thought leaders, coaches, and trainers get together to present and discuss their most recent innovations, research results, experiences, concerns, challenges, and trends. Following this history, for both researchers and seasoned practitioners XP 2019 provided an informal environment to network, share, and discover trends in Agile for the next 20 years. Research papers and talks submissions were invited for the three XP 2019 research workshops, namely, agile transformation, autonomous teams, and large scale agile. This book includes 15 related papers. In addition, a summary for each of the four panels at XP 2019 is included. The panels were on security and privacy; the impact of the agile manifesto on culture, education, and software practices; business agility – agile’s next frontier; and Agile – the next 20 years.

This book gathers papers presented at the second installment of the International Conference on Advanced Intelligent Systems for Sustainable Development (AI2SD-2019), which was held on July 08–11, 2019 in Marrakech, Morocco. It offers comprehensive coverage of recent advances in big data, data analytics and related

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paradigms. The book consists of fifty-two chapters, each of which shares the latest research in the fields of big data and data science, and describes use cases and applications of big data technologies in various domains, such as social networks and health care. All parts of the book discuss open research problems and potential opportunities that have arisen from the rapid advances in big data technologies. In addition, the book surveys the state of the art in data science, and provides practical guidance on big data analytics and data science. Expert perspectives are provided by authoritative researchers and practitioners from around the world, who discuss research developments and emerging trends, present case studies on helpful frameworks and innovative methodologies, and suggest best practices for efficient and effective data analytics. Chiefly intended for researchers, IT professionals and graduate students, the book represents a timely contribution to the growing field of big data, which has been recognized as one of the leading emerging technologies that will have a major impact on various fields of science and various aspects of human society over the next several decades. Therefore, the content in this book is an essential tool to help readers understand current developments, and provides them with an extensive overview of the field of big data analytics as it is practiced today. The chapters cover technical aspects of key areas that generate and use big data, such as management and finance, medicine and health care, networks, the Internet of Things, big data standards, benchmarking of systems, and others. In addition to a diverse range of

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applications, key algorithmic approaches such as graph partitioning, clustering and finite mixture modeling of high-dimensional data are also covered. The varied collection of topics addressed introduces readers to the richness of the emerging field of big data analytics.

Professionals in the interdisciplinary field of computer science focus on the design, operation, and maintenance of computational systems and software. Methodologies and tools of engineering are utilized alongside computer applications to develop efficient and precise information databases. *Computer Systems and Software Engineering: Concepts, Methodologies, Tools, and Applications* is a comprehensive reference source for the latest scholarly material on trends, techniques, and uses of various technology applications and examines the benefits and challenges of these computational developments. Highlighting a range of pertinent topics such as utility computing, computer security, and information systems applications, this multi-volume book is ideally designed for academicians, researchers, students, web designers, software developers, and practitioners interested in computer systems and software engineering.

Information Systems Development: Reflections, Challenges and New Directions, is the collected proceedings of the 20th International Conference on Information Systems Development held in Edinburgh, Scotland, August 24 - 26, 2011. 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

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ideas. It is hoped that the papers herein contribute towards disseminating research and improving practice

This book presents high-quality original contributions on new software engineering models, approaches, methods, and tools and their evaluation in the context of defence and security applications. In addition, important business and economic aspects are discussed, with a particular focus on cost/benefit analysis, new business models, organizational evolution, and business intelligence systems. The contents are based on presentations delivered at SEDA 2018, the 6th International Conference in Software Engineering for Defence Applications, which was held in Rome, Italy, in June 2018. This conference series represents a targeted response to the growing need for research that reports and debates the practical implications of software engineering within the defence environment and also for software performance evaluation in real settings through controlled experiments as well as case and field studies. The book will appeal to all with an interest in modeling, managing, and implementing defence-related software development products and processes in a structured and supportable way. This book contains the refereed proceedings of the 15th International Conference on Agile Software Development, XP 2014, held in Rome, Italy, in May 2014. Because of the wide application of agile approaches in industry, the need for collaboration between academics and practitioners has increased in order to develop the body of knowledge available to support managers, system engineers, and software engineers in their managerial/economic and architectural/project/technical decisions. Year after year, the XP conference has facilitated such improvements and provided evidence on the advantages of agile methodologies by examining the latest theories, practical applications, and implications of agile and lean

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methods. The 15 full papers, seven short papers, and four experience reports accepted for XP 2014 were selected from 59 submissions and are organized in sections on: agile development, agile challenges and contracting, lessons learned and agile maturity, how to evolve software engineering teaching, methods and metrics, and lean development.

"This book presents cutting-edge research and analysis of the most recent advancements in the fields of database systems and software development"--Provided by publisher.

"This set of books represents a detailed compendium of authoritative, research-based entries that define the contemporary state of knowledge on technology"--Provided by publisher.

This open access book constitutes the proceedings of the 21st International Conference on Agile Software Development, XP 2020, which was planned to be held during June 8-12, 2020, at the IT University of Copenhagen, Denmark. However, due to the COVID-19 pandemic the conference was postponed until an undetermined date. XP is the premier agile software development conference combining research and practice. It is a hybrid forum where agile researchers, academics, practitioners, thought leaders, coaches, and trainers get together to present and discuss their most recent innovations, research results, experiences, concerns, challenges, and trends. Following this history, for both researchers and seasoned practitioners XP 2020 provided an informal environment to network, share, and discover trends in Agile for the next 20 years. The 14 full and 2 short papers presented in this volume were carefully reviewed and selected from 37 submissions. They were organized in topical sections named: agile adoption; agile practices; large-scale agile; the business of agile; and agile and testing. The highly dynamic world of information technology service management stresses the benefits of the quick and correct implementation of IT services. A disciplined approach relies on a

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separate set of assumptions and principles as an agile approach, both of which have complicated implementation processes as well as copious benefits. Combining these two approaches to enhance the effectiveness of each, while difficult, can yield exceptional dividends. *Balancing Agile and Disciplined Engineering and Management Approaches for IT Services and Software Products* is an essential publication that focuses on clarifying theoretical foundations of balanced design methods with conceptual frameworks and empirical cases. Highlighting a broad range of topics including business trends, IT service, and software development, this book is ideally designed for software engineers, software developers, programmers, information technology professionals, researchers, academicians, and students.

Overview and Goals The agile approach for software development has been applied more and more extensively since the mid nineties of the 20th century. Though there are only about ten years of accumulated experience using the agile approach, it is currently conceived as one of the mainstream approaches for software development. This book presents a complete software engineering course from the agile angle. Our intention is to present the agile approach in a holistic and comprehensive learning environment that fits both industry and academia and inspires the spirit of agile software development. Agile software engineering is reviewed in this book through the following three perspectives: I The Human perspective, which includes cognitive and social aspects, and refers to learning and interpersonal processes between teammates, customers, and management. I The Organizational perspective, which includes managerial and cultural aspects, and refers to software project management and control. I The Technological perspective, which includes practical and technical aspects, and refers to design, testing, and coding, as well as to integration, delivery,

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and maintenance of software products. Specifically, we explain and analyze how the explicit attention that agile software development gives these perspectives and their interconnections, helps viii Preface it cope with the challenges of software projects. This multifaceted perspective on software development processes is reflected in this book, among other ways, by the chapter titles, which specify dimensions of software development projects such as quality, time, abstraction, and management, rather than specific project stages, phases, or practices. This book constitutes revised selected papers from the 10th Brazilian Workshop on Agile Methods, WBMA 2019, held in Belo Horizonte, Brazil, in September 2019. The 6 full and 4 short papers presented in this volume were carefully reviewed and selected from 21 submissions. Accepted papers focus on agile methods; experimental studies with agile; software engineering education with agile; agile project management.

This book constitutes the refereed proceedings of the 20th International Conference on Product-Focused Software Process Improvement, PROFES 2019, held in Barcelona, Spain, in November 2019. The 24 revised full papers 4 industry papers, and 11 short papers presented were carefully reviewed and selected from 104 submissions. The papers cover a broad range of topics related to professional software development and process improvement driven by product and service quality needs. They are organized in topical sections on

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testing, software development, technical debt, estimations, continuous delivery, agile, project management, microservices, and continuous experimentation. This book also includes papers from the co-located events: 10 project papers, 8 workshop papers, and 4 tutorial summaries.

This book constitutes the refereed proceedings of the 4th International Conference on Human-Centered Software Engineering, HCSE 2012, held in Toulouse, France, in October 2012. The twelve full papers and fourteen short papers presented were carefully reviewed and selected from various submissions. The papers cover the following topics: user interface design, examining the relationship between software engineering and human-computer interaction and on how to strengthen user-centered design as an essential part of software engineering process.

This book is based on an innovative research study which devised a suitable change management framework for Irish software development companies seeking to make the transition from a more “traditional” software development process to one which is more agile and responsive. Utilising Kotter’s eight-step technique for organisational change as a basis, this research demonstrates how the incorporation of agile software techniques using the Scrum process effected successful changes within one of the world’s leading Electronic Design

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Automation (EDA) companies.

Professionals in the interdisciplinary field of computer science focus on the design, operation, and maintenance of computational systems and software. Methodologies and tools of engineering are utilized alongside the technological advancements of computer applications to develop efficient and precise databases of information. The Handbook of Research on Innovations in Systems and Software Engineering combines relevant research from all facets of computer programming to provide a comprehensive look at the challenges and changes in the field. With information spanning topics such as design models, cloud computing, and security, this handbook is an essential reference source for academicians, researchers, practitioners, and students interested in the development and design of improved and effective technologies.

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