Software Requirements Developer Best Practices

Zero in on key project-initiation tasks—and build a solid foundation for successful software development. In this concise guide, critically-acclaimed author Karl E. Wiegers fills a void in project management literature by focusing on the activities that are essential—but often overlooked—for launching any project. Drawing on his extensive experience, Karl shares lessons learned, proven practices, and tools for getting your project off to the right start—and steering it to ultimate success. Lay a foundation for project success—discover how to: Effectively charter a project Define meaningful criteria for project success and product releases Negotiate achievable commitments for project teams and stakeholders Identify and document potential barriers to success—and manage project risks Apply the Wideband Delphi method for more accurate estimation Measure project performance and avoid common metrics traps Systematically apply lessons learned to future projects Companion Web site includes: Worksheets from inside the book Project document templates Resources for project initiation and process improvement While a number of books on the market deal with software requirements, this is the first resource to offer you a methodology for discovering and testing the real business requirements that software products must meet in order to provide value. The book provides you with practical techniques that help prevent the main causes of

requirements creep, which in turn enhances software development success and satisfaction among the organizations that apply these approaches. Complementing discovery methods, you also learn more than 21 ways to test business requirements from the perspectives of assessing suitability of form, identifying overlooked requirements, and evaluating substance and content. The powerful techniques and methods presented are applied to a real business case from a company recognized for world-class excellence. You are introduced to the innovative Problem Pyramidtm technique which helps you more reliably identify the real problem and requirements content. From an examination of key methods for gathering and understanding information about requirements, to seven guidelines for documenting and communicating requirements, while avoiding analysis paralysis, this book is a comprehensive, single source for uncovering the real business requirements for your software development projects.

Drawing on 20+ years helping software teams succeed in nearly 150 organizations, Karl Wiegers presents 60 concise lessons and practical recommendations students can apply to all kinds of projects, regardless of application domain, technology, development lifecycle, or platform infrastructure. Embodying both wisdom for deeper understanding and guidance for practical use, this book represent an invaluable complement to the technical nuts and bolts software developers usually study. Software Development Pearls covers multiple crucial domains of project success: requirements,

design, project management, culture and teamwork, quality, and process improvement. Each chapter suggests several first steps and next steps to help you begin immediately applying the author's hard-won lessons--and writing code that is more successful in every way that matters.

Learn proven, real-world techniques for specifying software requirements with this practical reference. It details 30 requirement "patterns" offering realistic examples for situation-specific guidance for building effective software requirements. Each pattern explains what a requirement needs to convey, offers potential questions to ask, points out potential pitfalls, suggests extra requirements, and other advice. This book also provides guidance on how to write other kinds of information that belong in a requirements specification, such as assumptions, a glossary, and document history and references, and how to structure a requirements specification. A disturbing proportion of computer systems are judged to be inadequate; many are not even delivered; more are late or over budget. Studies consistently show one of the single biggest causes is poorly defined requirements: not properly defining what a system is for and what it's supposed to do. Even a modest contribution to improving requirements offers the prospect of saving businesses part of a large sum of wasted investment. This guide emphasizes this important requirement need—determining what a software system needs to do before spending time on development. Expertly written, this book details solutions that have worked in the past, with guidance for modifying

patterns to fit individual needs—giving developers the valuable advice they need for building effective software requirements

Studies on software project delivery show that the most common cause of failure is mismanagement of the project's requirements. This book takes a holistic approach to managing requirements to show you how to bridge the gap between requirements and specifications and deliver a successful software project that meets your client's expectations.

This is the eagerly-anticipated revision to one of the seminal books in the field of software architecture which clearly defines and explains the topic.

Discover the untapped features of object-oriented programming and use it with other software tools to code fast, efficient applications. Key Features Explore the complexities of object-oriented programming (OOP) Discover what OOP can do for you Learn to use the key tools and software engineering practices to support your own programming needs Book Description Your experience and knowledge always influence the approach you take and the tools you use to write your programs. With a sound understanding of how to approach your goal and what software paradigms to use, you can create high-performing applications quickly and efficiently. In this two-part book, you'll discover the untapped features of object-oriented programming and use it with other software tools to code fast and efficient applications. The first part of the book begins with a discussion on how OOP is used today and moves on to analyze the ideas and problems that OOP doesn't

address. It continues by deconstructing the complexity of OOP, showing you its fundamentally simple core. You'll see that, by using the distinctive elements of OOP, you can learn to build your applications more easily. The next part of this book talks about acquiring the skills to become a better programmer. You'll get an overview of how various tools, such as version control and build management, help make your life easier. This book also discusses the pros and cons of other programming paradigms, such as aspect-oriented programming and functional programming, and helps to select the correct approach for your projects. It ends by talking about the philosophy behind designing software and what it means to be a "good" developer. By the end of this two-part book, you will have learned that OOP is not always complex, and you will know how you can evolve into a better programmer by learning about ethics, teamwork, and documentation. What you will learn Untangle the complexity of object-oriented programming by breaking it down to its essential building blocks Realize the full potential of OOP to design efficient, maintainable programs Utilize coding best practices, including TDD, pair programming and code reviews, to improve your work Use tools, such as source control and IDEs, to work more efficiently Learn how to most productively work with other developers Build your own software development philosophy Who this book is for This book is ideal for programmers who want to understand the philosophy behind creating software and what it means to be "good" at designing software. Programmers who want to deconstruct the OOP paradigm and see how it can be

reconstructed in a clear, straightforward way will also find this book useful. To understand the ideas expressed in this book, you must be an experienced programmer who wants to evolve their practice.

Write code that can adapt to changes. By applying this book's principles, you can create code that accommodates new requirements and unforeseen scenarios without significant rewrites. Gary McLean Hall describes Agile best practices, principles, and patterns for designing and writing code that can evolve more quickly and easily, with fewer errors, because it doesn't impede change. Now revised, updated, and expanded, Adaptive Code, Second Edition adds indispensable practical insights on Kanban, dependency inversion, and creating reusable abstractions. Drawing on over a decade of Agile consulting and development experience, McLean Hall has updated his best-seller with deeper coverage of unit testing, refactoring, pure dependency injection, and more. Master powerful new ways to: • Write code that enables and complements Scrum, Kanban, or any other Agile framework • Develop code that can survive major changes in requirements • Plan for adaptability by using dependencies, layering, interfaces, and design patterns • Perform unit testing and refactoring in tandem, gaining more value from both • Use the "golden master" technique to make legacy code adaptive • Build SOLID code with single-responsibility, open/closed, and Liskov substitution principles • Create smaller interfaces to support more-diverse client and architectural needs • Leverage dependency injection best practices to improve code

adaptability • Apply dependency inversion with the Stairway pattern, and avoid related anti-patterns About You This book is for programmers of all skill levels seeking more-practical insight into design patterns, SOLID principles, unit testing, refactoring, and related topics. Most readers will have programmed in C#, Java, C++, or similar object-oriented languages, and will be familiar with core procedural programming techniques. Thoroughly reviewed and eagerly anticipated by the agile community, User Stories Applied offers a requirements process that saves time, eliminates rework, and leads directly to better software. The best way to build software that meets users' needs is to begin with "user stories": simple, clear, brief descriptions of functionality that will be valuable to real users. In User Stories Applied, Mike Cohn provides you with a front-to-back blueprint for writing these user stories and weaving them into your development lifecycle. You'll learn what makes a great user story, and what makes a bad one. You'll discover practical ways to gather user stories, even when you can't speak with your users. Then, once you've compiled your user stories, Cohn shows how to organize them, prioritize them, and use them for planning, management, and testing. User role modeling: understanding what users have in common, and where they differ Gathering stories: user interviewing, questionnaires, observation, and workshops Working with managers, trainers,

salespeople and other "proxies" Writing user stories for acceptance testing Using stories to prioritize, set schedules, and estimate release costs Includes end-of-chapter practice questions and exercises User Stories Applied will be invaluable to every software developer, tester, analyst, and manager working with any agile method: XP, Scrum... or even your own home-grown approach.

Widely considered one of the best practical guides to programming, Steve McConnell's original CODE COMPLETE has been helping developers write better software for more than a decade. Now this classic book has been fully updated and revised with leading-edge practices—and hundreds of new code samples—illustrating the art and science of software construction. Capturing the body of knowledge available from research, academia, and everyday commercial practice, McConnell synthesizes the most effective techniques and must-know principles into clear, pragmatic guidance. No matter what your experience level, development environment, or project size, this book will inform and stimulate your thinking—and help you build the highest quality code. Discover the timeless techniques and strategies that help you: Design for minimum complexity and maximum creativity Reap the benefits of collaborative development Apply defensive programming techniques to reduce and flush out errors Exploit opportunities to refactor—or

evolve—code, and do it safely Use construction practices that are right-weight for your project Debug problems quickly and effectively Resolve critical construction issues early and correctly Build quality into the beginning, middle, and end of your project An accessible, innovative perspective on using the flexibility of agile practices to increase software quality and profitability When agile approaches in your organization don't work as expected or you feel caught in the choice between agility and discipline, it is time to stop and think about software development rhythms! Agile software development is a popular development process that continues to reshape philosophies on the connections between disciplined processes and agile practices. In Software Development Rhythms, authors Lui and Chan explain how adopting one practice and combining it with another builds upon the flexibility of agile practices to create a type of "synergy" defined as software development rhythms. The authors demonstrate how these rhythms can be harmonized to achieve synergies, making them stronger together than they would be apart. Software Development Rhythms provides programmers with a powerful metaphor for resolving some classic software management controversies and dealing with some common difficulties in agile software management. Software Development Rhythms is divided into two parts and covers: Essentials — provides an

introduction to software development rhythms; explores the programmer's unconscious mind at work on software methodology; discusses the characteristics of the iterative cycle and open source software development; and introduces the topic of agile values and agile practices Rhythms — compares plagiarism programming with cut-paste programming; provides an in-depth discussion of different ways to approach collaborative programming; demonstrates how to combine and harmonize these practices so they can be applied to common software management problems such as motivating programmers, discovering solution patterns, managing software teams, and rescuing troubled IT projects; and takes a comprehensive look at Scrum, CMMI, Just-In-Time, Lean Software Development, and Test-Driven Development from a software development rhythm perspective Abundantly illustrated with informative graphics and amusing cartoons, Software Development Rhythms is a comprehensive and thought-provoking introduction to some of the most advanced concepts in current software management. Written in a refreshingly easy-to-read style and filled with interesting anecdotes, simulation exercises, and case studies, Software Development Rhythms is suitable for the practitioner and graduate student alike. It offers readers practical guidance on how to take the themes and concepts presented in this book

back to their own projects to harmonize their software practices and release the synergies of their own teams.

The first edition of "Extreme Programming Explained" is a classic. It won awards for its then-radical ideas for improving small-team development, such as having developers write automated tests for their own code and having the whole team plan weekly. Much has changed in five years. This completely rewritten second edition expands the scope of XP to teams of any size by suggesting a program of continuous improvement based on: five core values consistent with excellence in software development; eleven principles for putting those values into action; and, thirteen primary and eleven corollary practices to help you push development past its current business and technical limitations. Whether you have a small team that is already closely aligned with your customers or a large team in a gigantic or multinational organization, you will find in these pages a wealth of ideas to challenge, inspire, and encourage you and your team members to substantially improve your software development. Learn to integrate programming with good documentation. This book teaches you the craft of documentation for each step in the software development lifecycle, from understanding your users' needs to publishing, measuring, and maintaining useful developer documentation. Well-

documented projects save time for both developers on the project and users of the software. Projects without adequate documentation suffer from poor developer productivity, project scalability, user adoption, and accessibility. In short: bad documentation kills projects. Docs for Developers demystifies the process of creating great developer documentation, following a team of software developers as they work to launch a new product. At each step along the way, you learn through examples, templates, and principles how to create, measure, and maintain documentation—tools you can adapt to the needs of your own organization. What You'll Learn Create friction logs and perform user research to understand your users' frustrations Research, draft, and write different kinds of documentation, including READMEs, API documentation, tutorials, conceptual content, and release notes Publish and maintain documentation alongside regular code releases Measure the success of the content you create through analytics and user feedback Organize larger sets of documentation to help users find the right information at the right time Who This Book Is For Ideal for software developers who need to create documentation alongside code, or for technical writers, developer advocates, product managers, and other technical roles that create and contribute to documentation for their products and services.

Right Your Software and Transform Your Career Righting Software presents the proven, structured, and highly engineered approach to software design that renowned architect Juval Löwy has practiced and taught around the world. Although companies of every kind have successfully implemented his original design ideas across hundreds of systems, these insights have never before appeared in print. Based on first principles in software engineering and a comprehensive set of matching tools and techniques, Löwy's methodology integrates system design and project design. First, he describes the primary area where many software architects fail and shows how to decompose a system into smaller building blocks or services, based on volatility. Next, he shows how to flow an effective project design from the system design; how to accurately calculate the project duration, cost, and risk; and how to devise multiple execution options. The method and principles in Righting Software apply regardless of your project and company size, technology, platform, or industry. Löwy starts the reader on a journey that addresses the critical challenges of software development today by righting software systems and projects as well as careers—and possibly the software industry as a whole. Software professionals, architects, project leads, or managers at any stage of their career will benefit greatly from this book, which provides guidance and knowledge

that would otherwise take decades and many projects to acquire. Register your book for convenient access to downloads, updates, and/or corrections as they become available. See inside book for details.

It may surprise you to learn that Microsoft employs as many software testers as developers. Less surprising is the emphasis the company places on the testing discipline—and its role in managing quality across a diverse, 150+ product portfolio. This book—written by three of Microsoft's most prominent test professionals—shares the best practices, tools, and systems used by the company's 9,000-strong corps of testers. Learn how your colleagues at Microsoft design and manage testing, their approach to training and career development, and what challenges they see ahead. Most important, you'll get practical insights you can apply for better results in your organization. Discover how to: Design effective tests and run them throughout the product lifecycle Minimize cost and risk with functional tests, and know when to apply structural techniques Measure code complexity to identify bugs and potential maintenance issues Use models to generate test cases, surface unexpected application behavior, and manage risk Know when to employ automated tests, design them for long-term use, and plug into an automation infrastructure Review the hallmarks of great testers—and the tools they use to

run tests, probe systems, and track progress efficiently Explore the challenges of testing services vs. shrink-wrapped software

Get best-in-class engineering practices to help you write more-robust, bug-free code. Two Microsoft .NET development experts share real-world examples and proven methods for optimizing the software development life cycle—from avoiding costly programming pitfalls to making your development team more efficient. Managed code developers at all levels will find design, prototyping, implementation, debugging, and testing tips to boost the quality of their code—today. Optimize each stage of the development process—from design to testing—and produce higher-quality applications. Use metaprogramming to reduce code complexity, while increasing flexibility and maintainability Treat performance as a feature—and manage it throughout the development life cycle Apply best practices for application scalability Employ preventative security measures to ward off malicious attacks Practice defensive programming to catch bugs before run time Incorporate automated builds, code analysis, and testing into the daily engineering process Implement better source-control management and check-in procedures Establish a quality-driven, milestone-based project rhythm—and improve your results!

"We need better approaches to understanding and

managing software requirements, and Dean provides them in this book. He draws ideas from three very useful intellectual pools: classical management practices, Agile methods, and lean product development. By combining the strengths of these three approaches, he has produced something that works better than any one in isolation." –From the Foreword by Don Reinertsen, President of Reinertsen & Associates; author of Managing the Design Factory; and leading expert on rapid product development Effective requirements discovery and analysis is a critical best practice for serious application development. Until now, however, requirements and Agile methods have rarely coexisted peacefully. For many enterprises considering Agile approaches, the absence of effective and scalable Agile requirements processes has been a showstopper for Agile adoption. In Agile Software Requirements, Dean Leffingwell shows exactly how to create effective requirements in Agile environments. Part I presents the "big picture" of Agile requirements in the enterprise, and describes an overall process model for Agile requirements at the project team, program, and portfolio levels Part II describes a simple and lightweight, yet comprehensive model that Agile project teams can use to manage requirements Part III shows how to develop Agile requirements for complex systems that require the cooperation of multiple teams Part IV guides enterprises in developing Agile requirements for ever-larger "systems of systems," application suites, and product portfolios This book will help you leverage the benefits of Agile without sacrificing the value of effective

requirements discovery and analysis. You'll find proven solutions you can apply right now–whether you're a software developer or tester, executive, project/program manager, architect, or team leader.

"Mastering the Requirements Process: Getting Requirements Right" sets out an industry-proven process for gathering and verifying requirements, regardless of whether you work in a traditional or agile development environment. In this sweeping update of the bestselling guide, the authors show how to discover precisely what the customer wants and needs, in the most efficient manner possible.

Most IT systems fail to meet expectations. They don't meet business goals and don't support users efficiently. Why? Because the requirements didn't address the right issues. Writing a good requirements specification doesn't take more time. This book shows how it's done - many times faster and many times smarter. What are the highlights? Two complete real-life requirements specifications (the traditional and the fast approach) and examples from many others. Explanations of both traditional and fast approaches, and discussions of their strengths and weaknesses in different project types (tailor-made, COTS, and product development). Real-life illustrations of all types of requirements, stakeholder analysis, cost/benefit and other techniques to ensure that business goals are met. Proven methods for dealing with difficult or complex requirements, such as specifying ease-of-use, or dealing with 200 reports that might be needed because they are in the old system. Who is it for? Everyone involved in the software supply chain,

from analysts and developers to end users, will learn new techniques, benefit from requirements written by other specialists, and discover successes and failures from other companies. Software suppliers will find ideas for helping customers and writing competitive proposals. Programmers and other developers will learn how to express requirements without specifying technical details, and how to reduce risks when developing a system. Students aspiring to IT careers will learn the theory and practice of requirements engineering, and get a strong foundation for case studies and projects. Who is the author? Soren Lauesen is currently professor at the IT-University of Copenhagen. He has worked in the IT industry for 20 years and has been a professor at Copenhagen Business School for 15. He has been co-founder of three educational and two industrial development organizations. His industry projects have encompassed compilers, operating systems, process control, temporal databases, and software quality assurance. His research interests include human-computer interaction, requirements specification, object-oriented design, quality assurance, marketing and product development, and interaction between research and industry. He has a broad range of other interests ranging from biology to dancing and foreign cultures. Solid requirements engineering has increasingly been recognized as the key to improved, on-time, and on-budget delivery of software and systems projects. This textbook provides a comprehensive treatment of the theoretical and practical aspects of discovering, analyzing, modeling, validating, testing, and writing

requirements for systems of all kinds, with an intentional focus on software-intensive systems. It brings into play a variety of formal methods, social models, and modern requirements for writing techniques to be useful to the practicing engineer. This book was written to support both undergraduate and graduate requirements engineering courses. Each chapter includes simple, intermediate, and advanced exercises. Advanced exercises are suitable as a research assignment or independent study and are denoted by an asterisk. Various exemplar systems illustrate points throughout the book, and four systems in particular—a baggage handling system, a point of sale system, a smart home system, and a wet well pumping system—are used repeatedly. These systems involve application domains with which most readers are likely to be familiar, and they cover a wide range of applications from embedded to organic in both industrial and consumer implementations. Vignettes at the end of each chapter provide mini-case studies showing how the learning in the chapter can be employed in real systems. Requirements engineering is a dynamic field and this text keeps pace with these changes. Since the first edition of this text, there have been many changes and improvements. Feedback from instructors, students, and corporate users of the text was used to correct, expand, and improve the material. This third edition includes many new topics, expanded discussions, additional exercises, and more examples. A focus on safety critical systems, where appropriate in examples and exercises, has also been introduced. Discussions have also been

added to address the important domain of the Internet of Things. Another significant change involved the transition from the retired IEEE Standard 830, which was referenced throughout previous editions of the text, to its successor, the ISO/IEC/IEEE 29148 standard. Get to the next level of your software development career, learning the tools you need to successfully manage the complexity of modern software systems. Whether you are developer at a small software company or a large enterprise, your success is directly related to the ability of your development team to rapidly respond to change. What makes this task challenging is that the tech challenges we strive to overcome are becoming increasingly more complex: requirements, solution, hosting, support, pace of change, etc. A good developer manages every aspect of the program and understands that when details and decisions are left to chance, outcomes can be negatively impacted and result in increased errors due to substandard quality. It is the difference between being a professional software engineer and a programmer. You will know how look at the entire spectrum of the software development process and learn valuable concepts and apply these principles through meaningful examples, exercises, case studies, and source code. What You Will Learn Know what it means to be a professional software engineer Spend more time doing software development and minimize the pain of dealing with inefficient processes Integrate Lean and Agile practices to reduce errors in judgment and provide predictable outcomes, while still maintaining agility and responsiveness Ensure a shared

understanding in the group of stakeholders Validate user experience early and often to minimize costly re-work Develop software designs and architectures that age well and enable long-term business agility Implement patterns and processes that result in developers "falling into the pit of success" instead of into the "pit of failure" Adopt the necessary processes and patterns that will result in "institutionalized" quality that is pervasive Redefine the important role of technical leadership to ensure team maturity and growth Who This Book Is For Software developers and team leaders who have struggled to implement design and development best practices due to lack of in-depth knowledge or experience, and want a book designed to provide the confidence and foundational skills needed to achieve success

Provides solutions to a variety of problems associated with the software development process.

Software RequirementsPearson Education Requirements Engineering and Management for Software Development Projects presents a complete guide on requirements for software development including engineering, computer science and management activities. It is the first book to cover all aspects of requirements management in software development projects. This book introduces the understanding of the requirements, elicitation and gathering, requirements analysis, verification and validation of the requirements, establishment of requirements, different methodologies in brief, requirements traceability and change management

among other topics. The best practices, pitfalls, and metrics used for efficient software requirements management are also covered. Intended for the professional market, including software engineers, programmers, designers and researchers, this book is also suitable for advanced-level students in computer science or engineering courses as a textbook or reference.

Praise for the first edition: "This excellent text will be useful to everysystem engineer (SE) regardless of the domain. It covers ALLrelevant SE material and does so in a very clear, methodicalfashion. The breadth and depth of the author's presentation ofSE principles and practices is outstanding." –Philip Allen This textbook presents a comprehensive, step-by-step guide toSystem Engineering analysis, design, and development via anintegrated set of concepts, principles, practices, andmethodologies. The methods presented in this text apply to any typeof human system -- small, medium, and large organizational systemsand system development projects delivering engineered systems orservices across multiple business sectors such as medical,transportation, financial, educational, governmental, aerospace anddefense, utilities, political, and charity, among others. Provides a common focal point for "bridgingthe gap" between and unifying System Users, System Acquirers,multi-discipline System Engineering, and Project, Functional, andExecutive Management education, knowledge, and decision-making fordeveloping systems, products, or services Each chapter provides definitions of key terms,guiding

principles, examples, author's notes, real-worldexamples, and exercises, which highlight and reinforce key SE&Dconcepts and practices Addresses concepts employed in Model-BasedSystems Engineering (MBSE), Model-Driven Design (MDD), UnifiedModeling Language (UMLTM) / Systems Modeling Language(SysMLTM), and Agile/Spiral/V-Model Development such asuser needs, stories, and use cases analysis; specificationdevelopment; system architecture development; User-Centric SystemDesign (UCSD); interface definition & control; systemintegration & test; and Verification & Validation(V&V) Highlights/introduces a new 21st Century SystemsEngineering & Development (SE&D) paradigm that is easy tounderstand and implement. Provides practices that are critical stagingpoints for technical decision making such as Technical StrategyDevelopment; Life Cycle requirements; Phases, Modes, & States;SE Process; Requirements Derivation; System ArchitectureDevelopment, User-Centric System Design (UCSD); EngineeringStandards, Coordinate Systems, and Conventions; et al. Thoroughly illustrated, with end-of-chapter exercises andnumerous case studies and examples, Systems EngineeringAnalysis, Design, and Development, Second Edition is a primarytextbook for multi-discipline, engineering, system analysis, andproject management undergraduate/graduate level students and avaluable reference for professionals.
Good requirements do not come from a tool, or from a customer interview. They come from a repeatable set of processes that take a project from the early idea stage

through to the creation of an agreed-upon project and product scope between the customer and the developer.From enterprise analysis and planning requirements gathering to documentation,

Often referred to as the "black art" because of its complexity and uncertainty, software estimation is not as difficult or puzzling as people think. In fact, generating accurate estimates is straightforward—once you understand the art of creating them. In his highly anticipated book, acclaimed author Steve McConnell unravels the mystery to successful software estimation—distilling academic information and real-world experience into a practical guide for working software professionals. Instead of arcane treatises and rigid modeling techniques, this guide highlights a proven set of procedures, understandable formulas, and heuristics that individuals and development teams can apply to their projects to help achieve estimation proficiency. Discover how to: Estimate schedule and cost—or estimate the functionality that can be delivered within a given time frame Avoid common software estimation mistakes Learn estimation techniques for you, your team, and your organization * Estimate specific project activities—including development, management, and defect correction Apply estimation approaches to any type of project—small or large, agile or traditional Navigate the shark-infested political waters that surround project estimates When many corporate software projects are failing, McConnell shows you what works for successful software estimation.

Provides information on successful software

development, covering such topics as customer requirements, task estimates, principles of good design, dealing with source code, system testing, and handling bugs.
In April 1991 BusinessWeek ran a cover story entitled, "I Can't Work This ?#!!@ Thing," about the difficulties many people have with consumer products, such as cell phones and VCRs. More than 15 years later, the situation is much the sameâ€"-but at a very different level of scale. The disconnect between people and technology has had society-wide consequences in the large-scale system accidents from major human error, such as those at Three Mile Island and in Chernobyl. To prevent both the individually annoying and nationally significant consequences, human capabilities and needs must be considered early and throughout system design and development. One challenge for such consideration has been providing the background and data needed for the seamless integration of humans into the design process from various perspectives: human factors engineering, manpower, personnel, training, safety and health, and, in the military, habitability and survivability. This collection of development activities has come to be called human-system integration (HSI). Human-System Integration in the System Development Process reviews in detail more than 20 categories of HSI methods to provide invaluable guidance and information for system designers and developers.
Get the most out of this foundational reference and improve the productivity of your software teams. This open access book collects the wisdom of the 2017

"Dagstuhl" seminar on productivity in software engineering, a meeting of community leaders, who came together with the goal of rethinking traditional definitions and measures of productivity. The results of their work, Rethinking Productivity in Software Engineering, includes chapters covering definitions and core concepts related to productivity, guidelines for measuring productivity in specific contexts, best practices and pitfalls, and theories and open questions on productivity. You'll benefit from the many short chapters, each offering a focused discussion on one aspect of productivity in software engineering. Readers in many fields and industries will benefit from their collected work. Developers wanting to improve their personal productivity, will learn effective strategies for overcoming common issues that interfere with progress. Organizations thinking about building internal programs for measuring productivity of programmers and teams will learn best practices from industry and researchers in measuring productivity. And researchers can leverage the conceptual frameworks and rich body of literature in the book to effectively pursue new research directions. What You'll LearnReview the definitions and dimensions of software productivity See how time management is having the opposite of the intended effect Develop valuable dashboards Understand the impact of sensors on productivity Avoid software development waste Work with human-centered methods to measure productivity Look at the intersection of neuroscience and productivity Manage interruptions and context-switching Who Book Is For Industry developers and those responsible for

seminar-style courses that include a segment on software developer productivity. Chapters are written for a generalist audience, without excessive use of technical terminology.

A comprehensive reference for developing and managing precise software requirements shares guidelines for fostering communications between business and technical teams to maximize accuracy at the request and developmental levels.

No matter how much instruction you've had on managing software requirements, there's no substitute for experience. Too often, lessons about requirements engineering processes lack the no-nonsense guidance that supports real-world solutions. Complementing the best practices presented in his book, Software Requirements, Second Edition, requirements engineering authority Karl Wiegers tackles even more of the real issues head-on in this book. With straightforward, professional advice and practical solutions based on actual project experiences, this book answers many of the tough questions raised by industry professionals. From strategies for estimating and working with customers to the nuts and bolts of documenting requirements, this essential companion gives developers, analysts, and managers the cosmic truths that apply to virtually every software development project. Discover how to: • Make the business case for investing in better requirements practices • Generate estimates using three specific techniques • Conduct inquiries to elicit meaningful business and user requirements • Clearly document project scope •

Implement use cases, scenarios, and user stories effectively • Improve inspections and peer reviews • Write requirements that avoid ambiguity
Today, software engineers need to know not only how to program effectively but also how to develop proper engineering practices to make their codebase sustainable and healthy. This book emphasizes this difference between programming and software engineering. How can software engineers manage a living codebase that evolves and responds to changing requirements and demands over the length of its life? Based on their experience at Google, software engineers Titus Winters and Hyrum Wright, along with technical writer Tom Manshreck, present a candid and insightful look at how some of the world's leading practitioners construct and maintain software. This book covers Google's unique engineering culture, processes, and tools and how these aspects contribute to the effectiveness of an engineering organization. You'll explore three fundamental principles that software organizations should keep in mind when designing, architecting, writing, and maintaining code: How time affects the sustainability of software and how to make your code resilient over time How scale affects the viability of software practices within an engineering organization What trade-offs a typical engineer needs to make when evaluating design and development decisions

Now in its third edition, this classic guide to software requirements engineering has been fully updated with new topics, examples, and guidance. Two leaders in the requirements community have teamed up to deliver a contemporary set of practices covering the full range of requirements development and management activities on software projects. Describes practical, effective, field-tested techniques for managing the requirements engineering process from end to end. Provides examples demonstrating how requirements "good practices" can lead to fewer change requests, higher customer satisfaction, and lower development costs. Fully updated with contemporary examples and many new practices and techniques. Describes how to apply effective requirements practices to agile projects and numerous other special project situations. Targeted to business analysts, developers, project managers, and other software project stakeholders who have a general understanding of the software development process. Shares the insights gleaned from the authors' extensive experience delivering hundreds of software-requirements training courses, presentations, and webinars. New chapters are included on specifying data requirements, writing high-quality functional requirements, and requirements reuse. Considerable depth has been added on business requirements, elicitation techniques, and nonfunctional requirements. In

addition, new chapters recommend effective requirements practices for various special project situations, including enhancement and replacement, packaged solutions, outsourced, business process automation, analytics and reporting, and embedded and other real-time systems projects.

The focus of Software for Dependable Systems is a set of fundamental principles that underlie software system dependability and that suggest a different approach to the development and assessment of dependable software. Unfortunately, it is difficult to assess the dependability of software. The field of software engineering suffers from a pervasive lack of evidence about the incidence and severity of software failures; about the dependability of existing software systems; about the efficacy of existing and proposed development methods; about the benefits of certification schemes; and so on. There are many anecdotal reports, which-although often useful for indicating areas of concern or highlighting promising avenues of research-do little to establish a sound and complete basis for making policy decisions regarding dependability. The committee regards claims of extraordinary dependability that are sometimes made on this basis for the most critical of systems as unsubstantiated, and perhaps irresponsible. This difficulty regarding the lack of evidence for system dependability leads to two conclusions: (1) that better evidence is needed, so

that approaches aimed at improving the dependability of software can be objectively assessed, and (2) that, for now, the pursuit of dependability in software systems should focus on the construction and evaluation of evidence. The committee also recognized the importance of adopting the practices that are already known and used by the best developers; this report gives a sample of such practices. Some of these (such as systematic configuration management and automated regression testing) are relatively easy to adopt; others (such as constructing hazard analyses and threat models, exploiting formal notations when appropriate, and applying static analysis to code) will require new training for many developers. However valuable, though, these practices are in themselves no silver bullet, and new techniques and methods will be required in order to build future software systems to the level of dependability that will be required.

A classic treatise that defined the field of applied demand analysis, Consumer Demand in the United States: Prices, Income, and Consumption Behavior is now fully updated and expanded for a new generation. Consumption expenditures by households in the United States account for about 70% of Americaâ__s GDP. The primary focus in this book is on how households adjust these expenditures in response to changes in price and

income. Econometric estimates of price and income elasticities are obtained for an exhaustive array of goods and services using data from surveys conducted by the Bureau of Labor Statistics, providing a better understanding of consumer demand. Practical models for forecasting future price and income elasticities are also demonstrated. Fully revised with over a dozen new chapters and appendices, the book revisits the original Taylor-Houthakker models while examining new material as well, such as the use of quantile regression and the stationarity of consumer preference. It also explores the emerging connection between neuroscience and consumer behavior, integrating the economic literature on demand theory with psychology literature. The most comprehensive treatment of the topic to date, this volume will be an essential resource for any researcher, student or professional economist working on consumer behavior or demand theory, as well as investors and policymakers concerned with the impact of economic fluctuations.

Looks at a successful software project and provides details for software development for clients using object-oriented design and programming.

Throughout your life, you've had numerous everyday conversations and other experiences in which a small observation---perhaps a single sentence someone spoke to you---resonated so

strongly that you still remember it years later. The "pearls of wisdom" that arose from such small encounters helped shape your values, how you think about yourself, and how you interact with others. "Pearls from Sand" will appeal to people who seek out life lessons, look for ways to apply the lessons to their thoughts and actions, and enjoy sharing these powerful lessons with others.

Gathering customer requirements is a key activity for developing software that meets the customer's needs. A concise and practical overview of everything a requirement's analyst needs to know about establishing customer requirements, this first-of-its-kind book is the perfect desk guide for systems or software development work. The book enables professionals to identify the real customer requirements for their projects and control changes and additions to these requirements. This unique resource helps practitioners understand the importance of requirements, leverage effective requirements practices, and better utilize resources. The book also explains how to strengthen interpersonal relationships and communications which are major contributors to project effectiveness. Moreover, analysts find clear examples and checklists to help them implement best practices. Apply best practices for capturing, analyzing, and implementing software requirements through visual models—and deliver better results for your business.

The authors—experts in eliciting and visualizing requirements—walk you through a simple but comprehensive language of visual models that has been used on hundreds of real-world, large-scale projects. Build your fluency with core concepts—and gain essential, scenario-based context and implementation advice—as you progress through each chapter. Transcend the limitations of text-based requirements data using visual models that more rigorously identify, capture, and validate requirements Get real-world guidance on best ways to use visual models—how and when, and ways to combine them for best project outcomes Practice the book's concepts as you work through chapters Change your focus from writing a good requirement to ensuring a complete system

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